

SR 7, SR 41, and SR 48 Road Safety Audit



**SAFETY
FIRST**

**Final Report
January 2020**



Delaware Department
of Transportation

EXECUTIVE SUMMARY

Senate Resolution Number 10 (SR 10), which was passed by the 149th General Assembly of the Delaware State Senate, established a Special Committee to study and make recommendations regarding truck traffic movement along SR 41, SR 48, and SR 7 in New Castle County, Delaware. The Special Committee submitted twenty-four (24) recommendations to the Delaware Department of Transportation (DelDOT) and the Delaware General Assembly, including a recommendation that DelDOT **“perform a Road Safety Audit on SR 7, SR 41, and SR 48” (Recommendation #6 of 24)**. A Road Safety Audit (RSA) is a formal and independent safety performance review of a road by a multidisciplinary team of safety specialists, addressing the safety of all road users. DelDOT requested that RK&K lead the RSA study effort, providing traffic engineering technical expertise, along with meeting facilitation support from Kramer & Associates. This report summarizes the RSA process, findings, and safety recommendations developed by RK&K based on the information, experiences, and local knowledge provided by the RSA Team members.

The RSA study area includes SR 7 from the Pennsylvania State Line to SR 2; SR 41 from the Pennsylvania State Line to SR 2; and SR 48 from the SR 41 / SR 48 split to SR 141. Together, the study area corridors encompass nearly 16 miles of roadway in northern New Castle County, Delaware.

The RSA Team followed guidance included in the *FHWA Road Safety Audit Guidelines*. RK&K provided the RSA Team Leader and oversaw the RSA process while the DelDOT Chief Traffic Engineer served as the project owner’s representative. RK&K and DelDOT assembled a multidisciplinary RSA Team that included representatives from various DelDOT offices (Maintenance & Operations, Planning, Project Development, Traffic Studies), fire and police services, and area residents. Elected officials from the area were also kept informed and invited to RSA meetings throughout the process. RK&K compiled and reviewed existing traffic and safety data with the RSA Team. As an integral part to any RSA, the RSA Team performed field visits, both individually and as a group during the RSA bus tour. Following listening sessions and the bus tour, RK&K developed a candidate list of safety improvements that were shared with the entire RSA Team. RK&K revised the candidate list based on feedback from the RSA Team to comprise the final recommendations documented in this report.

This report includes the final short-, mid-, and long-term safety improvement recommendations, including renderings and graphics to facilitate implementation. The short-term improvements are those recommendations that could be implemented within approximately one (1) year of DelDOT’s review, comment and acceptance of this report. It is anticipated that mid-term recommendations could be implemented within one (1) to three (3) years while long-term improvements would need to be studied and funded through the Capital Transportation Plan (CTP) development process. Although efforts have been made to categorize recommendations as short-, mid-, or long-term, some improvements may extend beyond the identified timeframes due to unanticipated conditions. Ultimately, 30 short-term, 11 mid-term, and 13 long-term recommendations were selected for inclusion in this report.

It is anticipated that, as the final steps of the overall RSA process, DelDOT will provide a response to this report indicating what actions will be taken related to the documented safety concerns and recommended safety improvements included in this report. DelDOT will then incorporate safety improvements committed to in the official response as funds become available.

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I. INTRODUCTION

Senate Resolution Number 10 (SR 10), which was passed by the 149th General Assembly of the Delaware State Senate, established a Special Committee to study and make recommendations regarding truck traffic movement along SR 41, SR 48, and SR 7 in New Castle County, Delaware. Per SR 10, the Special Committee was directed to study and make recommendations regarding:

1. How to reduce the number of trucks traveling along these roadways; and
2. Any improvements in engineering, infrastructure, education and enforcement that can improve the quality of life for those that live along these roadways.

The Special Committee completed the study on January 12, 2018 and submitted twenty-four (24) recommendations to the Delaware Department of Transportation (DelDOT) and the Delaware General Assembly. To address improvements in engineering and infrastructure that can improve the quality of life for those that live along these roadways, the Special Committee recommended that DelDOT “**perform a Road Safety Audit on SR 7, SR 41, and SR 48**” (Recommendation #6 of 24).

A Road Safety Audit (RSA) is a formal and independent safety performance review of a road by a multidisciplinary team of safety specialists, addressing the safety of all road users. DelDOT requested that RK&K, along with meeting facilitation support from Kramer & Associates, provide traffic engineering services, including acting as the RSA Team Leader. This report summarizes the RSA process, findings, and safety recommendations from the technical team (RK&K) based on the information, experiences, and local knowledge provided by the RSA Team members. The RSA Team members served as an advisory group while the final recommendations were developed by RK&K.

A. PROJECT DESCRIPTION AND LOCATION

The RSA study area includes SR 7 from the Pennsylvania State Line to SR 2; SR 41 from the Pennsylvania State Line to SR 2; and SR 48 from the SR 41 / SR 48 split to SR 141, as shown in **Figure 1**. Together the study corridors encompass nearly 16 miles of roadway in northern New Castle County, Delaware.

Between SR 2 in the south and Valley Road to the north, SR 7 is a four-lane, divided principal arterial with curbed and/or painted medians throughout. North of Valley Road to the Pennsylvania state line, SR 7 consists of one (1) travel lane in each direction and is undivided. The speed limit along SR 7 varies between 40 miles per hour (mph) and 50 mph.

The SR 41 corridor is generally a two-lane, undivided principal arterial; however, the cross-section changes for short stretches in multiple locations. Between SR 2 and Greenbank Road, SR 41 includes a wide curbed median and wide shoulders. North of Mitchell Road, a two-way left-turn lane (TWLTL) develops and SR 41 carries two (2) travel lanes in each direction between Mitchell Road and Valley Road. North of Valley Road, the SR 41 cross-section returns to a two-lane, undivided roadway north to the Pennsylvania state line. The speed limit along SR 41 varies between 35 mph and 50 mph.

Between SR 141 and Hercules Road, SR 48 is a four-lane, divided principal arterial with curbed medians. Between Hercules Road and SR 41, SR 48 is a two-lane, undivided roadway with occasional truck climbing lanes. The speed limit along SR 48 varies between 45 mph and 50 mph.

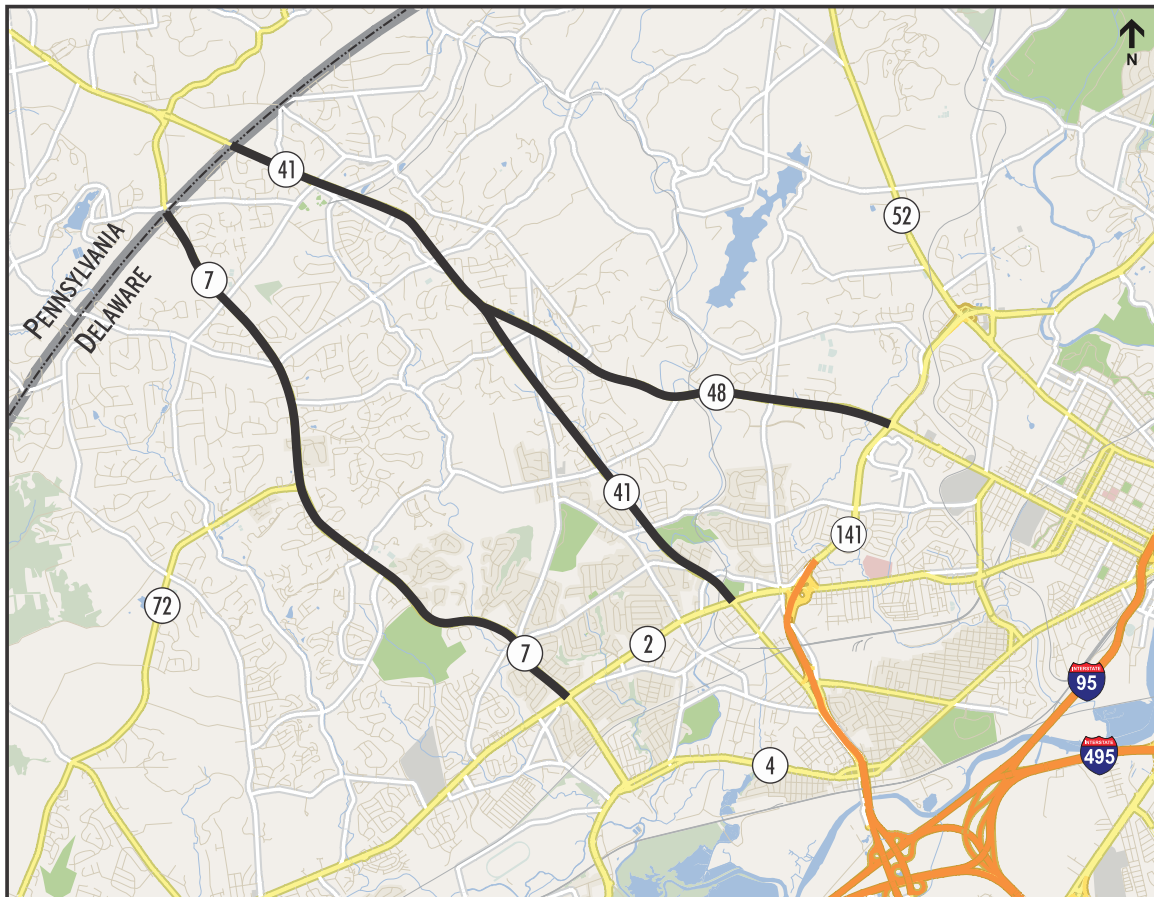


Figure 1. Study Area Map

B. RSA PROCESS

The RSA Team followed the 8-step process and guidance included in the *FHWA Road Safety Audit Guidelines*. At project initiation, RK&K coordinated with DelDOT to assemble a multidisciplinary RSA Team including representatives from various DelDOT offices (Maintenance & Operations, Planning, Project Development, Traffic Studies), fire and police services, and area residents. Local legislators were also included throughout the RSA process. The RSA Team was selected to include individuals from various disciplines to ensure all aspects of road safety were considered throughout the process.

RK&K compiled existing traffic and safety data to share with the RSA Team during the initial meetings on July 16, 2018 and October 9, 2018. In addition to the quantitative data that was reviewed with the RSA Team during the pre-field visit meetings, Team members collectively brainstormed and discussed safety concerns along each corridor related to their experiences living and working along the study area roadways. Between meetings, several of the Team members performed individual field observations and provided information to the Team Leader based on a list distributed by RK&K that outlined a variety of roadway elements to consider.

Following brainstorming sessions and the sharing of information and experiences, RK&K led a bus tour on December 11, 2018, allowing the RSA Team to travel along all three corridors together, making stops at multiple locations based on the discussions at earlier meetings. During the field visit, Team members observed roadway conditions, noted any additional concerns that were not previously discussed, explored possible underlying causes for safety issues at each location, and started to brainstorm possible safety improvements.

After the bus tour, RK&K used the insights provided by the RSA Team to develop a list of potential short-, mid-, and long-term safety improvement options and presented those options to the RSA Team on July 9, 2019. The RSA Team members provided feedback on the candidate improvements that RK&K then used to refine recommendations for inclusion in this report. Presentation materials and meeting summaries for all RSA Team meetings, including the bus tour, are included in **Appendix A**.

This report documents the short-, mid-, and long-term recommendations developed by RK&K based on information and insights from the multidisciplinary RSA Team. It is anticipated that DelDOT will provide a response to this report indicating what actions will be taken related to the documented safety concerns and recommended safety improvements, including an anticipated schedule for implementation of the accepted recommendations, as well as explanations for any RSA suggestions that will not be adopted. It should also be noted that, if accepted, some of the more extensive improvement recommendations from this study will need to go through DelDOT's Project Development process and be included in the Capital Transportation Plan (CTP) as funds become available.

C. RSA TEAM

At the request of DelDOT, Jim Burnett, P.E., PTOE served as the RSA Team Leader. The following RSA Team Members, listed alphabetically, also participated during the study process:

- Henry Alisa – Area Resident
- Maria Andaya – DelDOT, Planning
- John Antonelli – Area Resident
- Andrew Bing (*meeting facilitation*) – Kramer & Associates
- Dan Blevins – Wilmington Area Planning Council (WILMAPCO)
- Randy Broadwater – Hockessin Volunteer Fire Department
- Jim Burnett (*Team Leader*) – RK&K
- Matthew Cox – Delaware State Police (DSP)
- Stephanie Everett – RK&K
- Peter Haag – DelDOT, Traffic Studies
- Justin Hubschmitt – DelDOT, Project Development
- Maureen Kelley – DelDOT, Maintenance & Operations
- Jerry Lovell – DelDOT, Project Development
- Marvin Pedigo – DelDOT, Safety
- MaryAnn Summers – Area Resident
- Bill Taylor – Area Resident
- Mark Tudor – DelDOT, Project Development
- Sean Walsh – Area Resident

Chief Traffic Engineer Mark Luszc, P.E., PTOE, served as the project owner's representative throughout the study. Mark attended all RSA Team meetings as a resource to answer questions but was not considered a member of the audit team.

II. CRASH DATA SUMMARY

DelDOT provided crash data for the study area corridors covering the three-year period from January 1, 2015 through December 31, 2017. RK&K reviewed and summarized the crash data in a packet shared with the RSA Team at the pre-field visit meeting on October 9, 2018. The crash summary packet that the RSA Team reviewed together is included with the meeting materials and summaries in **Appendix A**. The full crash summary data for each corridor provided by DelDOT is included with this report in **Appendix B**.

Key findings from the crash analysis include the following trends:

- The crash rates (crashes per million vehicle miles traveled) for the SR 7 and SR 48 corridors were less than both the statewide crash rates and the New Castle County crash rates for similar facilities for the three-year study period.
- The crash rate for SR 41 was slightly greater than the statewide crash rate, but less than the New Castle County crash rate for similar facilities for the three-year study period.
- Along all three study area corridors, the crash clusters or hot spots with the highest frequency of crashes were located at or near intersections.
- Two (2) intersections appeared on WILMAPCO's Top 50 Crash Frequency Ranking List for the study period:
 - SR 7 and SR 2
 - SR 41 and SR 2
 - Both locations were likely impacted by high volumes on SR 2.
- There were six (6) fatal crashes along study area corridors during the three-year study period. Three (3) fatal crashes were related to alcohol or opiates. The remaining three (3) fatal crashes were related to driving in a careless, reckless, or aggressive manner.
- There were six (6) pedestrian crashes along study area corridors during the three-year study period. One (1) pedestrian-related crash resulted in a fatality and was alcohol related (intoxicated pedestrian). Four (4) pedestrian-related crashes resulted in injuries and the remaining crash resulted in property damage only (PDO).
- There was one (1) bicycle-related crash during the three-year study period that resulted in injury.
- Deer-related crashes accounted for approximately 6% of all reported crashes within the study area, including 9% of reported crashes along SR 48.
- Approximately 12% of all reported crashes were under "Dark-not lighted" conditions, including approximately 25% of reported crashes on SR 48.

The *FHWA Road Safety Audit Guidelines* note that although crash data is an important component for the audit team to review, the RSA is not the same as a traditional safety review or crash data analysis. For this study, the crash data was used as one source of information about historical safety trends. Through the brainstorming process, the RSA Team also identified a number of locations where there might be the potential for crashes, even where there was not a documented history of crashes.

III. SAFETY CONCERNS

During the kickoff meeting on July 16, 2018, the RSA Team used large aerial roll maps to guide discussion of safety concerns that Team members observed along the study area corridors. The Team used Post-it® notes to mark their concerns corresponding to specific locations on the roll maps, as shown in **Figure 2**. Following the kickoff meeting, Team members were assigned homework to travel the corridors independently and note any additional safety issues that may not have come up during the initial discussion. A detailed list was provided to each member of the RSA Team that outlined a variety of roadway elements to consider. This prompt list, which is included with the meeting materials in **Appendix A**, was intended to assist the RSA Team members during their individual field observations. Team members provided the Team Leader with their observations and RK&K updated the large aerial roll maps to digitally document concerns noted during both the initial discussion and as part of the homework assignment. At the second

RSA Team meeting on October 9, 2019, the RSA Team reviewed the previously noted safety concerns and discussed any additional issues. Copies of the large aerial roll maps with notes about specific safety concerns are included in the meeting materials in **Appendix A** of this report.



Figure 2. RSA Team used Post-it® Note Activity to Discuss Safety Concerns

Given the large scale of the study area, as well as the varied character of the three (3) roadways, noted safety issues covered a wide range of topics including: pedestrian and bicycle facilities; visibility at intersections and along roadways; lane reductions; water ponding on roadways and snow plowing; narrow shoulders; pavement condition; pavement markings; access management; guardrail treatments; animal crossing locations; illegal movements; steep grades; and congestion that results in safety concerns. Where possible, the RSA Team noted location-specific safety concerns so that targeted improvement recommendations could be made at each location, as shown on the large aerial roll maps in **Appendix A**. Additionally, the RSA Team identified several general concerns over extended segments along all three corridors as follows:

- Lack of continuous pedestrian and bicycle facilities
- Nighttime visibility concerns
- Compliance with posted speed limits, as well as noted concerns about the speed limits themselves
- Sign clutter

During the bus tour on December 11, 2018, the RSA Team observed travel behavior at multiple stops along the study area corridors consistent with the above noted concerns. Team members noted a combination of factors that may contribute to crashes or potential safety issues including limited sight distance, sun glare, aggressive driving, driver confusion, friction where multiple access points exist near intersections, and limited pedestrian accommodations.

IV. RELATED PROJECTS

The RSA is one of several ongoing projects in the study area. The following sections provide brief summaries of related projects and their relationship to the RSA findings and recommendations.

A. SPEED LIMIT STUDY

The SR 10 Special Committee also recommended that DelDOT “perform a traffic engineering study to determine appropriate speed limits on SR 7, SR 41, and SR 48” (Recommendation #8 of 24). The traffic engineering study regarding speed limits was performed by DelDOT concurrently with the RSA. Therefore, RK&K determined that it would be inappropriate for the RSA report to include recommendations regarding speed limits.

DelDOT completed the traffic engineering study in the summer of 2019 and the RSA Team reviewed the proposed speed limits at the July 9, 2019 RSA meeting. Reduced speeds were proposed by that study for segments along each corridor, and resolutions were signed in August 2019, as follows:

- Posted speed limit on SR 7 from the Pennsylvania/Delaware state lines to Brackenville Road reduced from 50 mph to 45 mph
- Posted speed limit on SR 41 from SR 48 to Faulkland Road reduced from 45 mph to 40 mph
- Posted speed limit on SR 48 from SR 41 to Centerville Road reduced from 50 mph to 45 mph

Although it was determined that the RSA would not include recommendations regarding changes to speed limits, the reduced speed limits adopted based on DelDOT’s traffic engineering study are expected to improve safety along the RSA study area corridors.

B. SIGNAL WARRANT ANALYSES

The SR 10 Special Committee also recommended that DelDOT “conduct signal warrant studies for the following intersections: SR 48 and Old Wilmington Road, SR 48 and Courtney Road, SR 48 and Harlech Drive/Hedgerow Place, and SR 48 and Old Hobson Farm” (Recommendation #13 of 24). Signal warrant analyses were completed by DelDOT in the winter of 2019. A traffic signal was recommended at the intersection of SR 48 and Old Wilmington Road; however, signals were not recommended at the other locations studied. A traffic signal resolution for the intersection of SR 48 and Old Wilmington Road was signed in February 2019. As of this writing, the traffic signal is under construction and it is estimated the signal will be operational in early 2020. This intersection is along the SR 48 study corridor. In addition to satisfying the traffic conditions that warrant the installation of this new signal, it is anticipated that the new traffic signal will also address safety concerns related to visibility and vehicle speeds at the intersection that were noted during the RSA process.

C. SR 7 PAVEMENT & REHABILITATION

There is an ongoing Pavement and Rehabilitation project along SR 7 between SR 72 (Paper Mill Road) and SR 2 (Kirkwood Highway). RK&K coordinated with the SR 7 project team to ensure pavement signing and striping plans incorporate improvements consistent with the RSA recommendations wherever possible. Recommendations that have been incorporated in the SR 7 Pavement and Rehabilitation project are noted in the recommendations section of this report.

V. OPTIONS CONSIDERED BUT NOT RECOMMENDED

Based on the input gathered from the RSA Team members at two pre-field visit meetings and the bus tour, as well as the available crash data, dash-camera footage, and photos from several field visits, RK&K identified an initial list of potential improvement recommendations for consideration. During the process of identifying potential recommendations, there were several potential options that were considered, but ultimately not retained, as described below.

Extensive tree clearing: Throughout the RSA process there were numerous discussions about tree cover along the study area corridors, particularly along SR 41 south of the SR 41/SR 48 split and along SR 48. In many locations, overgrown vegetation limits available sight distance and creates maintenance issues such as snow and ice on the roadways and dead limbs falling onto the roadway or nearby properties. DelDOT previously received estimates from a tree contractor to cut back the tree canopy to address similar maintenance and safety concerns; however, DelDOT also indicated that the scope of work included in the estimate would include the use of heavy equipment to extensively remove vegetation in the right-of-way, potentially resulting in a significant change to the character and appearance of the corridors. During the RSA discussion process, it was noted that this type of extensive cutting back and opening up the sightlines along the corridor may address the noted maintenance and safety concerns, but it could potentially also result in increased speeds throughout the corridor, which is already a concern in many locations. Because of the possibility that extensive clearing may increase speeds and potentially create new safety issues, it is RK&K's assessment that the RSA report should not recommend extensive tree clearing. However, *selective* tree trimming to address limited sight distance concerns is recommended in select locations (see the following sections of this report).

Major widening: The technical team also carefully considered roadway widening to provide wider shoulders along SR 41 between Milltown Road and Harrison Avenue and at the intersection of SR 41 and Faulkland Road. Between Milltown Road and Harrison Avenue, there are no shoulders on SR 41 and numerous homes are close to the travel lanes. Widening to accommodate shoulders would impact several properties and could potentially result in higher speeds through the area. Therefore, it was determined that major widening should not be recommended from a road safety perspective.

The intersection of SR 41 and Faulkland Road was under construction throughout the RSA process. The reconstruction project includes extending the northbound and southbound turn lanes, providing a protected-only left-turn phase (instead of protected-permissive), and providing a pedestrian crossing on the east leg, all of which would be expected to improve safety. During the July 9, 2019 RSA meeting concerns were raised regarding the pedestrian crossing of the channelized right-turn lane. RK&K developed short-term improvement recommendations to further enhance pedestrian safety at this location; however, additional roadway widening beyond what was already provided as part of the recently completed intersection improvements project was not included in the recommendations.

Speed limit reductions: As noted previously, a separate traffic engineering study evaluated the existing speed limits along each of the study area corridors and included recommendations for reduced speed limits on three (3) segments that have been adopted. The reduced speed limits are expected to improve safety along the study area corridors.

Geometric modifications at the intersection of SR 7 and Milltown Road: During the bus tour, RSA Team members indicated that previous improvements at this location addressed past concerns about the operations of closely spaced intersections at SR 7 at Milltown Road and Milltown Road at McKennans Church Road. It should be noted that pavement marking improvements were included as part of the SR 7 Pavement and Rehabilitation project to provide accommodations for bicyclists through the intersection.

VI. RECOMMENDATIONS

RK&K presented the initial list of potential improvement recommendations to the RSA Team at the meeting on July 9, 2019. Based on the feedback from the RSA Team, RK&K refined the list of short-, mid-, and long-term recommendations retained for DelDOT's consideration below.

Short-term improvement recommendations include improvements that could be completed in less than one (1) year of DelDOT's review, comment and acceptance of this report, including pavement marking modifications, the addition or modification of signs and/or flex-posts, right-turn-on-red (RTOR) restrictions, tree trimming, and re-positioning of signal heads.

Mid-term improvement recommendations are those that could be implemented in one (1) to three (3) years using available funding. Mid-term recommendations include guardrail improvements, lighting, bus pads, signal re-designs, and changes to medians and channelizing islands.

Long-term improvement options such as roadway widening, access modifications, off-roadway multi-use paths, and intersection reconstruction projects would need to be included in the 6-year Capital Transportation Plan (CTP), and would therefore require more than three (3) years for implementation.

It should be noted that specific improvements may extend into longer timeframes during implementation due to conditions that cannot be anticipated at this time. Recommendations were categorized as short-, mid-, or long-term based on conditions observed during field visits. The following subsections list each of the short-, mid-, and long-term recommendations. Graphic renderings of the short-term improvement recommendations are included in **Appendix C**. Large aerial roll maps with visuals and descriptions for the mid- and long-term improvement recommendations are included in **Appendix D**.

A. SHORT-TERM IMPROVEMENTS

Note: items in blue are already planned/underway.

1. Install centerline raised/recessed pavement markers (RPMs) on two-lane undivided portions of SR 7 & SR 41 (SR 48 has centerline RPMs)
 - Along SR 7 between Valley Road and Pennsylvania State Line
 - Along SR 41 between Washington Avenue and SR 41/SR 48 Split
 - Along SR 41 between Valley Road and Pennsylvania State Line
2. Provide W11-2 Pedestrian Crossing signs at locations with unmarked crosswalks near bus stops and/or consolidate or relocate bus stop locations
 - SR 7 near Pike Creek Sports Medicine and Professional Center (*included in Contract T201606118*)
 - SR 41 near Brackenville Road (alternatively, mark crosswalk at intersection)
 - SR 41 near St. Mary Assumption Church / Coffee Run Shopping Center
 - SR 48 near Downs Drive
 - SR 48 near Hedgerow Place/Harlech Drive
 - SR 48 near Westgate Drive
 - SR 48 near Coffee Run
3. Provide bicycle marking improvements on all three corridors
 - A. Update pavement markings to match DE-MUTCD Figure 9C-4B for bicycle lane treatment at a right-turn only lane with shoulder on "Suggested Connector" bicycle routes
 - NB SR 41 approaching Wilmington & Western Railroad Parking Lot Access
 - NB SR 41 approaching Greenbank Road
 - NB SR 41 approaching Washington Avenue
 - NB SR 41 approaching Faulkland Road
 - NB SR 41 approaching Winterbury Circle

- NB SR 41 approaching Loveville Road
 - NB SR 41 approaching entrance to Hockessin KinderCare
 - NB SR 41 approaching Withers Way / Old Lancaster Pike
 - NB SR 41 approaching Brackenville Road
 - SB SR 41 approaching Breckenridge Drive
 - SB SR 41 approaching Greenbank Road
 - SB SR 41 approaching SR 2
 - WB SR 48 approaching Courtney Road
 - WB SR 48 approaching Hedgerow Place
 - WB SR 48 approaching Centerville Road
 - WB SR 48 approaching Hampton Way
 - EB SR 48 approaching Coffee Run
 - EB SR 48 approaching Hercules Road
 - EB SR 48 approaching Centerville Road
 - EB SR 48 approaching Little Falls Drive
 - EB SR 48 approaching Harlech Drive
 - EB SR 48 approaching Weston Senior Living Center
 - EB SR 48 approaching Downs Drive
 - EB SR 48 approaching SR 141
- B. Update pavement markings to match DE-MUTCD Figure 9C-4C for bicycle lane treatment at a right-turn only lane with shoulder on "Regional" bicycle routes
- NB SR 7 approaching Weatherhill Drive *(included in Contract T201606118)*
 - NB SR 7 approaching Ocheltree Lane *(included in Contract T201606118)*
 - SB SR 7 approaching Steven Lane *(included in Contract T201606118)*
 - SB SR 7 approaching Ferris Drive *(included in Contract T201606118)*
 - SB SR 7 approaching Skyline Drive *(included in Contract T201606118, following DE-MUTCD Figure 9C-4A where there is space to provide a separate bicycle lane to the left of the right-turn only lane)*
 - SB SR 7 approaching Greenwood Drive *(included in Contract T201606118)*
 - SB SR 7 approaching Old Linden Hill Road *(included in Contract T201606118)*
 - SB SR 7 approaching Limestone Road *(included in Contract T201606118)*
 - SB SR 7 approaching Hopkins Drive *(included in Contract T201606118)*
 - SB SR 7 approaching Arundel Drive *(included in Contract T201606118)*
 - NB SR 7 approaching Vincent Lane
 - NB SR 7 approaching Wagon Wheel Lane
 - NB SR 7 approaching Village Drive
 - NB SR 7 approaching Mendenhall Mill Road
 - NB SR 7 approaching Hockessin Drive
 - NB SR 7 approaching Brackenville Road
 - NB SR 7 approaching Sheringham Drive
 - NB SR 7 approaching Lantana Drive
 - NB SR 7 approaching Valley Road (upstream of shopping entrance)
 - SB SR 7 approaching Tims Lane
 - SB SR 7 approaching Valley Road
 - SB SR 7 approaching Little Baltimore Road
 - SB SR 7 approaching Haileys Trail
 - SB SR 7 approaching Ennis Drive
 - SB SR 7 approaching Carrie Drive

- C. Provide bicycle lane markings with helmeted bicyclist symbols and directional arrows across painted channelizing islands as well as downstream “target” helmeted bicyclist symbols and directional arrows in wide shoulders on departure sides of intersections
- NB SR 7 at Milltown Road *(included in Contract T201606118)*
 - NB SR 7 at Milltown Shopping Center *(included in Contract T201606118)*
 - NB SR 7 at Concord Drive *(included in Contract T201606118)*
 - NB SR 7 at Stoney Batter Road *(included in Contract T201606118)*
 - NB SR 7 at Ocheltree Lane *(included in Contract T201606118)*
 - NB SR 7 at Vincent Lane
 - NB SR 7 at Mendenhall Mill Road
 - NB SR 7 at Hockessin Drive
 - NB SR 7 at Brackenville Road
 - NB SR 7 at Sheringham Drive
 - NB SR 7 at Lantana Drive
 - NB SR 7 at shopping entrance south of Valley Road
 - NB SR 7 at Valley Road
 - SB SR 7 at Valley Road
 - SB SR 7 at Farm Meadows Lane
 - SB SR 7 at Little Baltimore Road
 - SB SR 7 at Ennis Drive
 - SB SR 7 at Paper Mill Road
 - SB SR 7 at Steven Lane *(included in Contract T201606118)*
 - SB SR 7 at St. Philips Lutheran Church *(included in Contract T201606118)*
 - SB SR 7 at Skyline Drive *(included in Contract T201606118)*
 - SB SR 7 at New Linden Hill Road *(included in Contract T201606118)*
 - SB SR 7 at 100 Valley Center Drive Plaza *(included in Contract T201606118)*
 - SB SR 7 at Milltown Road *(included in Contract T201606118)*
 - NB SR 41 at Greenbank Road
 - NB SR 41 at Faulkland Road
 - NB SR 41 at entrance to Hockessin KinderCare
 - NB SR 41 at Mitchell Road
 - NB SR 41 at shopping entrance south of Yorklyn Road
 - SB SR 41 at shopping entrance south of Yorklyn Road
 - SB SR 41 at Breckenridge Drive
 - SB SR 41 at Greenbank Road
 - WB SR 48 at Courtney Road
 - WB SR 48 at Hedgerow Place
 - WB SR 48 at Centerville Road
 - WB SR 48 at Hampton Way
 - EB SR 48 at entrance to Hockessin KinderCare
 - EB SR 48 at Coffee Run
 - EB SR 48 at Hercules Road
 - EB SR 48 at Centerville Road
 - EB SR 48 at Little Falls Drive
 - EB SR 48 at Harlech Drive
 - EB SR 48 at Weston Senior Living Center
 - EB SR 48 at Downs Drive

- D. Remove acceleration lanes on SR 7 and replace with wide shoulders with “target” helmeted bicyclist symbols
 - NB SR 7 at Ocheltree Lane *(included in Contract T201606118)*
 - SB SR 7 at New Linden Hill Road *(included in Contract T201606118)*
 - SB SR 7 at Old Linden Hill Road *(included in Contract T201606118)*
 - SB SR 7 at Limestone Road *(included in Contract T201606118)*
- E. Provide pavement markings similar to the reverse of DE-MUTCD Figure 9C-4B with dashed lines along the end of acceleration lane tapers on SR 41 and SR 48
 - NB SR 41 at SR 2
 - NB SR 41 at Graves Road
 - SB SR 41 at Graves Road
 - WB SR 48 at SR 141
 - WB SR 48 at Centerville Road
 - EB SR 48 at Centerville Road
- F. Provide pavement markings similar to DE-MUTCD Figure 9C-4B where bypass lanes and climbing lanes begin and the shoulder typically used for bicycle travel narrows (i.e., where bicycles would travel in the lane)
 - NB SR 7 near Stenning Drive
 - SB SR 7 near Stenning Drive
 - NB SR 41 near Lora Lane
 - WB SR 48 near Hickory Spring Road (Old Hobson Farm)
 - EB SR 48 near Hickory Spring Road (Old Hobson Farm)
- G. Provide additional confirming helmeted bicyclist symbols and directional arrows within wide shoulders along all three corridors
- H. NB SR 7 between Arundel Drive and Concord Dr
 - *Modify markings to continue bicycle lane through Arundel Drive intersection into right-turn lane for Concord Drive (included in Contract T201606118)*
- I. SB SR 7 between Lantana Drive and Farm Meadows Lane (near Sheringham Drive and Massafferri Way)
 - Perform a geometric review to determine if a 4-ft wide shoulder could be created by restriping alone, or if minor widening (which would likely require slope stabilization and moving the guardrail) is needed
- J. SB SR 7 between Skyline Drive and New Linden Hill Road
 - *Restripe all lanes (currently approximately 12-ft wide) to narrower widths (11-ft wide) to create a 4-ft to 5-ft wide shoulder with bicycle lane markings (included in Contract T201606118)*
- K. SR 41 between Washington Avenue and Harrison Avenue
 - Install Bicycle Route Guide signs in DE-MUTCD Figure 9B-4 to provide an alternate route for bicyclists:
 - NB – direct bicyclists to turn right onto Washington Avenue, turn left onto Maple Avenue (which parallels SR 41), then turn left onto Harrison Avenue to return to NB SR 41
 - SB – direct bicyclists to turn left onto Harrison Avenue, turn right onto Maple Avenue (which parallels SR 41), then turn right onto Washington Avenue to return to SB SR 41
- L. SB SR 41 between Withers Way and Sanford School entrance
 - Shorten acceleration lane to eliminate pinch point for bicycles

- M. NB SR 48 at Loveville Road
 - Shorten taper for northbound right-turn lane and update pavement markings to match DE-MUTCD Figure 9C-4B
 - Provide W11-1-DE Bicycle IN LANE sign along NB SR 41, north of intersection
 - Provide dashed line where wide shoulder for bicycles begins
 - Perform a geometric review of the cross-section of SR 48 adjacent to the property on the northwest corner of SR 48 at Loveville Road to determine the feasibility of providing a 4-ft to 5-ft wide paved shoulder/bicycle lane; This will likely require coordination with the adjacent property owner
- N. SB SR 48 from west of Coffee Run to Old Wilmington Road
 - Perform a geometric review to determine if a 4-ft to 5-ft wide shoulder could be created in both directions by restriping alone, or if minor widening (which would likely require modifications to the adjacent drainage channel and moving a short segment of guardrail) is needed
- 4. SB SR 7 at Carrie Drive
 - Paint channelizing markings for right-in, right-out at Carrie Drive and extend edge line and bike lane from Carrie Drive to existing SB SR 7 edge line and bike lane
 - *Install flex posts along edge line (work order previously submitted to install flex posts)*
- 5. SB SR 7 at Vincent Lane
 - Move R1-1 Stop Sign along turn lane, so as to not face SB SR 7 through traffic
 - Remove R4-7 Keep Right sign from channelizing island
- 6. *SB SR 7 approaching Arundel Drive*
 - *Provide W3-3 Signal Ahead signs upstream of Arundel Drive (included in Contract T201606118)*
- 7. *SR 7 at Pike Creek Sports Medicine and Professional Center*
 - *Modify channelizing painted markings to allow left-in from SB SR 7 (included in Contract T201606118, all movements permitted)*
- 8. SR 7 at Midway Shopping Center
 - Replace any damaged existing flex-posts and install additional flex-posts in painted channelization between Midway Shopping Center and WSFS Bank
- 9. SR 7 at SR 2
 - Perform drainage study for channelized right-turn lanes
- 10. SB SR 41 approaching Brackenville Road
 - Add ONLY pavement marking between lane use arrows (Arrow – ONLY – Arrow) in right-turn lane and provide R3-7 Right Lane Must Turn Right sign
 - Relocate the Destination sign and Recreational and Cultural Interest Area sign
- 11. NB SR 41 north of Brackenville Road
 - Provide W11-1-DE Bicycle IN LANE sign north of Walgreens access
- 12. SR 41 at Old Lancaster Pike
 - Re-stripe end of painted median to round off median to eliminate appearance of tapers for northbound and southbound left-turn lanes
 - Provide W11-1 Bicycle Warning sign for SB Old Lancaster Pike to SB SR 41
- 13. SR 41 at Sanford School
 - Re-position signal heads and/or provide hoods for SB SR 41 and Sunny Hill Lane signal heads so that they are not visible to conflicting traffic approaches
 - Replace upward diagonal arrow red signal indication for NB SR 41 left-turn lane at Sanford School with left arrow indication
 - Establish School Zone along SR 41 between Withers Way and Sanford School entrance and provide S1-1 School Zone and S5-2 End School Zone signs in each direction

14. SB SR 41 approaching Loveville Road
 - Provide W3-3 Signal Ahead warning sign
15. SR 41 at Hercules Road
 - Remove R1-2 Yield signs on corners that do not have channelized right-turns (NE and SW quadrants)
16. SB SR 41 between Millcreek Road and Faulkland Road
 - Provide W21-9-DE Watch for Turning Traffic sign in southbound direction upstream of driveways
 - Provide W3-5 Reduced Speed Limit Ahead signs north of Faulkland Road
17. SR 41 at Faulkland Road
 - Provide W11-2 Pedestrian Crossing sign with diagonal downward pointing arrow plaque (W16-7P) in channelizing island at marked crosswalk in southeast corner of intersection
 - Provide W11-2 Pedestrian Crossing sign with AHEAD plaque (W16-9P) approximately 100 ft upstream of crosswalk on NB SR 41
18. SR 41 at Milltown Road
 - Prohibit RTOR from Jackson Avenue (limited sight distance)
19. SR 41 at Greenbank Road
 - Flex post out painted channelized islands to further enforce right-out only along EB SR 48
 - Paint bicycle pavement markings for a painted channelizing island (See Option 3C above)
20. SR 41 between Greenbank Road and Kirkwood Highway
 - Incorporate traffic calming by providing buffered bicycle lanes along wide shoulders to help reduce speeds entering residential area north of Greenbank Road
21. SR 41 at SR 2
 - Perform drainage study for channelized right-turn lanes
22. EB SR 48, approximately 700 ft east of Centerville Road
 - Provide R3-18 No U-Turn/No Left Turn sign at median opening for WB SR 48 U-turn (position sign facing EB SR 48 traffic)
23. WB SR 48, approximately 300 ft west of Hampton Way
 - Provide R3-18 No U-Turn/No Left Turn sign at median opening for EB SR 48 U-turn (position sign facing WB SR 48 traffic)
24. EB SR 48 at Hedgerow Place
 - Modify channelizing painted markings to allow left-in from EB SR 48
25. EB SR 48 approaching Centerville Road
 - Provide W3-3 Signal Ahead sign on median side of EB SR 48 upstream of Centerville Road (provide on both sides of roadway, existing sign on right side)
26. SR 48 approximately 1,000 ft east of Hercules Road
 - Provide black contrast pavement markings on concrete bridge
27. SR 48 along curve west of Hercules Road
 - Selective tree trimming
 - Provide post mounted delineators along curb on south side of SR 48 throughout area with tree canopy
28. SR 48 at Hickory Spring Road (Old Hobson Farm)
 - Provide street name plaques on existing W21-9-DE WATCH FOR TURNING TRAFFIC signs approaching Hickory Spring Road
 - Replace/relocate D3-1 OLD HOBSON FARM with D3-1 HICKORY SPRING RD street name sign closer to SR 48
 - Replace W11-1 Bicycle sign facing EB SR 48 with W11-1-DE Bicycle IN LANE sign and move farther upstream of start of bypass lane

- 29. SR 48 at Loveville Road
 - Provide W11-2 Pedestrian Crossing signs with diagonal downward pointing arrow plaques (W16-7P) on either side of the marked crossing across the channelized right turn from NB Loveville Road to EB SR 48
 - Relocate the R1-2 Yield sign posted on the right side further downstream of the yield
 - Perform drainage study at northwest corner along painted channelized right-turn from SB Loveville Road to WB SR 48
- 30. SR 41/ SR 48 Split
 - Remove access from Chapel Court to SB SR 41 and use flex posts to close off the small median between SB SR 41 and SB SR 48; reroute vehicles turning left from Chapel Court to SB SR 41 toward SB SR 48, then south to Loveville Road, and west to Graves Road to return to SB SR 41
 - Move R1-1 Stop sign for cul-de-sac to appropriate location in median between SR 41 northbound and SR 41 southbound and install stop bar
 - Install W9-1 Right Lane Ends sign with supplemental Beyond Signal plaque along NB SR 41 approaching the split
 - Install R4-7 Keep Right sign along NB SR 41 at the split
 - Install W1-6L One Direction Large Arrow and supplemental Type 4 OM4-3 object markers just east of Chapel Court facing NB SR 41 traffic to provide additional emphasis and guidance for through traffic on NB SR 41 along curve

B. MID-TERM IMPROVEMENTS

Note: items in blue are already planned/underway.

- 1. (Area-wide) Guardrail improvements
 - Provide guardrail farther north along SB SR 41 between Faulkland Road and Harrison Avenue (critical slope not protected)
 - See **Table 1** below for locations with identified barrier issues
 - General: Provide reflective delineators on W-beam to improve visibility at night
 - Note: A more comprehensive evaluation would be needed to determine if existing end treatment taper rates and barrier mounting heights are appropriate, identify critical foreslopes/backslows requiring protection, and determine if posts are installed properly in mow strips where used. There are several locations where decorative monument signs and walls are located within clear zones.
- 2. (Area-wide) Provide intersection lighting where criteria for lighting warrants are satisfied
 - Locations where the percentage of nighttime crashes is 40% or greater
 - SR 7 at Tims Lane
 - SR 7 at Wagon Wheel Lane
 - SR 7 at Ascension Drive
 - SR 41 at Ace Memorial Drive
 - SR 41 at Arthur Drive
 - SR 41 at Mc Govern Road
 - SR 41 at School House Road
 - SR 41 near St. Mary Assumption Church / Coffee Run Shopping Center (near bus stop)
 - SR 48 at Coffee Run
 - SR 48 at Hickory Spring Road (Old Hobson Farm)
 - SR 48 at Downs Drive
 - Locations near public transit stops
 - SR 7 at near Pike Creek Sports Medicine and Professional Center (near bus stop)

- Residential development entrances where the internal streets are lighted and there are at least 75 homes
 - SR 7 at Stenning Drive
 - SR 7 at Sheringham Drive
 - SR 7 at Hockessin Drive
 - SR 41 at Breckenridge Drive
 - Residential development entrances where there are at least 100 homes (may install)
 - SR 41 at Kenmore Drive
 - SR 48 at Hampton Way
- 3. (Area wide) Provide ADA compliant bus pads with sidewalk connections to the nearest side street and/or consolidate or relocate bus stop locations
 - [SB SR 7 near Pike Creek Sports Medicine and Professional Center \(included in SR 7 Pavement & Rehabilitation Contract T201606118\)](#)
 - NB SR 7 north of Milltown Road
 - NB SR 41 north of Hockessin Community Center
 - NB SR 41 north of Brackenville Road
 - SB SR 41 south of Brackenville Road
 - EB SR 48 east of Loveville Road (missing sign)
 - WB SR 48 near Coffee Run
 - EB SR 48 near Westgate Drive
 - WB SR 48 near Westgate Drive
 - EB SR 48 near Weston Senior Living Center
 - EB SR 48 near Downs Drive
- 4. SB SR 7 at Ascension Drive
 - Partially remove median to extend left-turn bay
- 5. SR 41 at Sanford School
 - Re-design signal with mast arms and include back plates
- 6. [SR 41 at Loveville Road](#)
 - [Re-design signal with mast arms and include back plates – Design is complete, and project was handed off to Signal Construction for implementation in February 2019](#)
- 7. SR 41 at Milltown Road
 - Replace passive Signal Ahead 800 ft sign (with flashing beacons) located just north of Harrison Avenue with an active W3-3-DE Red Signal Ahead When Flashing sign
 - Bump out curb to surround utility pole north of signal
 - Provide marked pedestrian crossing, including ADA ramps and pedestrian signal, across north leg of intersection (across SR 41)
- 8. SR 48 at Hercules Road
 - Re-design signal with mast arms and include back plates
- 9. EB SR 48 approaching Hercules Road
 - Install W3-4 Be Prepared to Stop sign with W16-13P When Flashing plaque and active beacons
- 10. WB SR 48 between Hickory Spring Road and Stratton Drive
 - Provide lighting near lane reduction (utility poles on south side of roadway)
- 11. SR 41/ SR 48 Split
 - Partially remove curbed channelizing islands to provide wide shoulders throughout intersection to accommodate bicycle movements, in particular NB SR 41 through and NB SR 48 to SB SR 41
 - Permanently close median between SB SR 41 and SB SR 48 (consistent with short-term recommendation to close with flex posts)

Table 1. Recommended Guardrail Improvements (Mid-Term)

Corridor	Direction	Location	Barrier Issue	Image Link
SR 7	SB	250 ft north of Tims Ln	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/PR2PqavQfLE2
SR 7	NB	225 ft north of Tims Ln	Downstream end treatment is Type 2, but within SB clearzone. Consider installing Type 1 end treatment.	https://goo.gl/maps/PR2PqavQfLE2
SR 7	NB	375 ft south of Tims Ln	Consider protecting cabinet for ATR.	https://goo.gl/maps/WzVdFIA1LqE2
SR 7	SB	SW corner of Lantana Dr	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/jhWEFShzeJG2
SR 7	SB	375 ft south of Lantana Dr	Damaged.	https://goo.gl/maps/HdDlQXDVdLm
SR 7	NB	NW corner of Arundel Dr	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/jcXyBwFbWA2
SR 7	SB	SW corner of Milltown Rd	Should be Type 1 end treatment.	https://goo.gl/maps/sDbatJf47UE2
SR 41	SB	SE corner of Valley Rd	Damaged.	https://goo.gl/maps/nVikWysIG4n
SR 41	SB	750 ft south of Yorklyn Rd	Consider protecting rail crossing structure.	https://goo.gl/maps/pPoFTALcAnm
SR 41	NB	NE corner of Brackenville Rd	Damaged.	https://goo.gl/maps/Fkzww12Bp8T2
SR 41	SB	330 ft south of Sunny Hill Ln	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/wfN1QFcNFDc2
SR 41	NB	330 ft south of Sunny Hill Ln	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/vWLp8kETsaD2
SR 41	SB	41 / 48 split	Discontinuity.	https://goo.gl/maps/oTDFayyJkG12
SR 41	SB	41 / 48 split	Should be Type 1 end treatment.	https://goo.gl/maps/fBxo82p8vh32
SR 41	SB	600 ft south of split	Should be Type 1 end treatment.	https://goo.gl/maps/BSPj6BRfDay
SR 41	SB	1650 ft south of McKennans Church Rd	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/qFgeuCSXs9t
SR 41	NB	1750 ft south of McKennans Church Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/tmdK85KMhbo
SR 41	SB	2000 ft south of McKennans Church Rd	Damaged. Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/VT8mJcaM39N2
SR 41	SB	675 ft north of Cheltenham Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/DWq9tbgWkwt
SR 41	SB	150 ft north of Faulkland Rd	Should be Type 1 end treatment. Curb height should nose down.	https://goo.gl/maps/2LuuWceW3ME2
SR 41	SB	SW corner of Faulkland Rd	Damaged.	https://goo.gl/maps/UG7yXJWksVx
SR 41	NB	250 ft south of Greenbank Rd	Consider a Type 1 end treatment.	https://goo.gl/maps/zmhNyAgZiNo
SR 41	NB & SB	700 ft south of Greenbank Rd	Protect rail crossing cantilever structures.	https://goo.gl/maps/mHuibeTSvKp
SR 48	WB	600 ft east of split	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/Gre1Jbkedy
SR 48	EB & WB	750 ft west of Loveville Rd	Both should be Type 1 end treatments.	https://goo.gl/maps/b7Ms8RXG1a52
SR 48	WB	840 ft west of Old Wilmington Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/sGUZuGLEiij2
SR 48	WB	NW corner of Hercules Rd	Damaged.	https://goo.gl/maps/9KknKNWEVhf52
SR 48	WB	550 ft east of Hercules Rd	Should be Type 1 end treatment.	https://goo.gl/maps/T63VihbUby32
SR 48	EB & WB	650 ft east of Hercules Rd	Protect rail crossing cantilever structures.	https://goo.gl/maps/bvnW2MgMQBQ2
SR 48	WB	1000 ft west of Hampton Way	Should be Type 1 end treatment.	https://goo.gl/maps/ugBomYHAvdC2
SR 48	EB	400 ft west of Hampton Way	Should be Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/aLeM2Af9D6n
SR 48	EB	150 ft east of Hampton Way	Should be Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope. Damaged.	https://goo.gl/maps/2c74jZBvVHD2
SR 48	WB	500 ft west of Centerville Rd	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/ZA8KBHcPmvR2
SR 48	EB	675 ft west of Downs Dr	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/oEvD7UaktJo
SR 48	EB	400 ft west of Downs Dr	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/VWextZq6WA32

C. LONG-TERM IMPROVEMENTS

1. SR 7 at Stenning Drive
 - Widen shoulder to create 4-ft to 5-ft wide shoulder/bicycle lane where NB SR 7 truck climbing lane begins approaching Stenning Drive
 - At NB SR 7 at Stenning Drive, provide pavement markings to match DE-MUTCD Figure 9C-4C for bicycle lane treatment at a right-turn only lane with shoulder
 - Widen roadway to provide exclusive left-turn lane at SB SR 7 at Stenning Drive and maintain wide shoulder for bicycles
2. NB SR 7 from south of Tims Lane to the PA State Line
 - Widen shoulder to create a 4-ft to 5-ft wide shoulder/bicycle lane through the SR 7 at Tims Lane intersection to the PA State Line
3. SR 7 at SR 2
 - Channelize SB SR 7 double left-turn lanes to prevent right-turns from Midway Shopping Center and/or WSFS Bank into left-turn lane(s)
 - Close right-in access on SB SR 7 to WSFS bank and reroute vehicles to existing right-in access on SR 2 (right-turn from SB SR 7 to WB SR 2 into WSFS)
 - Pursue internal access agreements to close one or more access points to/from Midway Shopping Center and/or WSFS Bank on SB SR 7
4. NB SR 41 at Lora Lane
 - Widen roadway to provide exclusive left-turn lane at NB SR 41 at Lora Lane and maintain wide shoulder for bicycles
5. NB SR 41 from north of Brackenville Road to south of Mitchell Road
 - Widen shoulder along truck climbing lane to provide 4-ft to 5-ft wide shoulder/bicycle lane
 - This will require modifications to drainage inlets and may also impact the slope adjacent to the shoulder
6. SR 41 at Old Lancaster Pike
 - Perform operational feasibility study to eliminate left-turn from NB SR 41 onto Old Lancaster Pike and reroute vehicles to left-turn at Brackenville Road
 - Move access to Well Coffeehouse farther south and/or pursue connections with Old Lancaster Pike to provide more separation between NB SR 41 left-turn to Old Lancaster Pike and SB SR 41 left-turn to coffeehouse
 - Convert Old Lancaster Pike south access on NB SR 41 to right-in, right-out only and reroute left-turns to signal at Sunny Hill Lane
7. SR 41 at Graves Road
 - Pull back curb line/guardrail to provide wide shoulder in NB direction for bicycles to use shoulder
8. SR 41 at Loveville Road
 - Modify curb line to provide necessary width to continue SB bicycle lane through the intersection; mark bicycle lanes to match DE-MUTCD Figure 9C-4A (approaching) and DE-MUTCD 9C-1B (departing) through the intersection
9. SR 41 at Faulkland Road
 - Create accessible bicycle network connecting Brandywine Springs Park to neighborhood streets south of the park
10. SR 41 at Milltown Road
 - Perform feasibility study to re-align Milltown Road to form a 90-degree intersection with SR 41 and Jackson Avenue
 - Reclaim additional intersection space to provide pedestrian facilities
 - Considered mini-roundabout, but not recommended due to preliminary operational analysis results – LOS F on Milltown Road approach during AM peak and LOS F on NB SR 41 approach during PM peak

- NOTE: The study of these potential options could be considered a short or mid-term improvement, but the construction falls more appropriately under long-term
- 11. EB SR 48 between Stratton Drive and Hercules Road
 - Widen shoulder to provide 4-ft to 5-ft wide shoulder/bicycle lane
 - This will require modifications to the adjacent drainage channel and may also impact the slope adjacent to the drainage channel
- 12. EB SR 48 at Hickory Spring Road
 - Widen roadway to provide exclusive left-turn lane and maintain wide shoulder for bicycles
- 13. SR 41 / SR 48 Split
 - Perform feasibility study to reconstruct SR 41 / SR 48 Split. Options include:
 - Traditional T: SR 41 into SR 41 / SR 48
 - Traditional T: SR 48 into SR 41
 - Hybrid Roundabout
 - Considered single-lane roundabout, but not recommended due to preliminary operational analysis results – LOS F
 - NOTE: The study of these potential options could be considered a short or mid-term improvement, but the construction falls more appropriately under long-term
 - NOTE: Further analysis should account for queue spillback from downstream signals at SR 41 and Sunny Hill Lane and SR 41 and Brackenville Road. This could be most impactful for the hybrid roundabout option.

VII. SUMMARY AND CONCLUSIONS

The purpose of this Road Safety Audit (RSA) was to identify opportunities to improve safety along SR 7, SR 41, and SR 48 in New Castle County, Delaware. An independent, multidisciplinary team of safety professionals including representatives from DelDOT, emergency service personnel, and area residents was gathered to discuss their safety concerns, review relevant crash data, and travel the corridors together. Based on these efforts, RK&K developed a preliminary list of potential safety improvement options and presented those candidate improvements to the RSA Team for feedback. RK&K then revised the recommendations per input from the RSA Team and area elected officials. This report includes recommendations for DelDOT to address recurring safety concerns along the study area corridors that were developed by RK&K based on a combination of technical data, engineering judgement and input from the entire RSA Team.

The study area consists of nearly 16 miles of roadway with varying characteristics. Throughout the RSA study, the Team made efforts to identify specific safety concerns so that targeted improvements could be recommended. Therefore, RK&K developed numerous short-, mid-, and long-term safety improvement recommendations that can be implemented independently or as a collection of complementary improvements. The short-term improvements are those recommendations that could be implemented within approximately one (1) year of DelDOT's review, comment and acceptance of this report. It is anticipated that mid-term recommendations could be implemented within one (1) to three (3) years while long-term improvements would need to be studied and funded through the Capital Transportation Plan (CTP) development process. However, it should be noted that some recommendations may take longer to implement than the timeframe identified in this report due to unanticipated conditions. Ultimately, 30 short-term, 11 mid-term, and 13 long-term recommendations were selected for inclusion in this report.

As the final steps of the overall RSA process, it is expected that DelDOT will provide a response to this report indicating what actions will be taken regarding the documented safety concerns and recommended improvements in this report, then incorporate safety improvements as funds become available.

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Appendix A

RSA Team Meeting Summaries / Meeting Materials

Appendix A.1

**Kickoff Meeting
July 16, 2018**

SR 7, SR 41, SR 48 Road Safety Audit Kickoff Meeting

Date: July 16, 2018

Time: 3:00 PM to 6:00 PM

Place: DelDOT's Canal District Office Building: 250 Bear Christiana Road, Bear, DE 19701

Attendance:

NAME	ORGANIZATION	PHONE NUMBER	E-MAIL
Henry Alisa	Route 7 Representative	302-234-0885	hsalisa@comcast.net
Maria Andaya (<i>designee for Anthony Aglio</i>)	DelDOT, Planning		Maria.Andaya@state.de.us
John Antonelli	Route 7 Representative	302-420-7249	jantonelli@optimacleaning.com
Andrew Bing	Kramer & Associates	410-271-1783	abing@kramerassociates.net
Jim Burnett (<i>Team Lead</i>)	RK&K	410-462-9389	jburnett@rkk.com
Stephanie Everett	RK&K	410-462-9423	severett@rkk.com
Peter Haag	DelDOT, Traffic Studies	302-659-4084	Peter.Haag@state.de.us
Maureen Kelley	DelDOT, Maintenance & Operations	302-894-6307	Maureen.Kelley@state.de.us
Marvin Pedigo	DelDOT, Safety	302-894-6357	Marvin.Pedigo@state.de.us
MaryAnn Summers	Route 41 Representative	302-998-2278	s_type@comcast.net
Bill Taylor	Route 41 Representative	302-547-2298	payup@comcast.net
Sean Walsh	Route 48 Representative	302-353-8282	virtualbk@comcast.net
Owner's Representative			
Mark Luszc	DelDOT, Chief Traffic Engineer	302-659-4062	Mark.Luszc@state.de.us
Other Attendees			
Bailey Brooks	Leg. Asst. Rep. Debbie Hudson, 12 th District	302-577-8517	Bailey.Brooks@state.de.us
Tammie Kanich	Leg. Asst. Sen. Greg Lavelle, 4 th District		Tammie.Kanich@state.de.us
Kim Williams	Representative, 19 th District		Kimberly.Williams@state.de.us

AGENDA

1. Welcome

Andrew Bing (Kramer & Associates) welcomed the participants to the Road Safety Audit (RSA) Kickoff Meeting. The purpose of the RSA is to identify existing safety concerns and potential improvements on the three corridors. Andrew stated that the RSA was one recommendation from the Senate Resolution #10 Special Committee to study truck traffic on SR 7, SR 41, and SR 48, but noted that although trucks might come up in the discussion, the focus of the RSA will be safety along the three corridors.

2. Introductions

RSA team members introduced themselves, including their organizational affiliation. During introductions, Mark Luszc (DelDOT) stated that he would be available at RSA team meetings to make sure the RSA team has all the information it needs and answer any questions, but that as the owner's representative, he would not be a member of the team.

3. Project Overview/Purpose/Status Updates

Jim Burnett (RK&K) reviewed the 24 recommendations from the Senate Resolution #10 Committee, including updates on the work complete to date by DelDOT. The group briefly discussed some of the recommendations, including funding for some of the long-term feasibility studies, the limits of the pave and rehab project on SR 7, and the enhanced truck enforcement efforts. Andrew mentioned that the RSA team could review the information for the Senate Resolution #10 Committee on the WILMAPCO website.

Action Item: RK&K to provide team members with the website address for the Senate Resolution #10 materials, including the final report and response from DelDOT.

4. Road Safety Audit (RSA) Process

Jim explained the RSA process and how potential safety improvements will be identified by the technical team. He noted that the purpose of the kickoff meeting, as well as the second meeting, would be to review the study corridors with the stakeholders, listen to their safety concerns, and begin to identify feasible solutions to improve safety. Jim stated that after reviewing project information, the team will collectively conduct a field visit to observe conditions along the corridors. Jim mentioned that following the field visit, the technical team will develop and evaluate improvement concepts that will be presented to the RSA team at future meetings, as well as write the Draft and Final RSA report to be submitted to DelDOT.

At the end of Jim's presentation, Mark confirmed that DelDOT will review the Final RSA report and provide a response outlining the plans for implementing safety improvements identified through the RSA, likely in the form of a letter or table similar to the response to the Senate Resolution #10 Recommendations.

5. Guidelines

Andrew briefly reviewed the RSA Team Guidelines included in the meeting materials. The guidelines remind the RSA team members to be courteous to each other; not to speak "on behalf of" the RSA team, but as individuals; and, reiterate that the team members' role is to provide information, experience, and local knowledge to inform the technical team that will ultimately recommend potential safety improvements.

6. Preliminary Observations & Discussion

The team used large aerial roll maps to guide the discussion of safety issues/concerns that members have observed in the area. The group used post-it notes to mark their concerns corresponding to specific locations on the roll maps. The safety concerns that the team identified cover a wide range of topics including pedestrian and bicycle facilities, driver compliance with speeds, visibility at intersections and along the roadways, lane reductions, ponding and snow plowing, narrow/lack of shoulders, illegal movements, grades, and congestion that results in safety concerns.

Action Item: RK&K to digitally update the aerial maps to include the safety concerns identified during the team discussion.

7. Next Meeting & Homework

Jim informed the RSA team members that their homework before the next meeting is to visit the corridors and make notes about any additional safety concerns that were not discussed. Jim mentioned that the meeting materials include a “prompt list” with ideas of items for the team members to consider during their field visits.

Action Item: RK&K to provide a Microsoft word version of the prompt list for RSA team members to make notes.

Action Item: RSA team members should visit the corridors on their own and provide additional comments to Jim by **September 14, 2018**.

The team discussed potential dates for the next meeting as well as the field visit. The next meeting will be scheduled **for Tuesday, October 9, 2018**. The field visit is planned during the week of **November 12 – 16, 2018**, with the exact date to be determined. The field visit will likely be an all-day activity, but arrangements can be made if necessary for team members to attend a portion if they are not available for the full day.

Action Item: RK&K to confirm availability with RSA team members that were not available for the kickoff meeting to finalize the date and time for the next meeting in October. *Completed*

SR 7, SR 41, and SR 48 Road Safety Audit

July 16, 2018

3:00 pm – 6:00 pm

DelDOT's Canal District Office Building

250 Bear-Christiana Road Bear, DE 19701

AGENDA

	<u>Start Time</u>
1. Welcome (5 min).....	3:00 PM
2. Introductions (10 min)	3:05 PM
3. Project Overview/Purpose/Status Updates (30 min)	3:15 PM
4. Road Safety Audit (RSA) Process (15 min)	3:45 PM
5. Guidelines (10 min).....	4:00 PM
---- 5 MINUTE BREAK ----	
6. Preliminary Observations & Discussion (30 min/corridor x 3 corridors = ~90 min)	4:15 PM
7. Closing - Next Meeting & Homework (15 min).....	5:45 PM

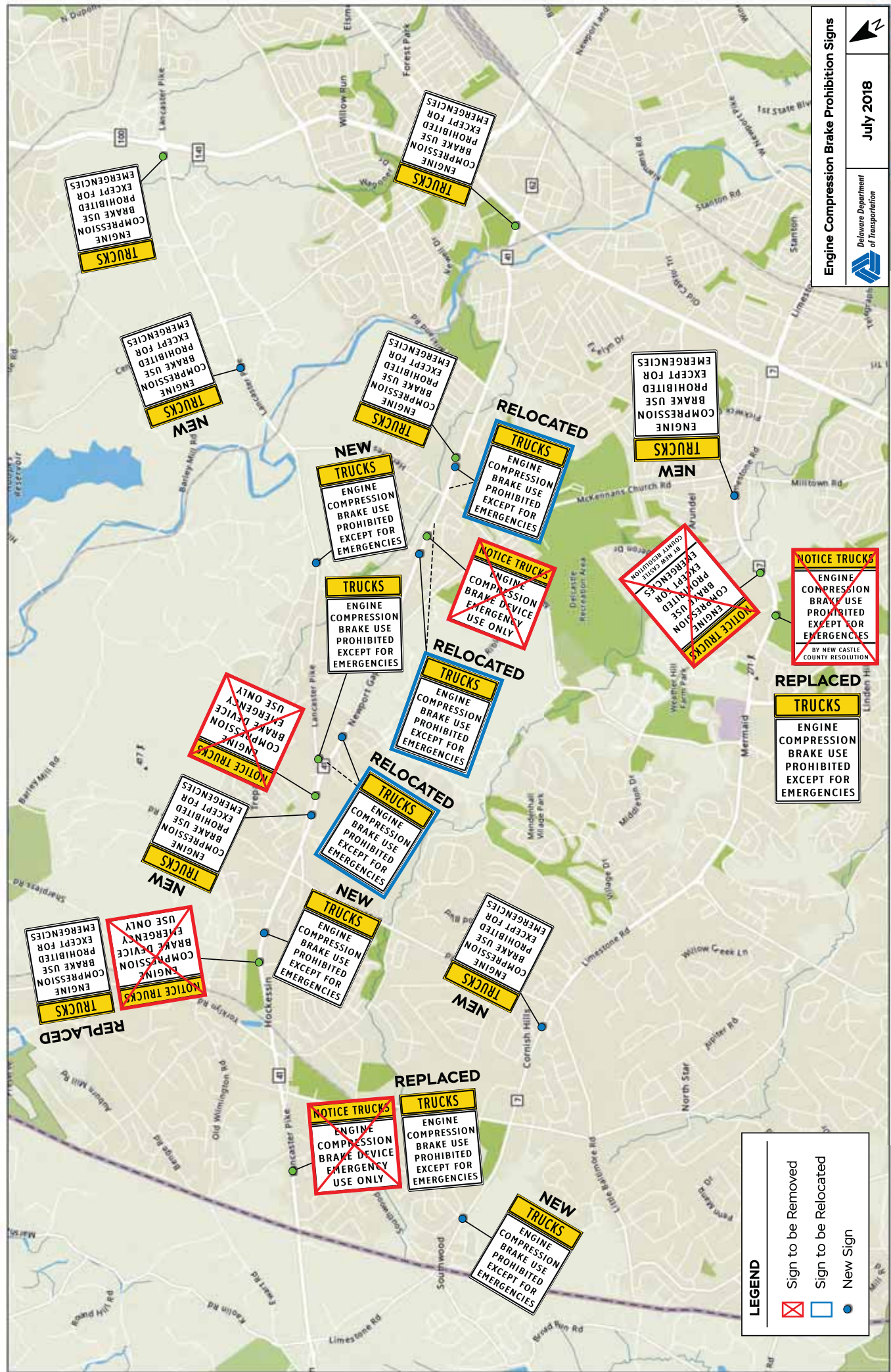
**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

Status Update as of 7/16/18 (for DelDOT-led Recommendations)

Recommendation	Status
1. Conduct a feasibility study of constructing a bypass between US 1 and I-95	
2. Conduct a feasibility study of constructing a passenger and freight rail spur from Wilmington that parallels the SR 41 corridor, including impacts to SR 7, SR 41, and SR 48	
3. Conduct a feasibility study of constructing a dedicated freight line along the NE corridor from Perryville, MD to Newark, DE	
4. Conduct a feasibility study of restricting trucks on SR 7, SR 41 and SR 48 during specified times, in specified directions, and based on loaded vs. unloaded conditions, determining impacts to, and improvements needed, on alternate routes	DelDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Spring 2019</i>
5. Conduct a feasibility study for improvements to the SR 896 corridor, including a potential alternate parallel route, to encourage trucks to use I-95 to SR 896	
6. Perform a Road Safety Audit on SR 7, SR 41 and SR 48	DelDOT Study Underway. Kickoff Meeting: 7/16/18 <i>Expected Completion: Summer 2019</i>
7. Perform a traffic engineering study to implement a school speed limit zone on SR 41 near Cooke Elementary School	DelDOT Study Underway. Data Collection Complete. <i>Expected Completion: Summer 2018</i>
8. Perform a traffic engineering study to determine appropriate speed limits on SR 7, SR 41, and SR 48	DelDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Winter 2018/2019</i>
9. Continue to study options described in the 2016 Delaware Valley Regional Planning Commission (DVRPC) Chester County New Castle County Transit Study	
10. Consider the use of quiet pavement technology on SR 7, SR 41 and SR 48	DelDOT Implementing Quiet Pavement on SR 7 Pave/Rehab Project in 2018/2019
11. Relocate existing engine compression brake prohibition signs to downhill locations approaching signalized intersections	DelDOT Project Underway. Semi-Final Plans Complete. <i>Expected Completion: Fall 2018</i>
12. Install engine compression brake prohibition sign with flashing beacons at PA state line	DelDOT Studied Concept. Decision to install larger signs w/o flashing beacons. <i>Expected Completion: Fall 2018</i>

**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

13. Conduct signal warrant studies for the following locations: SR 48 and Old Wilmington Road SR 48 and Courtney Road SR 48 and Harlech Drive/Hedgegrow Place SR 48 and Old Hobson Farm	DelDOT Project Underway. Data Collection Ongoing. <i>Expected Completion: Fall 2018</i>
14. Install permanent YOUR SPEED XX MPH signs on SR 7, SR 41 and SR 48 and perform a “before” and “during” study to determine the effectiveness of these signs on arterial roadways over time	DelDOT Project Underway. Sign Locations Selected. Signs Purchased. <i>Expected Installation: Summer 2018</i>
15. Perform a traffic engineering study to determine any potential improvements for intersections on SR 7, SR 41 and SR 48 that are currently operating at LOS E or worse, based on WILMAPCO’s Congestion Management Program Results	DelDOT Project Underway. Data Collection Ongoing. <i>Expected Completion: Winter 2018</i>
16. Provide additional enforcement of existing speed limits	
17. Perform a study to identify feasible locations to install fixed virtual WIM stations on SR 7, SR 41 and SR 48	DelDOT Project Underway. Data Collection Ongoing. <i>Expected Completion: Fall 2018</i>
18. Increase the number of truck inspections	
19. Recommend New Castle County Police increase enforcement of NCC Code Section 22.02.0008-B.2.a.i, which makes it unlawful to “race or gun any motor vehicle between the hours of 9:00 p.m. and 8:00 a.m.”	
20. Increase enforcement of Delaware Code, Title 21 §4311(a), which makes it unlawful to “drive a motor vehicle, including a motorcycle, on a highway, including residential streets, unless such motor vehicle or motorcycle is equipped with a muffler in good working order and in accordance with manufacturer’s specifications and in constant operation to prevent excess or unusual noise.”	
21. Increase enforcement of engine compression brake prohibition	
22. Continue enhanced truck enforcement on SR 41 and SR 48, and expand enhanced truck enforcement to SR 7	
23. Establish a bi-state working/coordination group to discuss and address issues associated with regional freight movement. The working group should be comprised of representatives from DelDOT, PennDOT, WILMAPCO, Delaware Valley Regional Planning Commission (DVRPC), Delaware State Police, Pennsylvania State Police, and other relevant stakeholders	
24. Request that existing legislation be re-written to bring Delaware’s truck length laws in-line with surrounding states	



LEGEND

-  Sign to be Removed
-  Sign to be Relocated
-  New Sign




Speed Limit Signs


July 2018

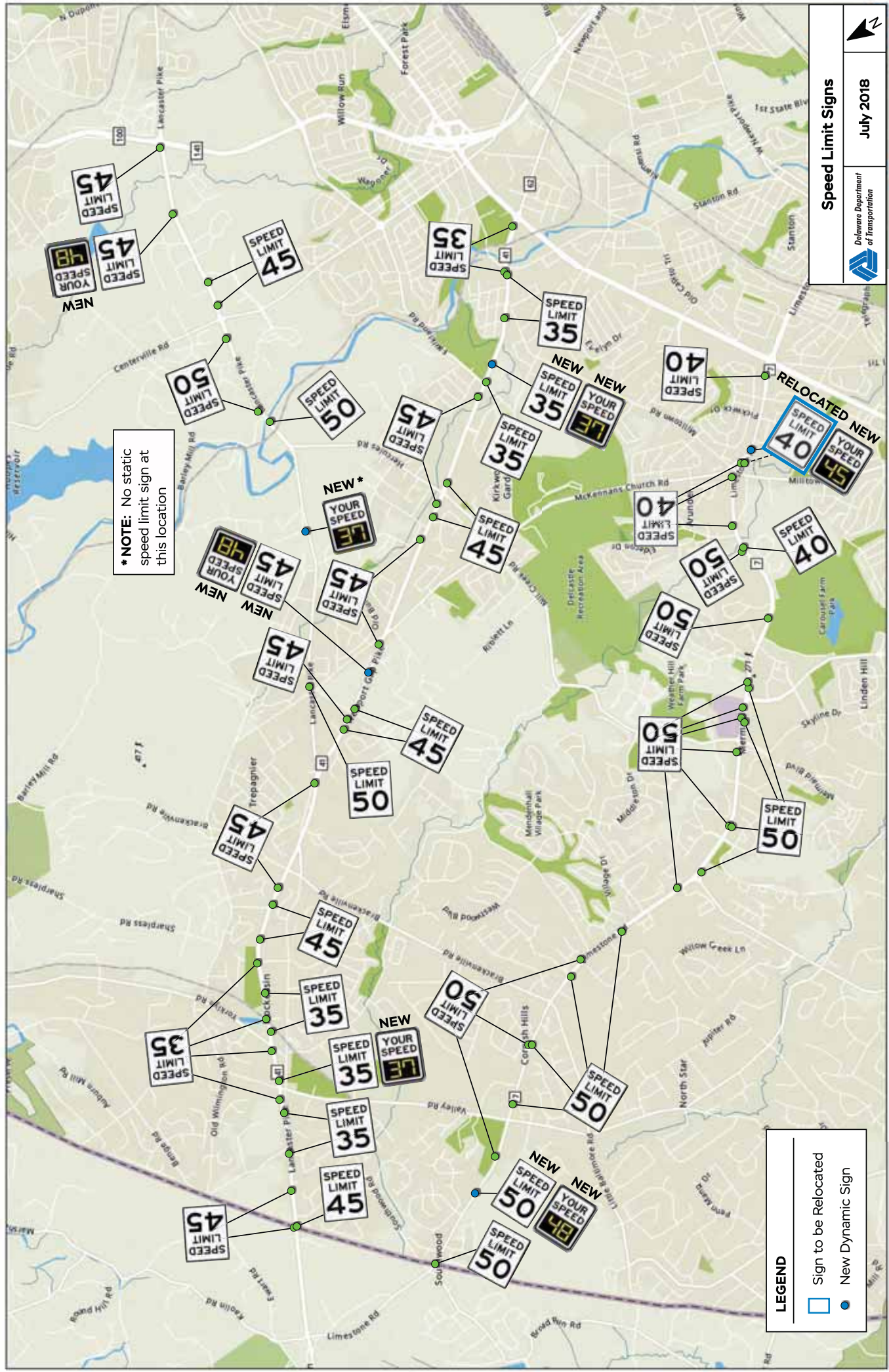


* NOTE: No static speed limit sign at this location

LEGEND

 Sign to be Relocated

 New Dynamic Sign



Road Safety Audit (RSA) Process Overview

Jim Burnett, PE, PTOE
July 16, 2018



**SAFETY
FIRST**

Road Safety Audit (RSA) Definition

A road safety audit (RSA) is a formal and independent safety performance review of a road by a multidisciplinary team of safety specialists, addressing the safety of all road users.



What is a RSA?

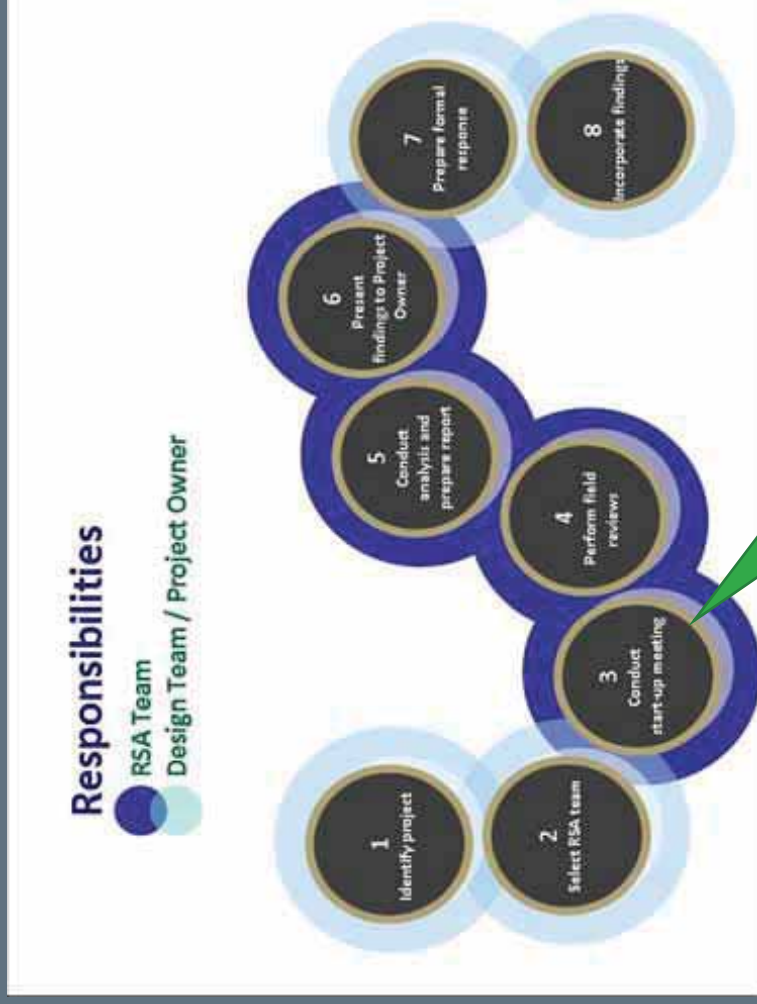
- Road Safety Audits **ARE:**
 - Focused on road safety
 - Formal
 - Proactive
 - Conducted by a multidisciplinary, independent, and qualified team
 - Broad enough to consider safety of all road users and all facilities
 - Qualitative in nature

- Road Safety Audits are **NOT:**
 - Traditional safety review
 - Compliance check
 - Crash investigation or analysis (review of crash history may be one part)
 - Continuation of the SR 7, SR 41, SR 48 Truck Study



8-Step Federal Highway RSA Process

- RSA team performs field reviews, conducts analysis, prepares RSA report, and shares findings with project owner
- Owner prepares response and incorporates findings of RSA report



What to Expect as a RSA Team Member

First Steps (Mtgs 1&2)

- Review project information
- Visit the corridors independently before next meeting
- Share experiences and local knowledge with Team Leader



What to Expect as a RSA Team Member

Field Visit (Mtg 3)

- Visit the corridors as a group to understand safety concerns
- SAFETY FIRST applies to our field visit as well; wear proper gear



What to Expect as a RSA Team Member



Post-Field Review (Mtg 4)

- De-brief findings of field visit
- Team Leader presents possible safety improvements to Team for discussion and refinement



What to Expect as a RSA Team Member



Share Findings (Mtg 5)

- Team Leader writes Draft RSA Report
- Team reviews and comments on Draft Report
- Team Leader revises Final RSA Report
- Team Leader shares findings with DeIDOT



SR 7, SR 41, and SR 48 Road Safety Audit Team

Guidelines

A. How We Treat Each Other:

- Each member has an equal right to speak and ask questions
- Each member is encouraged to share individual viewpoints
- Individual opinions are valid whether others agree with them or not
- We will listen to, respect and seek to understand the views of others, particularly those perspectives that differ from our own
- Disagreements will be explored not suppressed
- We will be courteous when addressing other team members, staff and consultants
- We will refrain from interrupting each other, staff or consultants
- We will keep our comments relevant to the topic under discussion

B. How We Communicate with Those Outside the Road Safety Audit Team:

- Individuals are free to discuss the work of the Road Safety Audit Team; however, any discussions reflect the views of the individual and not of the Team
- Meetings of the Road Safety Audit Team are not public meetings

C. How Recommendations Will Be Made:

- This group will not be making recommendations
- The group will provide information, experiences, and local knowledge to assist the technical team as they make safety recommendations to DelDOT
- The technical team will prepare a Draft Road Safety Audit Report for the Road Safety Audit Team to review and comment
- The technical team will prepare the Final Road Safety Audit Report, incorporating comments received from the Road Safety Audit Team



SR 7, SR 41, and SR 48 Road Safety Audit

July 16, 2018

3:00 pm – 6:00 pm

**DelDOT’s Canal District Office Building
250 Bear-Christiana Road Bear, DE 19701**

NEXT STEPS

Before Meeting #2:

- Individual/Independent Field Review of Corridor(s)
- Fill out “Homework” sheets

When

Meeting #2 – Review Project Information..... Week of Oct 8-12
Meeting #3 – Field Visit Week of Nov 12-16
Meeting #4 – Discuss Potential Safety Improvements April 2019
Meeting #5 – Review DRAFT Road Safety Audit Report June 2019



SR 7, SR 41, and SR 48 Road Safety Audit Safety Review Prompt List

This prompt list is intended to help you identify potential safety issues on SR 7, SR 41, and SR 48.

Please consider the listed elements as you drive and/or walk the corridors and make notes about your observations. **Please be specific regarding location, time of day, etc.** Please bring this list, including your written notes, to the second RSA team meeting.

Considerations	Comments/Thoughts
Geometric Design	
Road alignment & cross-section <ul style="list-style-type: none"> ▪ Visibility at intersections, crossings, driveways ▪ Passing opportunities ▪ Auxiliary lanes ▪ Shoulders, or lack thereof ▪ Lane Widths ▪ Drainage features ▪ “Readability” – is the road free of elements that might cause confusion? 	
Speeds <ul style="list-style-type: none"> ▪ Posted and advisory speeds ▪ Driver compliance with speed limits 	
Intersections <ul style="list-style-type: none"> ▪ Location ▪ Visibility (from each approach) ▪ Conflict point management ▪ Signs & roadway markings ▪ “Readability” ▪ Lighting ▪ Congestion/queues 	
Pavement <ul style="list-style-type: none"> ▪ Pavement condition ▪ Ponding, ice and snow accumulation ▪ Loose stones, debris 	
Barriers and Roadside Area <ul style="list-style-type: none"> ▪ Guardrails & curbs ▪ Roadside obstructions (trees, poles, etc) ▪ Visibility of barriers / obstructions, especially at night 	
Curves <ul style="list-style-type: none"> ▪ Curve warning signs ▪ Advisory (yellow) speed signs ▪ Combinations of curves 	

SR 7, SR 41, and SR 48 Road Safety Audit

Safety Review Prompt List

Considerations	Comments/Thoughts
Traffic Control Devices	
Signs <ul style="list-style-type: none"> ▪ Legibility/condition ▪ “Clutter” – is each sign necessary? 	
Lighting <ul style="list-style-type: none"> ▪ Is lighting adequate? ▪ Location of poles 	
Markings <ul style="list-style-type: none"> ▪ Centerlines, edgelines, lane lines ▪ Consistency along route ▪ Condition/visibility 	
Signals <ul style="list-style-type: none"> ▪ Operation ▪ Visibility of signals/back of queues 	
Roadway Activity	
Pedestrians and bicyclists <ul style="list-style-type: none"> ▪ Continuity of travel paths ▪ Pedestrian signals at traffic lights ▪ Separation of vehicular and pedestrian/bicycle traffic ▪ Provisions for elderly, disabled ▪ Adequate pavement/lane width ▪ Bicycle safe drainage grates ▪ Signing near schools and hospitals 	
Public transportation <ul style="list-style-type: none"> ▪ Bus stop locations ▪ Shelters ▪ Curbs at bus stops suitable for pedestrians 	
Emergency vehicles & heavy vehicles <ul style="list-style-type: none"> ▪ Overtaking opportunities ▪ Maneuverability at intersections ▪ Pavement/shoulder quality 	

SR 7, SR 41, and SR 48 Road Safety Audit

Safety Review Prompt List

Considerations	Comments/Thoughts
Roadway Environment	
Glare <ul style="list-style-type: none"> ▪ Sun glare in morning/evening ▪ Headlight glare at night 	
Landscaping <ul style="list-style-type: none"> ▪ Visibility ▪ Overhanging branches ▪ Will needed clearances and visibility be maintained as plants grow? 	
Temporary work <ul style="list-style-type: none"> ▪ Construction, maintenance equipment ▪ Signs and temporary traffic control devices ▪ Items removed that are no longer required 	
Animals <ul style="list-style-type: none"> ▪ Known animal travel/migration routes in surrounding areas ▪ Animal-proof fencing and/or wildlife crossing signs 	

Other Comments/Thoughts:

Appendix A.2

**Meeting #2
October 9, 2018**

SR 7, SR 41, SR 48 Road Safety Audit Meeting #2

Date: October 9, 2018

Time: 3:00 PM to 6:00 PM

Place: DelDOT's Canal District Office Building: 250 Bear Christiana Road, Bear, DE 19701

Attendance:

NAME	ORGANIZATION	PHONE NUMBER	E-MAIL
Henry Alisa	Route 7 Representative	(302) 234-0885	hsalisa@comcast.net
Maria Andaya	DelDOT, Planning	(302) 760-4258	Maria.Andaya@state.de.us
Andrew Bing	Kramer & Associates	(410) 271-1783	abing@kramerassociates.net
Dan Blevins	WILMAPCO	(302) 737-6205	dblevins@wilmapco.org
Randy Broadwater	Hockessin Volunteer Fire Department	(302) 239-7159	rbroadwater@hockessin19.com
Jim Burnett (<i>Team Lead</i>)	RK&K	(410) 462-9389	jburnett@rkk.com
Matthew Cox	Delaware State Police		Matthew.Cox@state.de.us
Stephanie Everett	RK&K	(410) 462-9423	severett@rkk.com
Peter Haag	DelDOT, Traffic Studies	(302) 659-4084	Peter.Haag@state.de.us
Justin Hubschmitt	DelDOT, Project Development	(302) 760-2204	Justin.Hubschmitt@state.de.us
Maureen Kelley	DelDOT, Maintenance & Operations	(302) 894-6307	Maureen.Kelley@state.de.us
Jerry Lovell	DelDOT, Project Development	(302) 760-2285	Jerry.Lovell@state.de.us
Marvin Pedigo	DelDOT, Safety	(302) 894-6357	Marvin.Pedigo@state.de.us
Bill Taylor	Route 41 Representative	(302) 547-2298	payup@comcast.net
Mark Tudor	DelDOT, Project Development	(302) 760-2275	Mark.Tudor@state.de.us
Sean Walsh	Route 48 Representative	(302) 353-8282	virtualbk@comcast.net
Owner's Representative			
Mark Luszc	DelDOT, Chief Traffic Engineer	(302) 659-4062	mark.luszc@state.de.us

AGENDA

1. Welcome

Andrew Bing (Kramer & Associates) welcomed everyone to the second Road Safety Audit (RSA) meeting. Andrew reminded those who had been at the Kickoff Meeting in July and informed first-time attendees that the purpose of the RSA is to identify existing safety concerns and potential improvements on the three corridors. Andrew noted that although the RSA was one recommendation from the Senate Resolution #10 Special Committee to study truck traffic on SR 7, SR 41, and SR 48, the scope of the RSA would be focused on all types of safety issues and, therefore, only on truck traffic issues that are related to safety.

2. Introductions

RSA team members introduced themselves, including their organizational affiliation. Following introductions, Andrew reminded attendees of ground rules included in the team members' notebooks. Andrew pointed to guidelines for RSA members to be courteous to each other. He also noted that any comments outside of the RSA team's activities should be made as individuals and not speaking on behalf of the RSA team. Finally, Andrew reminded everyone that there wouldn't be any formal voting process because recommendations will come from the technical team and will be informed by input from the RSA team members' experience and expertise.

3. SR 10 Status Updates

Jim Burnett (RK&K) reviewed the 24 recommendations from the Senate Resolution #10 Committee, including updates on the work complete to date by DeIDOT. All of the updates are summarized in the meeting material that was distributed at the start of the meeting for the team members' notebooks. Dan Blevins (WILMAPCO) and Captain Matthew Cox (DSP) also provided updates on recommendations pertaining to their organizations. Several recommendations are completed or already underway while more long-term recommendations may require additional direction from the General Assembly and/or funding that has not yet been identified.

4. Review of Crash Data

Jim led the RSA team through a discussion of crash data for the study area covering the period between January 1, 2015 and December 31, 2017. The crash data summary was also distributed at the start of the meeting for the team members' notebooks. During the discussion, it was noted that a fatal crash occurred on SR 7 in September 2017 that did not appear in the crash data. Although the group agreed that typically the crash data would have included that crash by this time, it is common for crashes to not be reported as fatal until a formal review is completed sometime after the crash occurrence. During the discussion, it was noted that one trend among the fatal crashes may be crossing the double yellow centerline. Finally, during discussion of "dark-not lighted" crashes, it was noted that the crash reports include the lighting condition for informational purposes and that the crashes may or may not have been caused by lack of lighting.

Action Item: RK&K to investigate missing/mis-coded fatal crash on SR 7.

5. Review of Preliminary Observations & Discussion

Jim reminded everyone that the team completed a "post-it note activity" during the first meeting using large aerial roll maps to guide the discussion of safety issues/concerns. Since the Kickoff Meeting, RK&K digitally updated the aerial maps to include comments from the post-it note activity. Additionally, RSA team members were assigned homework between meetings to visit the corridors and make notes about any additional safety concerns. The homework responses were also included on the large aerial roll maps. The group reviewed the safety concerns noted from the homework assignment and provided additional comments to be incorporated into the aerial maps.

During a discussion of overgrown vegetation along the corridors, Mark Luszcz (DeIDOT) informed the RSA team that DeIDOT had received an estimate from their tree contractor to cut back the tree canopy for maintenance and safety reasons. Currently, there are several locations along these corridors, particularly on SR 41 and SR 48 where the extensive tree canopy blocks sunlight reducing visibility, results in branches or trees falling into the road during storms, results in ice falling on the road from above and creates icy patches on the road in the winter. Mark wanted to encourage discussion about the group's desire to remove overgrown vegetation, noting that the contractor's scope would include the use of heavy equipment to remove many large branches and potentially even entire trees close to the roadway. This removal of branches and possibly entire trees could result in a significant change to the appearance of these corridors, particularly in areas with heavy tree canopy. Mark will request that the DeIDOT arborist participate in the

upcoming bus tour to provide more information about the extent of tree trimming and removal. Mark also suggested that DelDOT may develop a before/after rendering of one or more locations along these corridors to provide better visual understanding to the extent of work that would be performed.

Action Item: RK&K to digitally update the aerial maps to include new safety concerns identified during the team discussion.

Action Item: DelDOT (Mark and Maureen) to collaborate to develop artist's rendering of one or more locations along these corridors to show how the road might look after the canopy is cut back.

6. Next Meeting: Field Visit on 11/15/2018

Jim led the group discussion regarding the upcoming bus tour to visit all three corridors as a team. The bus tour is tentatively scheduled for **Thursday, November 15, 2018 from 8:30 AM to 2:00 PM** beginning and ending at **Brandywine Springs Park**. More details will follow via email.

Action Item: RK&K to identify alternative rain date for RSA Bus Tour.

Action Item: DelDOT to provide bus, panel truck with TMA, and safety vests for RSA Bus Tour.

Action Item: RK&K to review proposed tour route to see if the SR 7 corridor could be toured after the lunch break instead of before.

SR 7, SR 41, and SR 48 Road Safety Audit

October 9, 2018

3:00 pm – 6:00 pm

DelDOT's Canal District Office Building

250 Bear-Christiana Road Bear, DE 19701

AGENDA

	<u>Start Time</u>
1. Welcome (5 min).....	3:00 PM
2. Introductions (10 min)	3:05 PM
3. SR 10 Status Updates (20 min).....	3:15 PM
4. Review of Crash Data (30 min)	3:35 PM
----- 10 MINUTE BREAK -----	
5. Review of Preliminary Observations & Discussion (1 hr)	4:15 PM
6. Next Meeting: Field Visit on 11/15/2018 (45 min)	5:15 PM



**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

Status Update as of 10/09/18 (for DelDOT-led Recommendations)

Recommendation	Status
1. Conduct a feasibility study of constructing a bypass between US 1 and I-95	Given the size, scope, and bi-state nature of this study, we believe it is premature to begin work on this effort without explicit direction from the General Assembly, and a formal recommendation from a bi-state working group such as the one recommended in Item 23.
2. Conduct a feasibility study of constructing a passenger and freight rail spur from Wilmington that parallels the SR 41 corridor, including impacts to SR 7, SR 41, and SR 48	Same response as Item 1.
3. Conduct a feasibility study of constructing a dedicated freight line along the NE corridor from Perryville, MD to Newark, DE	Given the size, scope, and bi-state nature of this study, we believe it is premature to begin work on this effort without explicit direction from the General Assembly.
4. Conduct a feasibility study of restricting trucks on SR 7, SR 41 and SR 48 during specified times, in specified directions, and based on loaded vs. unloaded conditions, determining impacts to, and improvements needed, on alternate routes	<i>DelDOT Study Underway. Data Collection Ongoing. Expected Completion: Spring 2019</i>
5. Conduct a feasibility study for improvements to the SR 896 corridor, including a potential alternate parallel route, to encourage trucks to use I-95 to SR 896	Same response as Item 3.
6. Perform a Road Safety Audit on SR 7, SR 41 and SR 48	<i>DelDOT Study Underway. Meeting #2: 10/09/18 Expected Completion: Summer 2019</i>
7. Perform a traffic engineering study to implement a school speed limit zone on SR 41 near Cooke Elementary School	<i>DelDOT Study Underway. Data Collection Complete. Expected Completion: Fall 2018</i>
8. Perform a traffic engineering study to determine appropriate speed limits on SR 7, SR 41, and SR 48	<i>DelDOT Study Underway. Data Collection Ongoing. Expected Completion: Winter 2018/2019</i>
9. Continue to study options described in the 2016 Delaware Valley Regional Planning Commission (DVRPC) Chester County New Castle County Transit Study	There were two general recommendations from the study: limited bus service from Wilmington to West Chester and van pools. Bus service was not recommended on SR 41 or SR 48. We will continue to monitor the options and this effort should be part of the work of the bi-state working group recommended in Item 23.
10. Consider the use of quiet pavement technology on SR 7, SR 41 and SR 48	<i>DelDOT Implementing Quiet Pavement on SR 7, from SR 72 to Kirkwood Highway, via a Pavement & Rehabilitation Project. The project is expected to start construction in Winter/Spring 2018/2019.</i>
11. Relocate existing engine compression brake prohibition signs to downhill locations approaching signalized intersections	<i>Signs fabricated and installed Project Complete - Summer 2018</i>

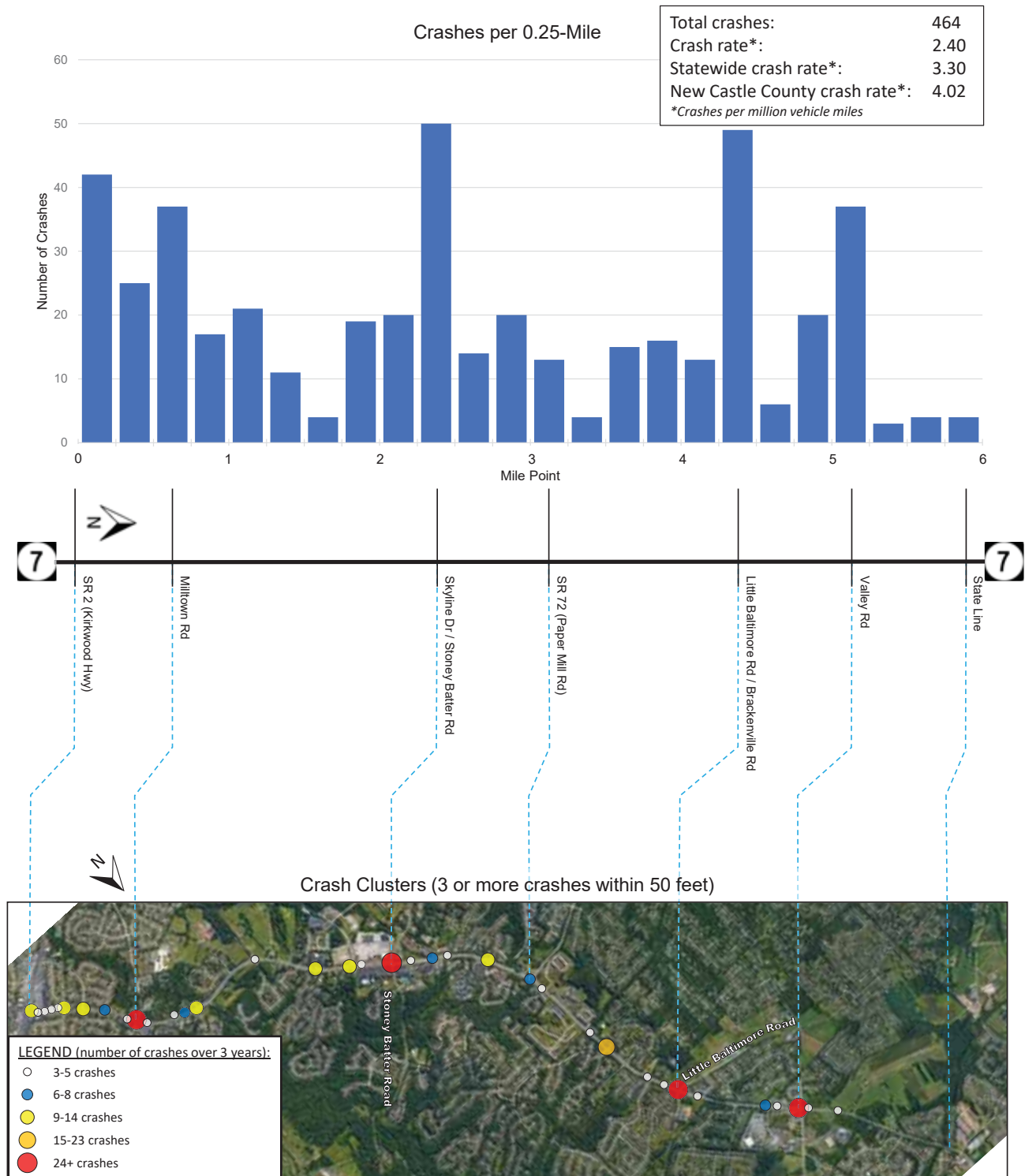
**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

12. Install engine compression brake prohibition sign with flashing beacons at PA state line	DelDOT Studied Concept. Decision to install larger signs w/o flashing beacons. Signs fabricated and installed. Project Complete – Summer 2018
13. Conduct signal warrant studies for the following locations: SR 48 and Old Wilmington Road SR 48 and Courtney Road SR 48 and Harlech Drive/Hedgegrow Place SR 48 and Old Hobson Farm	DelDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Fall 2018</i>
14. Install permanent YOUR SPEED XX MPH signs on SR 7, SR 41 and SR 48 and perform a “before” and “during” study to determine the effectiveness of these signs on arterial roadways over time	Dynamic Signs Purchased and Installed. “Before” Data Collection Complete. Static Signs being Fabricated. Signs Installed – September 2018 <i>“After” Data Collection: Winter 2018/2019</i>
15. Perform a traffic engineering study to determine any potential improvements for intersections on SR 7, SR 41 and SR 48 that are currently operating at LOS E or worse, based on WILMAPCO’s Congestion Management Program Results	DelDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Winter 2018/2019</i>
16. Provide additional enforcement of existing speed limits	This recommendation is for Delaware State Police.
17. Perform a study to identify feasible locations to install fixed virtual WIM stations on SR 7, SR 41 and SR 48	DelDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Fall 2018</i>
18. Increase the number of truck inspections	This recommendation is for Delaware State Police.
19. Recommend New Castle County Police increase enforcement of NCC Code Section 22.02.0008-B.2.a.i, which makes it unlawful to “race or gun any motor vehicle between the hours of 9:00 p.m. and 8:00 a.m.”	This recommendation is for New Castle County Police.
20. Increase enforcement of Delaware Code, Title 21 §4311(a), which makes it unlawful to “drive a motor vehicle, including a motorcycle, on a highway, including residential streets, unless such motor vehicle or motorcycle is equipped with a muffler in good working order and in accordance with manufacturer’s specifications and in constant operation to prevent excess or unusual noise.”	This recommendation is for Delaware State Police.
21. Increase enforcement of engine compression brake prohibition	This recommendation is for Delaware State Police.
22. Continue enhanced truck enforcement on SR 41 and SR 48, and expand enhanced truck enforcement to SR 7	DelDOT continues to fund Delaware State Police with approximately \$100,000 for additional commercial vehicle enforcement on these corridors.
23. Establish a bi-state working/coordination group to discuss and address issues associated with regional freight movement. The working group should be comprised of representatives from DelDOT, PennDOT, WILMAPCO, Delaware Valley Regional Planning Commission (DVRPC), Delaware State Police, Pennsylvania State Police, and other relevant stakeholders	No reportable action to date.
24. Request that existing legislation be re-written to bring Delaware’s truck length laws in-line with surrounding states	This recommendation is for the General Assembly.

SR 7, SR 41, and SR 48 Road Safety Audit

Crash Analysis

Crashes by Segment – **7** (2015 – 2017)

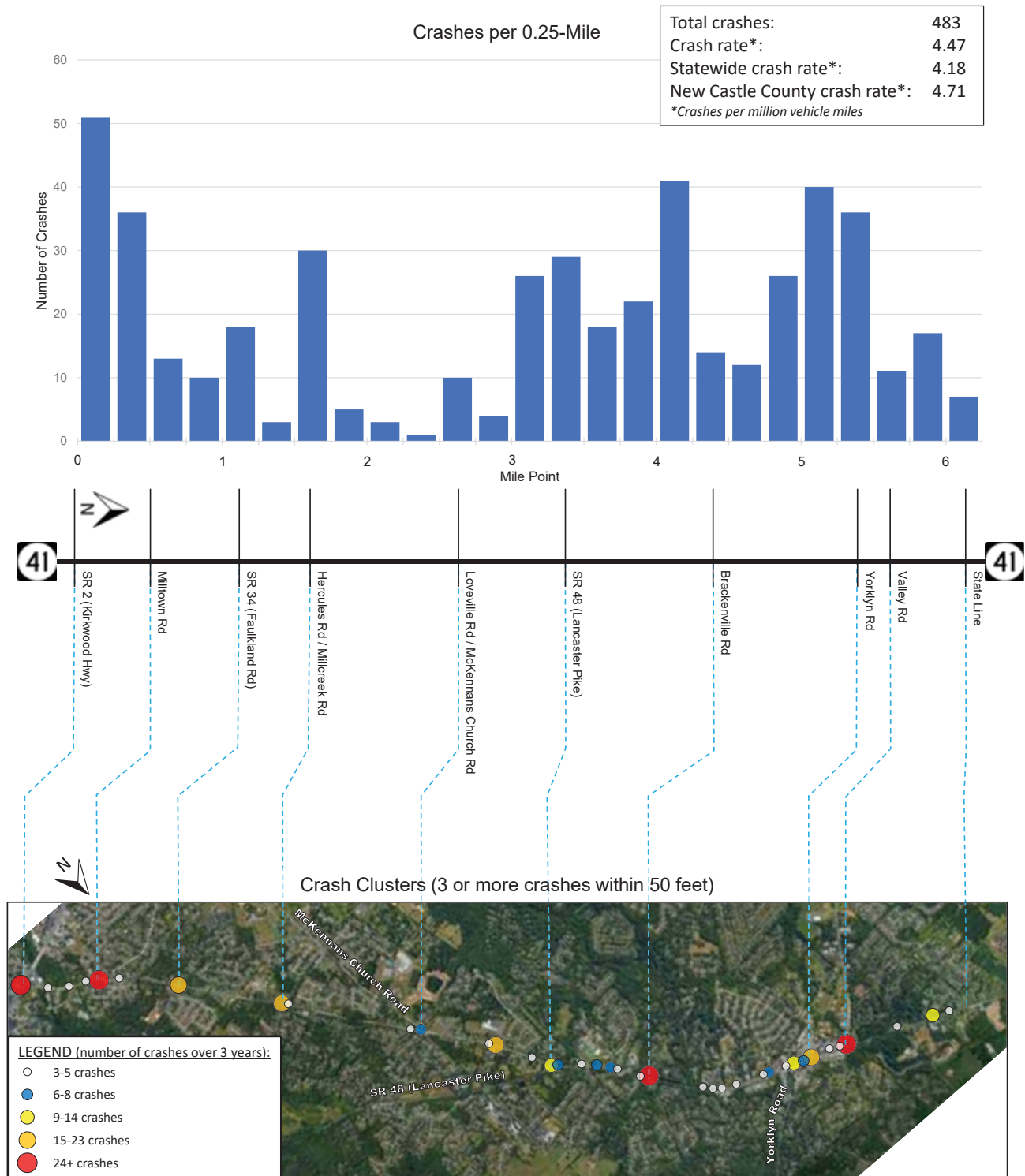


- Most crash clusters appear at or near intersections, but some clusters appear between intersections.
- Intersections with the most crashes are Skyline Drive / Stoney Batter Road (44), Little Baltimore Road / Brackenville Road (41), Valley Road (31), and Milltown Road (24).
- One intersection on SR 7 corridor appeared on WILMAPCO's Top 50 Crash Frequency Ranking List: SR 7 at SR 2 (Kirkwood Highway).

SR 7, SR 41, and SR 48 Road Safety Audit

Crash Analysis

Crashes by Segment – (2015 – 2017)

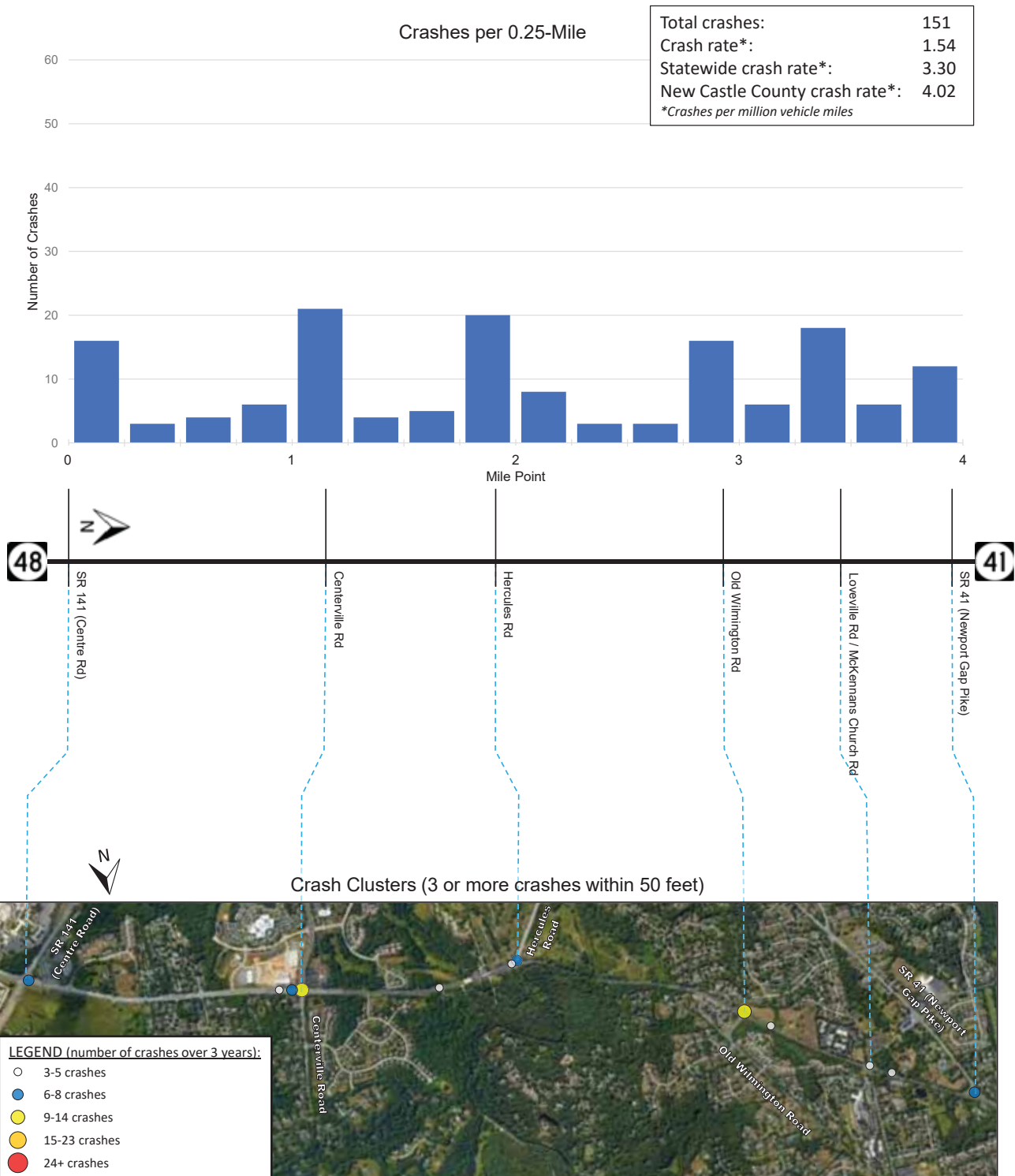


- Most crash clusters appear at or near intersections, but some clusters appear between intersections.
- Intersections with the most crashes are SR 2 (Kirkwood Highway) (42), Milltown Road (30), Brackenville Road (29), and Valley Road (24).
- One intersection on SR 41 corridor appeared on WILMAPCO's Top 50 Crash Frequency Ranking List: SR 41 at SR 2 (Kirkwood Highway).

SR 7, SR 41, and SR 48 Road Safety Audit

Crash Analysis

Crashes by Segment – (2015 – 2017)



- Most crash clusters appear at or near intersections, but some clusters appear between intersections.
- Intersections with the most crashes are Centerville Road (12), Old Wilmington Road (9), SR 41 (Newport Gap Pike) (8), and SR 141 (Centre Road) (8).
- No intersections on SR 48 corridor appeared on WILMAPCO's Top 50 Crash Frequency Ranking List.

SR 7, SR 41, and SR 48 Road Safety Audit Crash Analysis

Fatal Crashes – SR 7, SR 41, and SR 48 (2015 – 2017)



Crash Trends

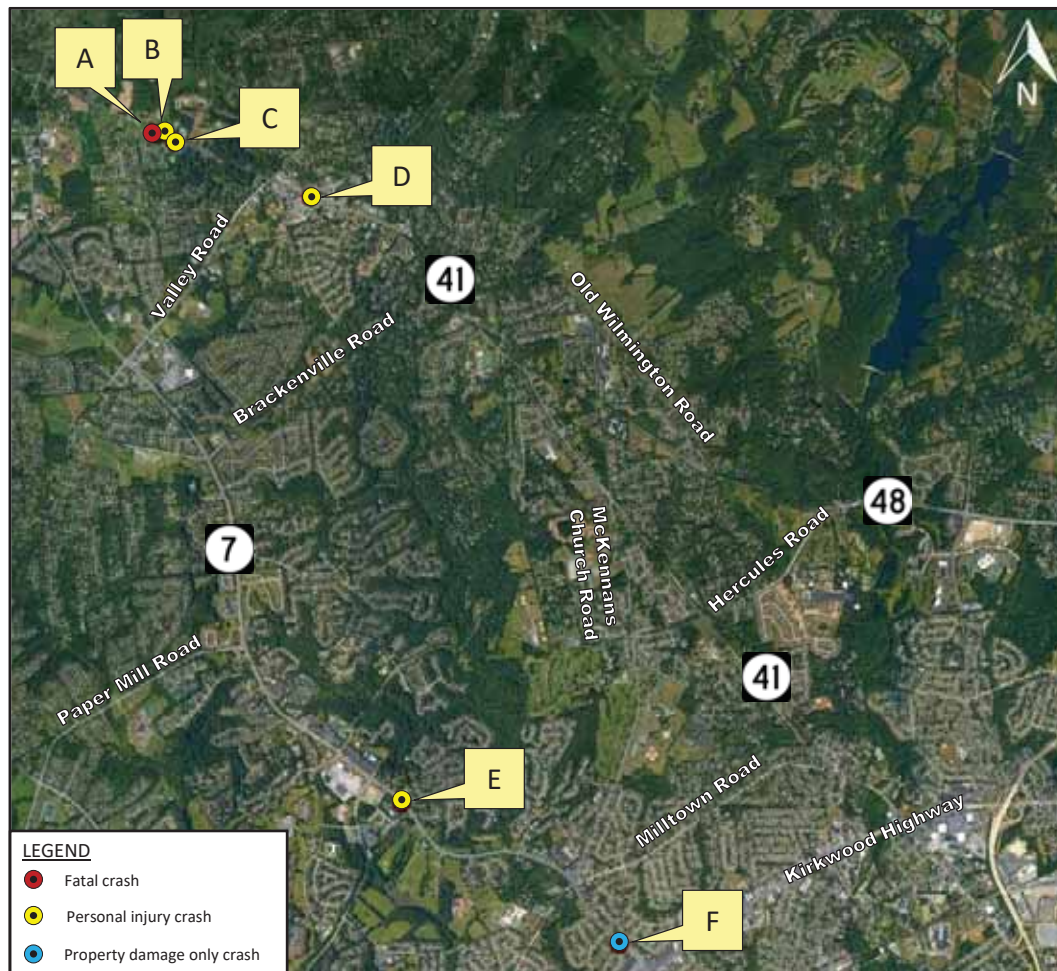
- Fatal crashes do not exhibit any clear trends related to engineering factors.
- Three crashes (A,B,D) were related to alcohol or opiates.
- The other three crashes (C,E,F) were related to driving in a careless, reckless, or aggressive manner.

Crash Descriptions

- SR 41: Vehicle struck intoxicated (alcohol) pedestrian crossing SR 41 at night in dark clothing, then fled the scene. Pedestrian succumbed to fatal injuries.
- SR 41: Intoxicated (opiates) driver traveling at a high rate of speed crossed double yellow centerline and struck tractor trailer traveling in opposite direction.
- SR 41: SUV driver crossed double yellow centerline to pass passenger car, then braked sharply. Passenger car swerved into opposite lane then struck SUV. SUV overturned and struck a tree. Driver of SUV was pronounced dead at the scene.
- SR 48: Intoxicated (opiates) driver crossed double yellow centerline and struck a dump truck head-on.
- SR 48: Driver on Old Wilmington Road turned into path of oncoming vehicle on SR 48. Both occupants of turning vehicle succumbed to fatal injuries.
- SR 48: Driver crossed double yellow centerline for unknown reason and struck a utility pole. The driver was not wearing a seatbelt.

SR 7, SR 41, and SR 48 Road Safety Audit Crash Analysis

Pedestrian Crashes – SR 7, SR 41, and SR 48 (2015 – 2017)



Crash Trends

- Pedestrian crashes do not exhibit any clear trends related to engineering factors.
- Three crashes (A,C,F) involved pedestrians crossing at unmarked locations at night.
- Two crashes (D,E) occurred at marked crosswalks when pedestrians did not have walk signal.
- Of the 11 total school bus related crashes, three occurred when the bus was slowing down/stopped to pick up or drop off children including one pedestrian crash (B).

Crash Descriptions

- SR 41: Vehicle struck intoxicated (alcohol) pedestrian crossing SR 41 at night in dark clothing, then fled the scene. Pedestrian succumbed to fatal injuries.
- SR 41: A school bus was stopped with red lights flashing and stop sign extended to pick up a student. Box truck driver rear-ended the bus and the impact threw a student stepping onto the bus onto the ground.
 - Further investigation of 10 additional school-bus related crashes revealed two occurred while the school bus was slowing down/stopped to pick up or drop off children. The remaining eight crashes did not occur during student pick-up or drop-off.
- SR 41: Vehicle struck pedestrian crossing SR 41 at night, then fled the scene. The pedestrian was then struck by another vehicle whose driver remained at the scene.
- SR 41: A left-turning vehicle struck a pedestrian in the crosswalk during a green arrow. The pedestrian signals were covered due to ongoing road construction at the time.
- SR 7: Vehicle struck pedestrian crossing in crosswalk just as vehicle received green light and began accelerating.
- SR 7: Vehicle swerved to avoid a pedestrian crossing SR 7 at night and struck a utility pole. The pedestrian was not hit.

SR 7, SR 41, and SR 48 Road Safety Audit

Crash Analysis

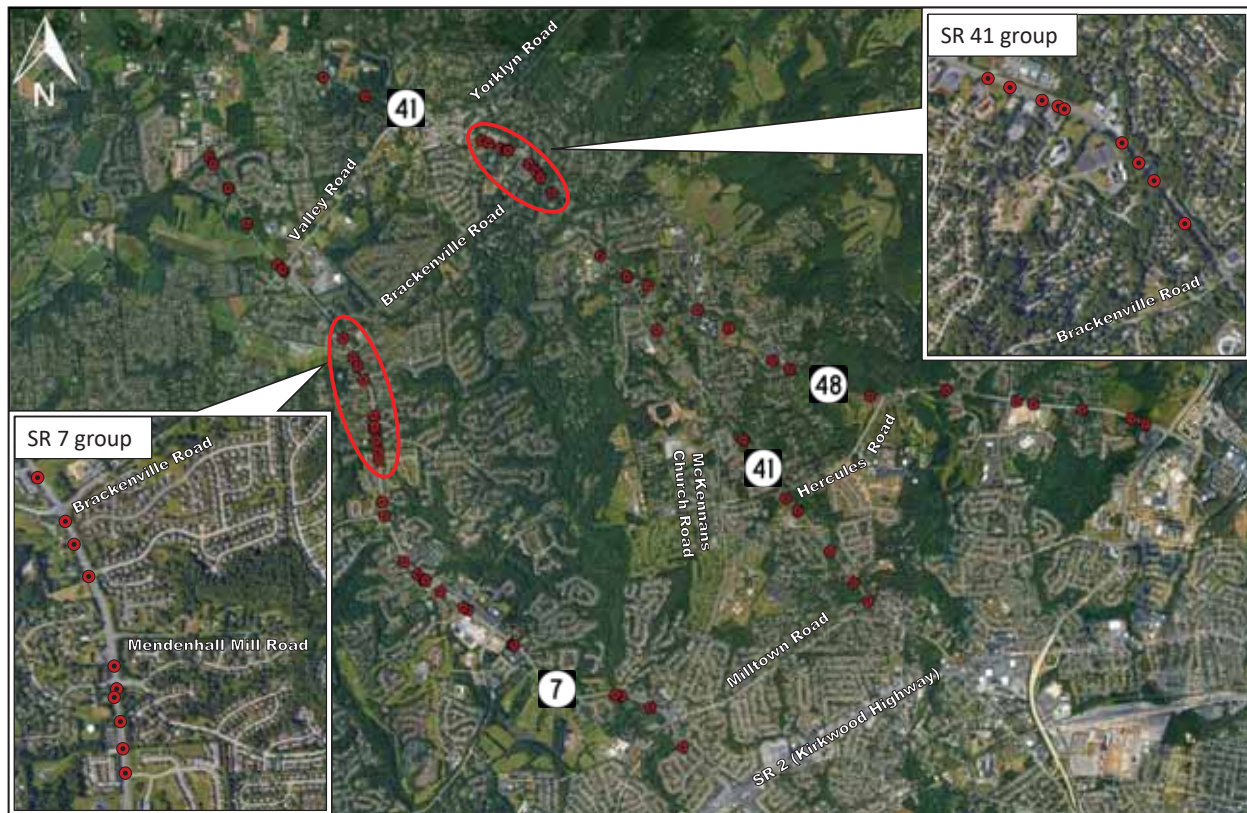
Bicyclist Crashes – SR 7, SR 41, and SR 48 (2015 – 2017)



- One police-reported bicycle-related crash on all three state routes between 2015 and 2017.
 - Bicyclist traveling in the right turn lane on northbound SR 7 and continuing straight through at Lantana Drive struck a southbound left-turning vehicle.
 - Crash occurred during daylight on dry road surface.
- Between Valley Road and Lantana Drive, southbound SR 7 has a bike lane between the through lane and right turn lane.
- Northbound SR 7 does not have any signed or marked bicycle facilities from Little Baltimore Road/Brackenville Road to Valley Road.
- This portion of SR 7 is designated as a Regional Bicycle Route by DeIDOT.

SR 7, SR 41, and SR 48 Road Safety Audit Crash Analysis

Deer-Related Crashes – SR 7, SR 41, and SR 48 (2015 – 2017)



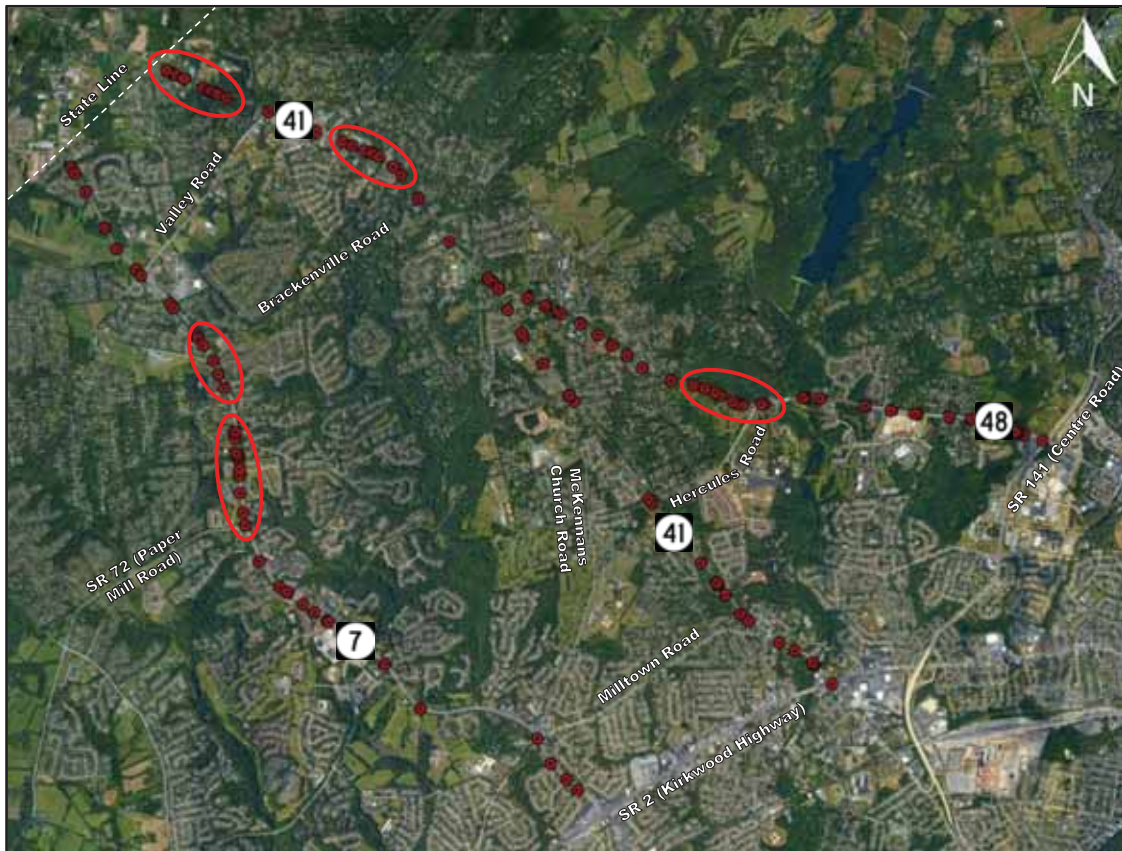
Deer-Related Crashes on SR 7, SR 41, and SR 48

	SR7	SR41	SR48	Total
Not deer-related	430	462	138	1030
Deer-related	34 (7%)	21 (4%)	13 (9%)	68 (6%)
Total	464	483	151	1098

- Deer-related crashes account for 6 percent of all crashes on all three state routes, but 9 percent on SR 48.
- Crash groups on SR 7 (10 crashes) and SR 41 (9 crashes):
 - Surrounded by heavily-wooded areas
 - On horizontal curves
 - Limited/no street lighting
 - Two streetlights on SR 7 at Mendenhall Mill Road intersection
 - Combination of factors may limit sight distance for driver to react to deer in or near roadway.

SR 7, SR 41, and SR 48 Road Safety Audit Crash Analysis

Lighting Condition-Related Crashes – SR 7, SR 41, and SR 48 (2015 – 2017)



Lighting Condition-Related Crashes on SR 7, SR 41, and SR 48

	SR7	SR41	SR48	Total
Daylight	312	322	90	724
Dawn	9	11	5	25
Dusk	9	13	2	24
Dark-Lighted	92	78	15	185
Dark-Not Lighted	40 (9%)	57 (12%)	38 (25%)	135 (12%)
Dark-Unknown Lighting	0	1	0	1
Unknown	2	1	1	4
Total	464	483	151	1098

- “Dark-not lighted” crashes account for 12 percent of crashes on all three state routes, but 25 percent on SR 48.
- “Dark-not lighted” crash groups:
 - SR 48: Except for one group near Hercules Road, crashes were relatively uniformly-spaced on SR 48 between SR 141 and SR 41.
 - SR 7: Two groups on SR 7 between Valley Road and SR 72 (Paper Mill Road).
 - SR 41: Two groups on SR 41 between state line and Brackenville Road.

SR 7, SR 41, and SR 48 Road Safety Audit

DRAFT Field Visit Schedule

November 15, 2018

8:30 am – 2:00 pm

Brandywine Springs Park

3300 Faulkland Road Wilmington, DE 19808

8:30 AM	Meet at Brandywine Springs Park
9:00 AM	Depart on Bus for Stops along SR 41 and SR 7
12:00 PM	Lunch at Brandywine Springs Park
1:00 PM	Depart on Bus for Stops along SR 48
2:00 PM	Return to Brandywine Springs Park




Stops

 Brandywine Springs Park
(Begin/End Bus Tour)

 1 SR 41 at McKennans Church Rd /
Loveville Rd

 2 SR 41 at SR 48

 3 SR 41 at Old Lancaster Pike /
Withers Way / Well Coffeehouse


 4 SR 41 at Yorklyn Rd & SR 41 at
Valley Rd

 5 SR 7 at Valley Rd & SR 7 at
Lantana Dr

 6 SR 7 at Little Baltimore Rd /
Brackenville Rd

 7 SR 7 at Milltown Rd

 8 SR 7 at Midway Shopping Center

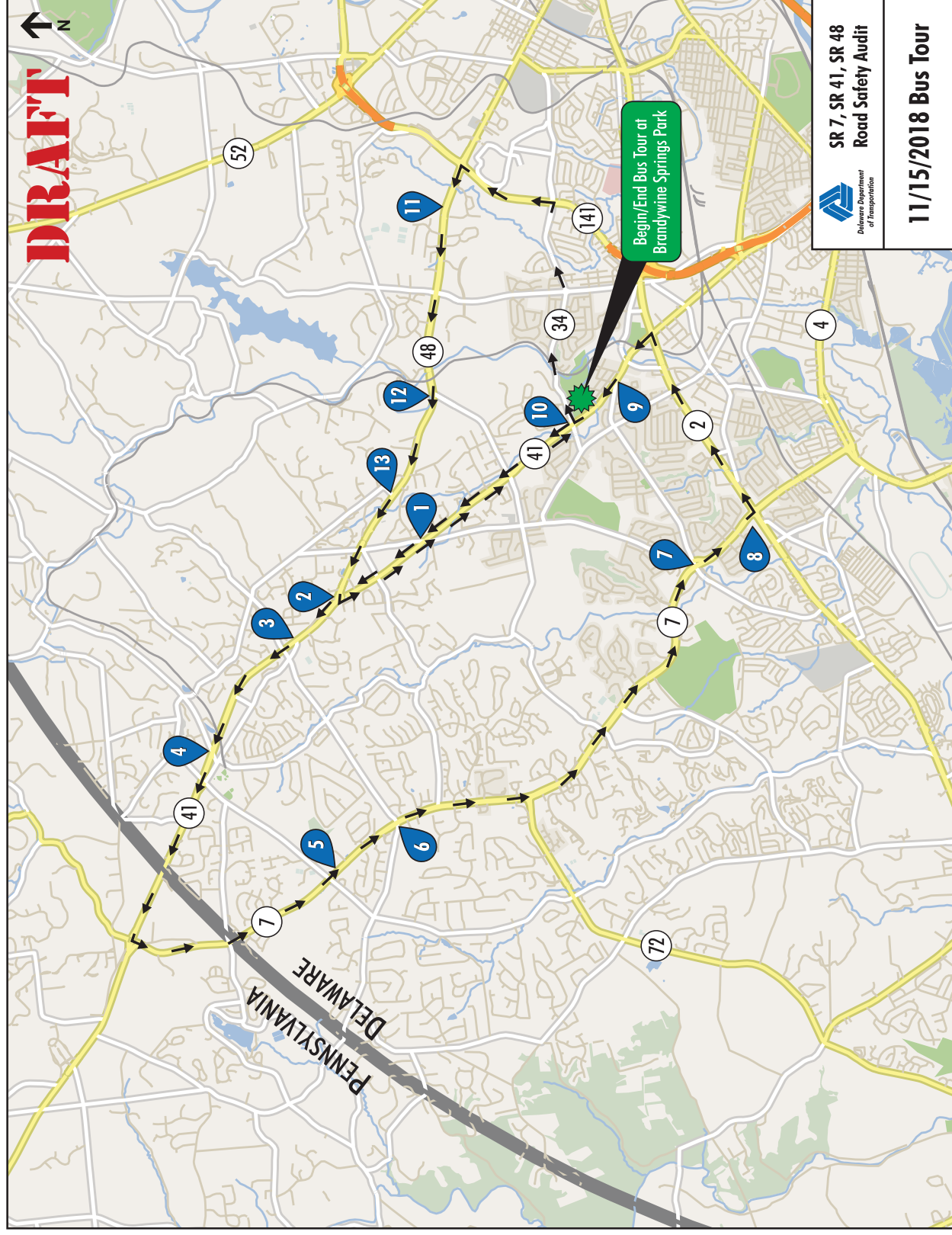
 9 SR 41 at Milltown Rd

 10 SR 41 at Faulkland Rd

 11 SR 48 north/west of SR 141

 12 SR 48 at Hercules Rd

 13 SR 48 at Old Wilmington Rd



SR 7, SR 41, SR 48
Road Safety Audit

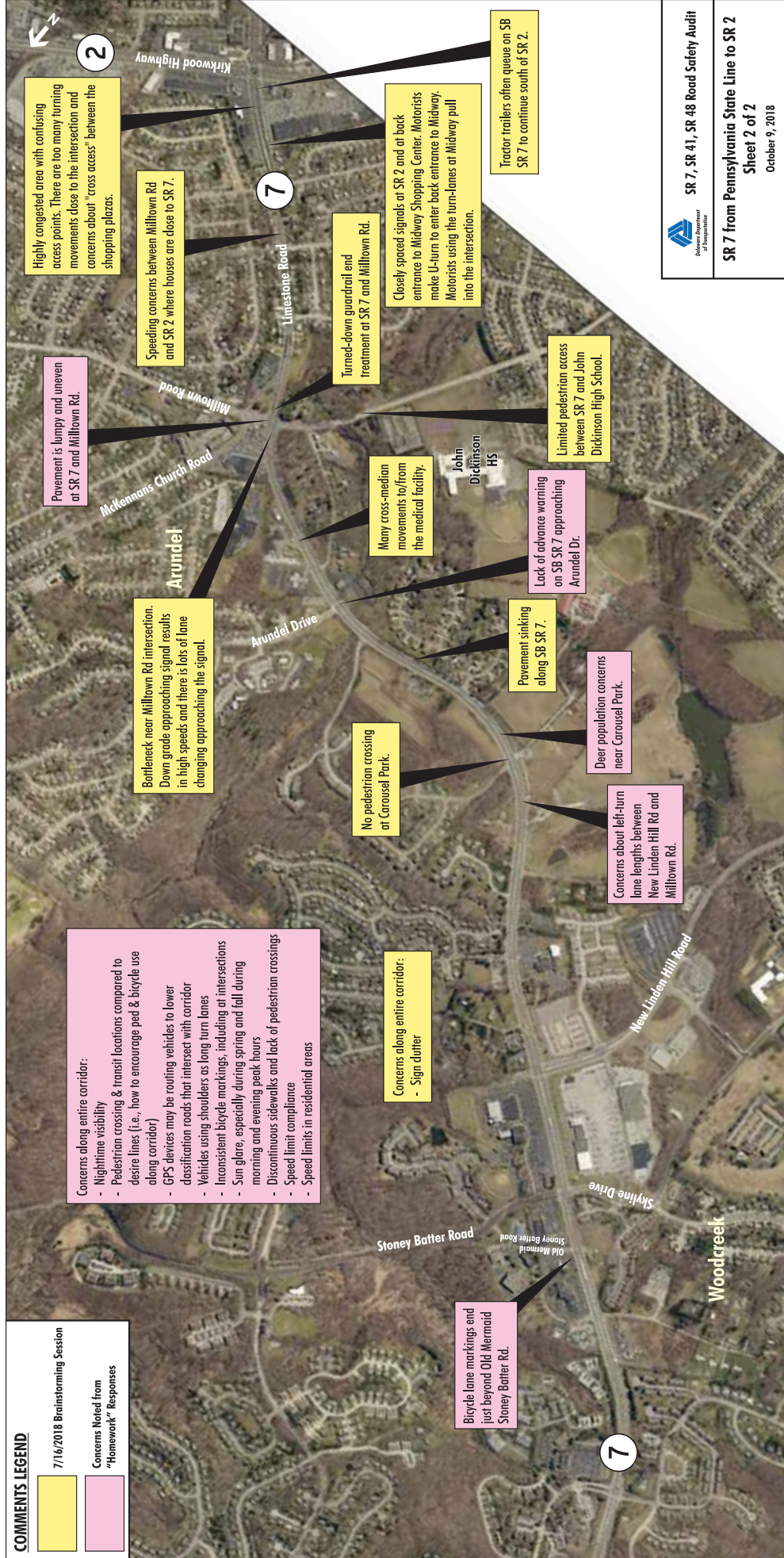
11/15/2018 Bus Tour



COMMENTS LEGEND

7/16/2018 Brainstorming Session

Concerns Noted from "Homework" Responses



COMMENTS LEGEND

	7/16/2018 Brainstorming Session
	Concerns Noted from "Homework" Responses

- Concerns along entire corridor:
- Nighttime visibility
 - Pedestrian crossing & transit locations compared to desire lines (i.e., how to encourage ped & bicycle use along corridor)
 - GPS devices may be routing vehicles to lower classification roads that intersect with corridor
 - Vehicles using shoulders as long turn lanes
 - Inconsistent bicycle markings, including at intersections
 - Sun glare, especially during spring and fall during morning and evening peak hours
 - Discontinuous sidewalks and lack of pedestrian crossings
 - Speed limit compliance
 - Speed limits in residential areas

Concerns along entire corridor:

- Sign clutter

Bicycle lane markings end just beyond Old Mermaid Stoney Batter Rd.

Highly congested area with confusing access points. There are too many turning movements close to the intersection and concerns about "cross access" between the shopping plazas.

Speeding concerns between Milltown Rd and SR 2 where houses are close to SR 7.

Pavement is lumpy and uneven at SR 7 and Milltown Rd.

Bottleneck near Milltown Rd intersection. Down grade approaching signal results in high speeds and there is lots of lane changing approaching the signal.

Turned-down guardrail end treatment at SR 7 and Milltown Rd.

Many cross-median movements to/from the medical facility.

No pedestrian crossing at Carousel Park.

Closely spaced signals at SR 2 and at back entrance to Midway Shopping Center. Motorists make U-turn to enter back entrance to Midway. Motorists using the turn-lanes at Midway pull into the intersection.

Tractor trailers often queue on SB SR 7 to continue south of SR 2.

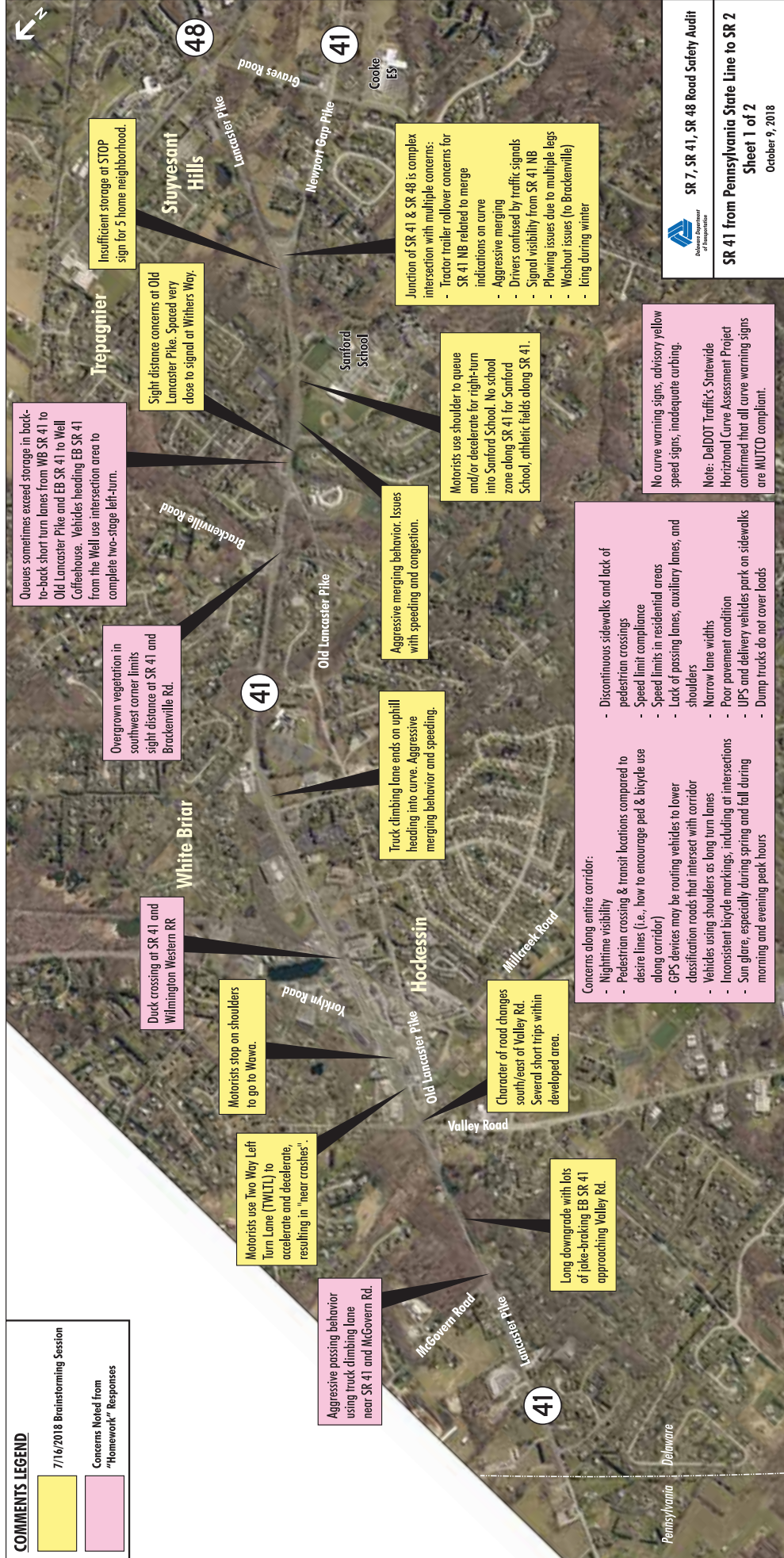
Limited pedestrian access between SR 7 and John Dickinson High School.

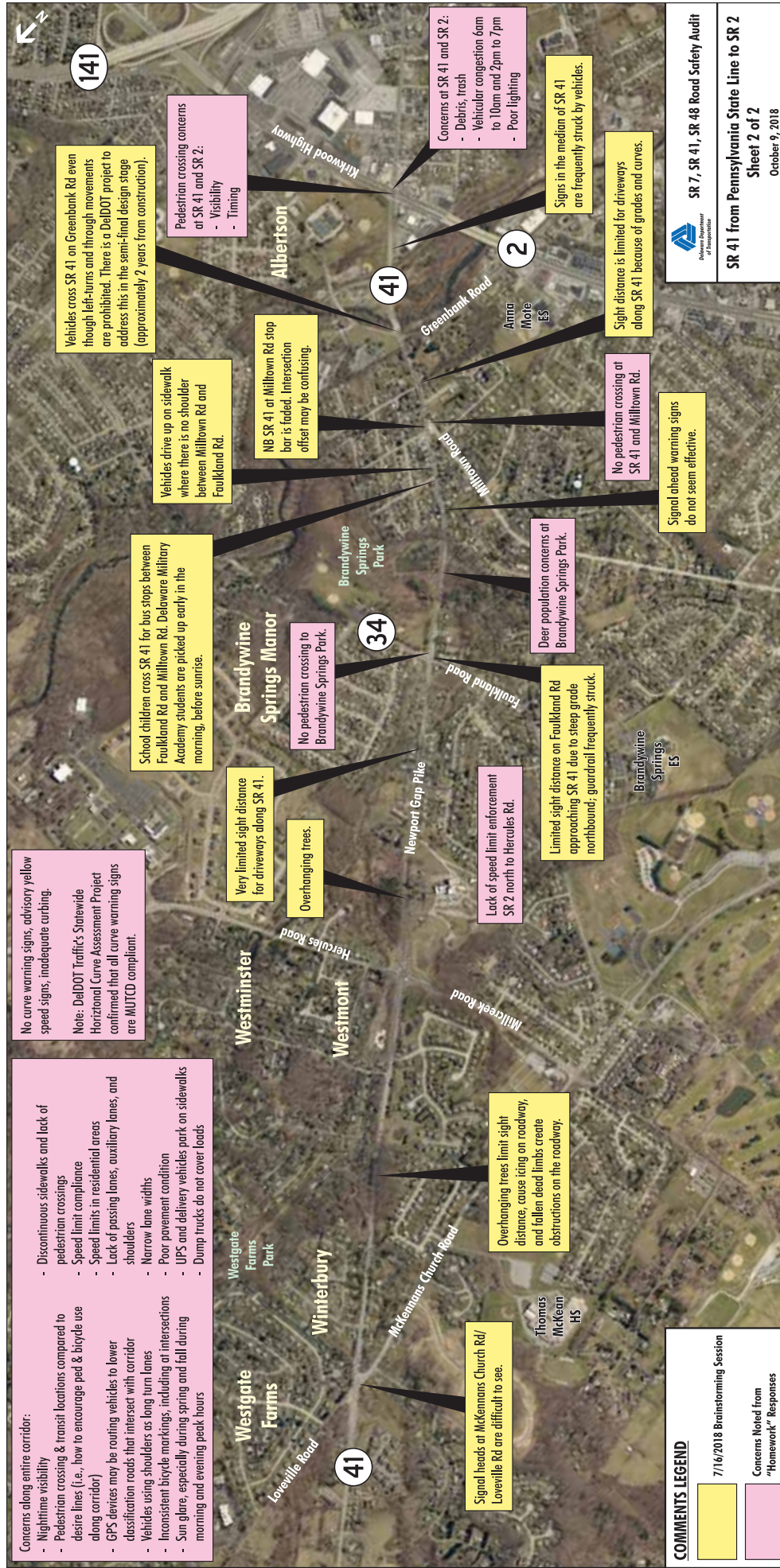
Lack of advance warning on SB SR 7 approaching Arundel Dr.

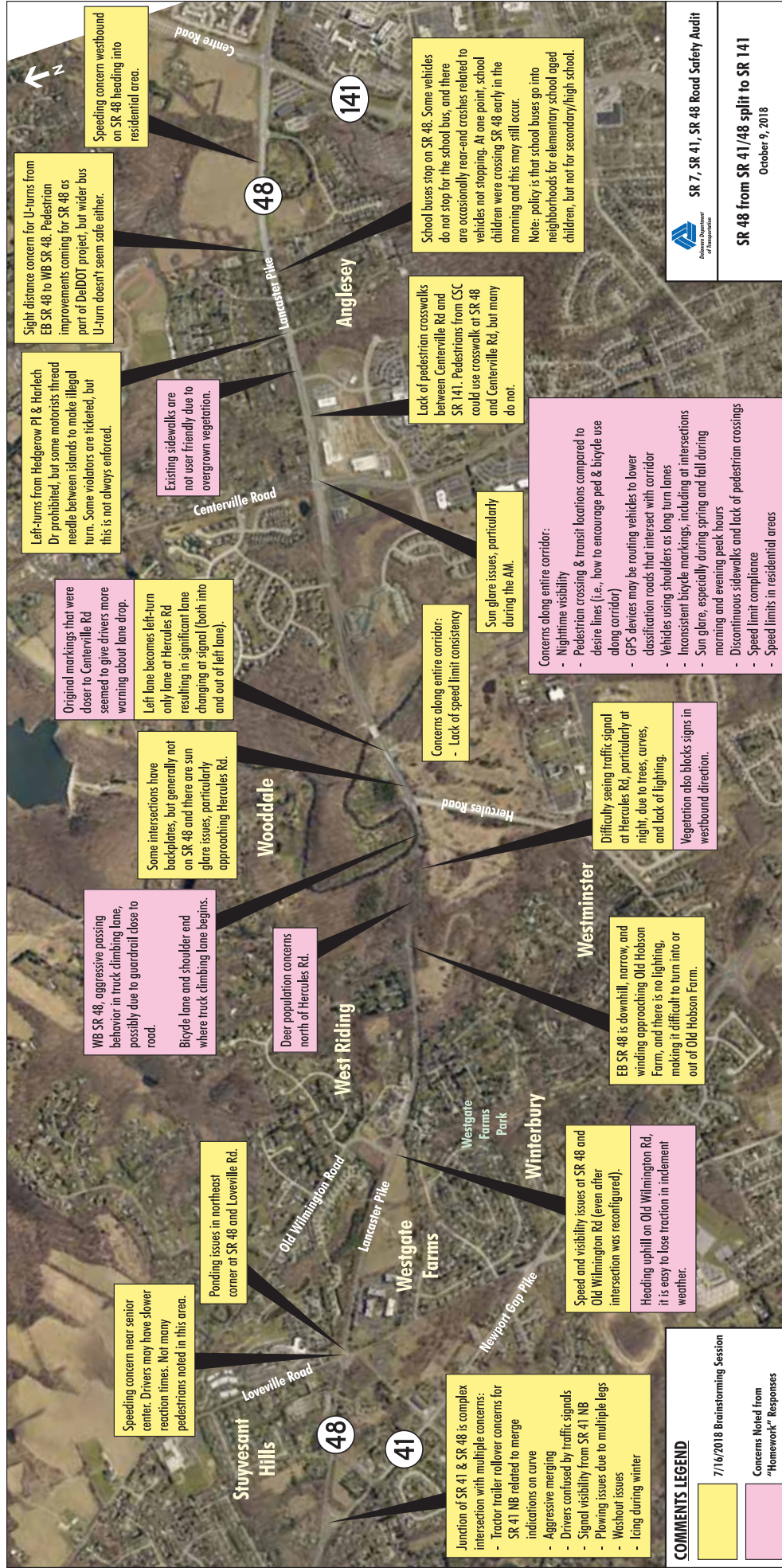
Pavement sinking along SB SR 7.

Deer population concerns near Carousel Park.

Concerns about left-turn lane lengths between New Linden Hill Rd and Milltown Rd.







Appendix A.3

**Bus Tour
December 11, 2018**

SR 7, SR 41, SR 48 Road Safety Audit Bus Tour

Date: December 11, 2018

Time: 8:30 AM to 2:00 PM

Place: Brandywine Springs Park: 3300 Faulkland Road, Wilmington, DE 19808

Attendance:

NAME	ORGANIZATION	PHONE NUMBER	E-MAIL
Andrew Bing	Kramer & Associates	(410) 271-1783	abing@kramerassociates.net
Dan Blevins	WILMAPCO	(302) 737-6205	dblevins@wilmapco.org
Randy Broadwater	Hockessin Volunteer Fire Department	(302) 239-7159	rbroadwater@hockessin19.com
Jim Burnett	RK&K	(410) 462-9389	jburnett@rkk.com
Matt Palsgrove	DelDOT, Maintenance & Operations		
Matthew Cox	Delaware State Police		Matthew.Cox@state.de.us
Stephanie Everett	RK&K	(410) 462-9423	severett@rkk.com
Justin Hubschmitt	DelDOT, Project Development	(302) 760-2204	Justin.Hubschmitt@state.de.us
Maureen Kelley	DelDOT, Maintenance & Operations	(302) 894-6307	Maureen.Kelley@state.de.us
Paul Moser	DelDOT, Planning		
Marvin Pedigo	DelDOT, Safety	(302) 894-6357	Marvin.Pedigo@state.de.us
MaryAnn Summers	Route 41 Representative	(302) 998-2278	s_type@comcast.net
Sean Walsh	Route 48 Representative	(302) 353-8282	virtualbk@comcast.net
Owner's Representative			
Mark Luszc	DelDOT, Chief Traffic Engineer	(302) 659-4062	mark.luszc@state.de.us
Other Attendees			
Gerald Brady	Representative, District 4		Gerald.Brady@state.de.us
Krista Griffith	Representative, District 12		Krista.Griffith@state.de.us
Tammie Kanich	Leg. Asst., Rep. Ramone & Rep. Smith		Tammie.Kanich@state.de.us

The RSA team met at Brandywine Springs Park at 8:30 AM. Jim Burnett (RK&K) welcomed attendees and gave a safety briefing before the bus departed. The team traveled by bus along SR 41, SR 7, and SR 48 and made stops at 13 locations (see list below). At each location, the RSA Team reviewed previously noted concerns, discussed additional potential safety issues, and brainstormed possible improvements. Notes from that discussion are summarized below:

1. SR 41 at McKennans Church Rd / Loveville Rd
 - AM sun glare in SB direction
 - Several people asked if backplates could be installed
 - Limited sight distance in the NB direction?
 - Lack of pedestrian crossings and lack of bike lanes
 - The optically programmed signal heads are hard to see until you get close to the intersection
 - Request for aesthetic treatments in median to make the intersection look nicer
 - Check signal ahead warning signage and consider red signal ahead sign when flashing sign
2. SR 41 at SR 48
 - Very complex/complicated junction
 - Suggestion to examine whether some form of at-grade "DDI" (diverging diamond interchange) concept could work here
 - Limited sight distance in the NB direction?

- Several people noted aggressive driving through the intersection, particularly on NB SR 41 through the lane drop
 - Suggestion to examine roundabout concepts at the intersection
 - Cpt. Cox noted a fatality that had occurred with a drunk driver that crossed over several of the channelization islands at a high rate of speed
 - 2 very unusual STOP sign placements: one for vehicles exiting Chapel Ct that only has 10-15 feet of storage space, the other for vehicles making the NB SR 48 to SB SR 41 “u-turn” movement, where there is a STOP sign within 100 feet of passing through a green light
 - Suggestion to select which road is “primary” road and reconfigure intersection to prioritize through movements on the “primary” road
 - Suggestion to examine right-in, right-out restrictions for Chapel Ct
 - Occasionally the queue for traffic from SB SR 41 to SB SR 48 blocks the right-turn lane for traffic continuing SB on SR 41
 - Noted that congestion, queuing, and aggressive behaviors are often worse during PM rush hour
 - AM sun glare in the SB direction
3. SR 41 at Old Lancaster Pike / Withers Way / Well Coffeehouse
- AM sun glare in the SB direction
 - Many motorists turn left onto Old Lancaster Pike to avoid the traffic signal at Brackenville Road
 - Back to back left turn: motorists observed decelerating in the opposing left turn lane
 - Free right turn from Old Lancaster Pike was added recently
 - Several people wondered if there could be access changes to/from the Well parking lot to simplify the turning movements through this area
 - Suggestion to cul-de-sac Old Lancaster Pike near Withers Way
 - Residents would be able to access SR 41 at the signalized intersection at Sunny Hill Ln (approximately 1,000 ft south)
 - Suggestion to establish connection between Well Coffeehouse and Old Lancaster Pike
 - DeIDOT (contact: Matt Buckley) has information about the access changes that have occurred at this location in recent years
 - Signal at SR 41 and Brackenville Rd is at the bottom of the hill
4. SR 41 at Yorklyn Rd & SR 41 at Valley Rd
- Buses stop at RR tracks. When this happens, cars often use the two-way left turn lane (TWLTL) to pass them
 - Is there a need for the mailbox along SR 41 for the Exxon station?
 - Suggestion to experiment with high friction pavement on the downhill approach (SB) to the Valley Road intersection
 - A comment that this is the “best” section of SR 41 and few/no changes are needed
 - Pedestrians observed crossing SR 41 near “Keep Right” sign in median near end of TWLTL
 - Concerns that access changes might negatively affect businesses
 - Signal at SR 41 and Valley Rd is at the bottom of a hill
5. SR 7 at Valley Rd & SR 7 at Lantana Dr
- Suggestion to perform a study to look at narrowing lanes to accommodate a bike lane (or at least a wider shoulder that bikes could use) south of Lantana Drive

- There is only a bike lane in the NB direction. Can a study be performed to see if a bike lane could be provided in the opposite direction?
 - Check DE Bike map to see if SB movement is provided on another road
6. SR 7 at Little Baltimore Rd / Brackenville Rd
- Few issues identified with the exception of a possible conflict between NB U-turning vehicles and EB right turning vehicles. Check crash history to see if there is any crash problem.
 - Suggestion to add channelizing islands on remaining corners and provide pedestrian crossings, possibly on north and east legs (to connect existing sidewalks)
 - Sidewalk along north side of Little Baltimore Rd ends east of the elementary school. Suggestion to extend sidewalk to complete connections if crosswalks are provided.
7. SR 7 at Milltown Rd
- Pedestrian accommodations (crosswalk) was recently implemented
 - Signal timing changes were recently made that residents indicated have made a big improvement, particularly for vehicles on McKennans Church Road that no longer get trapped in the short segment of Milltown Road.
 - Guard rail end treatment should be replaced
 - Suggestion to modify access to Valero station, possibly closing southern access
8. SR 7 at Midway Shopping Center
- Drainage problems exist on the right turn lanes from WB SR 2 to NB SR 7 and from SB SR 7 to WB SR 2
 - Biggest problem in this location is the number of access points in such a short distance of SR 2
 - Many of the vehicles exiting Midway Shopping Center turn right onto SB SR 7 and immediately try to reach the double left turn lanes to EB SR 2
 - Suggestion to limit access along SR 7.
 - DelDOT has significant history in this area (contact: Matt Buckley for HEP history, Marc Cote for bank site access)
 - SB SR 7 left-turn not aligned well with entrance to bank creating conflicts with NB SR 7 right-turn in. Stop bar(?) for left-turn/U-turns confusing with misalignment.
 - Vehicles observed making U-turn from shopping center into bank
 - Heavy movement: right-turn out of back signalized exit of shopping center to U-turn to travel north on SR 7
9. SR 41 at Milltown Rd
- Approximately 6 children cross SR 41 each day to reach a bus stop along NB SR 41 in front of gas station. There are no pedestrian accommodations
 - Suggested crosswalk location on north leg of intersection, continuing to Milltown Rd
 - Suggestion to prohibit RTOR from Jackson Ave due to limited sight distance
 - Limited sight distance for pedestrians trying to see NB vehicles due to curvature of road
 - Signal head facing Milltown Road appears to be misaligned and is visible to motorists on SB SR 41
 - Left turn queue for vehicles on NB SR 41 turning onto Milltown Road occasionally extends back out of turn bay and blocks the through lane

10. SR 41 at SR 34 (Faulkland Road)

- Advance utility work was recently completed.
- Intersection improvements are planned for 2019:
 - Extension of NB and SB turn lanes on SR 41
 - Left turn phasing on SR 41 will change from protected-permitted to protected-only
 - Extension of sidewalk on Faulkland Road (eastern leg only)
- Due to these pending changes, the group did not perform a site visit at this intersection

11. SR 48 north/west of SR 141

- Buses pick up children along SR 48 in this area. Buses stop in both directions.
- Limited visibility for motorists on NB SR 48 exiting their driveways looking to the left due to the vertical curvature of the road combined with high speeds along SR 48 (note: anecdotal reports that the recently installed dynamic speed limits signs have helped)
- Desire expressed for a pedestrian crossing near bottom of the hill. Noted that there are curb cuts in the median island at SR 48 and Harlech Dr / Hedgerow Pl, but no marked crossing.
- Bushes block sidewalk (and reduce visibility) along NB SR 48

12. SR 48 at Hercules Rd

- In SB direction, the tree canopy limits view of the signal heads
- Consider replacing solid white lane line approaching RR tracks in the NB direction with puppy track markings to emphasize the fact that the lane is dropping
- Consider an overhead lane control sign in the NB direction to more clearly convey to motorists that the left lane is ending

13. SR 48 at Old Wilmington Rd

- Fire Department noted that there have been many crashes at the Old Wilmington Road intersection
- Suggestion to change Old Wilmington Rd to right-in, right-out, possibly keeping left-in
- Overhanging trees northwest of Old Wilmington Rd limit sight distance

Action Item: RK&K to develop preliminary safety improvement recommendations before the next RSA Team meeting (time and location TBD).

Appendix A.4

Meeting #3
July 9, 2019

SR 7, SR 41, SR 48 Road Safety Audit Meeting #3

Date: July 9, 2019

Time: 2:00 PM to 5:00 PM

Place: DelDOT's Canal District Office Building: 250 Bear Christiana Road, Bear, DE 19701

Attendance:

NAME	ORGANIZATION	PHONE NUMBER	E-MAIL
Andrew Bing	Kramer & Associates	(410) 271-1783	abing@kramerassociates.net
Dan Blevins	WILMAPCO	(302) 737-6205	dblevins@wilmapco.org
Jim Burnett (<i>Team Lead</i>)	RK&K	(410) 462-9389	jburnett@rkk.com
Matthew Cox	Delaware State Police		Matthew.Cox@state.de.us
Stephanie Everett	RK&K	(410) 462-9423	severett@rkk.com
Peter Haag	DelDOT, Traffic Studies	(302) 659-4084	Peter.Haag@state.de.us
Justin Hubschmitt	DelDOT, Project Development	(302) 760-2204	Justin.Hubschmitt@state.de.us
Maureen Kelley	DelDOT, Maintenance & Operations	(302) 894-6307	Maureen.Kelley@state.de.us
Chip Kneavel	DelDOT, Planning	(302) 760-2527	Thomas.kneavel@delaware.gov
Paul Moser	DelDOT, Planning	(302) 760-2114	Paul.moser@state.de.us
Marvin Pedigo	DelDOT, Safety	(302) 894-6357	Marvin.Pedigo@state.de.us
MaryAnn Summers	Route 41 Representative	(302) 998-2278	s_type@comcast.net
Sean Walsh	Route 48 Representative	(302) 353-8282	virtualbk@comcast.net
Owner's Representative			
Mark Luszc	DelDOT, Chief Traffic Engineer	(302) 659-4062	mark.luszc@state.de.us
Other Attendees			
Meaghan Barna	DelDOT, Public Relations		Meaghan.barna@delaware.gov
Anthony Bernadowski	Leg. Asst. – Senate		Anthony.bernadowski@delaware.gov
Anthony Delcollo	Senator, 7 th District		Anthony.delcollo@delaware.gov
Tammie Kanich	Leg. Asst. – House		Tammie.Kanich@delaware.gov
David Sokola	Senator, 8 th District		senatordave@live.com
Kylie Snyder	RK&K		ksnyder@rkk.com

AGENDA

1. Welcome & Introductions

Jim Burnett (RK&K) welcomed everyone to the Road Safety Audit (RSA) Meeting #3. Jim reminded attendees that the purpose of the RSA is to identify existing safety concerns and recommend safety improvements on each corridor. The recommendations are coming from the engineering team with input from the RSA team members. Jim noted that although the RSA was one recommendation from the Senate Resolution #10 (SR 10) Special Committee, the scope of the RSA is not a continuation of the SR 10 Committee. Jim reminded everyone that the RSA is focused on safety for all road users. The RSA team held two previous meetings, as well as a bus tour in 2018. Meeting attendees introduced themselves, including their organizational affiliation.

2. SR 10 Status Updates

Mark Luszc reviewed the SR 10 recommendations that were directed to DelDOT, including work completed to date. Updates were summarized in the meeting material that was distributed at the start of the meeting for team members' notebooks.

New updates since the last meeting include a recommended school speed zone with 20 mph speed limit on Graves Road for Cooke Elementary School; proposed reduced speed limits on portions of SR 7, SR 41, and SR 48; a proposed traffic signal at SR 48 and Old Wilmington Road; and, recommendations for two virtual weigh station sites entering Delaware from Pennsylvania, one on SR 7 and one on SR 41. Mark and Peter Haag indicated that work orders for the school speed zone and reduced speed limits will be submitted so that new signs can be installed before school starts. The proposed traffic signal at SR 48 and Old Wilmington Road is currently in design and is expected to be operational in FY 2020 (e.g., prior to summer 2020). There is no schedule for the virtual weigh stations. Other ongoing activities include paving work on SR 7 using quiet pavement, research on the effectiveness of radar speed signs, and enhanced truck enforcement on all three corridors.

3. Review of Road Safety Audit (RSA) Process

Jim reviewed the presentation from the Kickoff Meeting about the RSA process. Jim explained how safety improvements were identified by the technical team based on input received from the RSA team at prior meetings and the bus tour. Jim also thanked all RSA team members for following safety protocols during the bus tour.

4. Present & Discuss Potential Short-Term Safety Improvement Options

Prior to presenting short-term improvement options, Jim provided an overview of concepts the technical team considered but ultimately decided not to recommend, including extensive tree clearing along large sections, widening along SR 41 between Milltown Road and Faulkland Road, speed limit changes (beyond the ones already being recommended by the SR 10 study – although Jim noted that the technical team will endorse those reduced speed limits), and improvements to the SR 7 and Milltown Road intersection. During discussion of options not recommended, it was noted that there are invasive species, particularly the Bradford Pear tree, that should be removed for reasons in addition to road safety.

Jim then led discussion of the proposed short-term recommendations, each consisting of signs, markings, flex posts, and other low-cost improvements. A bulleted list of proposed improvements as well as graphics and renderings depicting each were included in the meeting material. Notes from the discussion are summarized below (not all options resulted in extensive discussion):

4. Pedestrian Crossing Signs – Concerns were expressed regarding existing bus stops with suggestions to only have a stop on one side of the road and/or consolidate stops. At most locations, there is a bus stop in each direction. Although some stops only serve small numbers of people, consolidating bus stops could be quite impactful for those individuals, particularly elderly riders. There was also discussion about providing marked crosswalks. Jim indicated that the team considered the use of marked crosswalks versus warning signs in various locations, but there is a concern that marked crosswalks may provide a false sense of security. MaryAnn Summers noted that a crossing is needed at SR 41 and Milltown Road to serve students crossing SR 41 to get to the bus for Delaware Military Academy.

Action Item: RK&K to develop recommendation to accommodate students crossing SR 41 at Milltown Road that could be implemented before potential long-term reconfiguration.

5. Bus Pads – The rendering discussed at the meeting shows a bus pad that does not include sidewalks on either side. Jim noted that the technical team worked with DTC on their plans for providing bus pads. The RSA team would like to include ADA ramps/curbs and sidewalks to connect the bus pads to other features, which would likely be mid-term, rather than short-term, improvements.

Action Item: RK&K to explore providing sidewalk connections at least from the bus pads to the nearest side street as well as ADA ramps/curbs.

6. Bicycle Markings and Signs – There are several recommendations intended to increase connectivity of bicycle features along all three corridors.

Mark noted that DelDOT often receives requests to “flip” lane use at existing locations with bypass lanes to provide dedicated turn lanes; however, this condition would be less safe for bicyclists than the existing bypass lanes. If there is available width, separate turn lanes and wide shoulders for bicyclists would be preferred.

Action Item: RK&K to include mid- or long-term recommendations to provide roadway widening at one or more locations with existing bypass lanes, to provide exclusive turn lanes instead of bypass lanes.

Paul Moser noted that there are often extremely long right-turn lanes that include multiple access points and suggested that converting more of these entrances to right-in, right-out could help make things safer for bicyclists. However, this could also result in multiple sub-standard right-turn lanes and create weaving issues.

Action Item: RK&K to consider right-in, right-out access changes, additional flex post locations, and off-line paths on an entrance-by-entrance basis.

The Pave & Rehab project on SR 7 between SR 72 and SR 2 includes the segment between Skyline Drive and New Linden Hill Road specifically called out for reduced lane widths. Other locations may also be covered under this project.

Action Item: RK&K to coordinate on signing and striping plans for the Pave & Rehab project to incorporate any potential bicycle improvements.

Paul asked whether it would be possible to connect from the proposed Maple Ave detour parallel to SR 41 to trails within Brandywine Park to connect to Faulkland.

Action Item: RK&K to explore potential ways to leverage existing trails within Brandywine Park.

MaryAnn expressed concerns about pedestrians crossing the right-turn lane from the sidewalk to the raised concrete channelizing island to access the push button to cross Faulkland Road at SR 41 near Brandywine Park.

Action Item: RK&K to explore methods to increase pedestrian safety at the channelized right-turn at SR 41 and Faulkland Road.

7. Channelization Improvements at SR 7 at Carrie Drive – Peter noted that a work order has already been prepared to provide a bicycle lane on the far side.

Action Item: RK&K and DelDOT to coordinate so that RSA recommendations are consistent with the work order.

9. Signal Ahead Sign at SR 7 approaching Arundel Drive – Peter requested that the warning sign be placed on both sides of the roadway.

Action Item: RK&K to include a second warning side within the median in the recommendations.

20. Right Turn on Red Restriction at SR 41 at Jackson Avenue – During discussion about the need for a crossing from Milltown Road to the gas station, it was determined that this would be a mid-term improvement because ADA ramps and a pedestrian signal would be necessary.

Action Item: RK&K to provide mid-term recommendation for SR 41 at Milltown Road focused on pedestrian crossing(s).

23. Drainage Study at SR 41 at SR 2 – During discussion it was noted that the channelized islands have been repaired several times. It was also noted that the right-turn lanes have a small radius which might be an issue for off-tracking which could be the cause of damage.

30. Sign Modifications at SR 48 at Hickory Spring Road – Peter requested that the team keep the WATCH FOR TURNING TRAFFIC signs but add plaques and repair the white on green street name signs.

Action Item: RK&K to modify recommendations to keep existing signs, but supplement with advance street name plaques and repair/relocate existing street name sign.

31. SR 41/SR48 Short-Term Improvements – Mark noted missing TO plaques for the route shields. Additional pavement markings may provide better guidance through intersection.

Action Item: RK&K to update figures to include TO auxiliary plaques and improved striping through intersection.

5. Present & Discuss Potential Mid- and Long-Term Safety Improvement Options

Prior to discussing individual recommendations, the group discussed the timelines/meanings of “short”, “mid” and “long” term. Mark stated that he would characterize short-term improvements as those that could be completed in less than 1 year, mid-term improvements could be completed in 1-3 years using available funding, and long-term improvements would generally be those that need to go through the CTP process and, therefore, would typically take 3+ years to complete. Mark noted that although the intent for any mid-term improvements would be to do them without going through CTP, if there were issues along the way, such as utilities and ROW, some might get deferred. The CTP process can take up to 10 years. Mark noted that several “short-term” improvements presented by the technical team would more likely be mid-term, such as lighting and guardrail improvements.

Action Item: RK&K to revise bulleted lists and graphics based on the proposed timelines: (1) short-term recommendations to be completed in less than 1 year, (2) mid-term improvements to be completed in 1-3 years, and (3) long-term improvements that would take longer than 3 years.

Jim led discussion of the proposed mid-term and long-term recommendations. The recommendations were depicted on large aerial roll maps. Notes from the discussion are summarized below:

Mid-Term Options 1 & 2 – Mark requested that these options be revised to include widening to provide exclusive turn lanes instead of the existing bypass lanes, which may require more extensive widening than that necessary for a wide shoulder/bicycle lane. This may push these options to “long-term”.

Action Item: RK&K to revise recommendations at SR 7 near Stenning Drive and Tims Lane to include exclusive turn lanes.

Long-Term Option 1 – Senator Delcollo noted that the recommendation to pursue internal access agreements would not be guaranteed to occur because it requires action from outside entities. Jim agreed that this is the case but suggested keeping the recommendation to provide some support for the changes during any subsequent discussion between agencies and property owners. Mark noted that there is an independent project underway to signalize the northbound right-turn at SR 7 and SR 2 which would remove the channelizing island. Marvin Pedigo also noted that there is a pedestrian improvement project planned for SR 2 at that location.

Mid-Term Options 6, 7B, and 12 should be moved to “long-term”.

Mid-Term 8B – There was a request to provide a full width sidewalk instead of a bump out around the utility pole. There are a number of other considerations, such as impacts to utilities, drainage, and ROW. There are no sidewalks upstream or downstream of this location.

Mid-Term Option 13 – It was noted that given the short-term recommendation to close access from Chapel Court to southbound SR 41 using flex posts, Mid-Term Option 13 should also include permanently closing the median with grass and curb.

Action Item: RK&K to update the bulleted list and graphics to permanently close the median to close access from Chapel Court to southbound SR 41.

Long-Term Option 4 (SR 41/48 Split) – Jim presented 5 concepts to the group and asked for feedback that could be included with the final recommendations. The group discussed variables that would be considered before the final decision including traffic operations, impacts to the environment, and cost. It was noted that the roundabout would likely have the most calming effects on speed but may also be the most difficult to build and may have a fatal flaw – the potential for queues to back up into the roundabout from downstream signals. It was noted that the Traditional T option in which SR 41 tees into SR 41/SR 48 may be the easiest to build because it is mostly along the existing pavement. A retaining wall may be necessary for some options because there is a steep slope with guardrail along southbound SR 41 under existing conditions. The group also discussed eliminating continuous green T options from consideration because the focus of the RSA is on safety; the continuous green T is an operational improvement on the

traditional T and the traditional T would likely slow vehicles more. In the future, the planning/design teams may consider operational improvements to traditional intersections, such as a continuous green T.

Action Item: RK&K to revise recommendation to only include concepts of Traditional T intersections (2 concepts with different alignments) and the hybrid roundabout.

6. Closing

Jim opened up discussion about whether the group would like to meet again after the technical team has revised the recommendations per the discussion at the meeting, or if the group would prefer to receive the final recommendations when the report is submitted to DelDOT. Jim reminded the group that the recommendations will officially come from the technical team using their best engineering judgement based on the input received from the RSA team. The group consensus was that Jim could provide additional information to the RSA team via email and that this would be the final in-person RSA meeting. Jim and Mark both thanked all attendees for being part of the team and the RSA process.

SR 7, SR 41, and SR 48 Road Safety Audit

July 9, 2019

2:00 pm – 5:00 pm

DelDOT's Canal District Office Building

250 Bear-Christiana Road Bear, DE 19701

AGENDA

Start Time

1. Welcome & Introductions (10 min) 2:00 PM
2. SR 10 Status Updates (20 min)
3. Review Road Safety Audit (RSA) Process (15 min)
4. Present & Discuss Potential Short-Term Safety Improvement Options (1 hr)
5. Present & Discuss Potential Mid- and Long-Term Safety Improvement Options (1 hr)
6. Closing – Next Meeting (Final Report) (15 min)
7. Adjourn 5:00 PM



**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

Status Update as of 6/3/19 (for DeIDOT-led Recommendations)

Recommendation	Status
1. Conduct a feasibility study of constructing a bypass between US 1 and I-95	Given the size, scope, and bi-state nature of this study, we believe it is premature to begin work on this effort without explicit direction from the General Assembly, and a formal recommendation from a bi-state working group such as the one recommended in Item 23.
2. Conduct a feasibility study of constructing a passenger and freight rail spur from Wilmington that parallels the SR 41 corridor, including impacts to SR 7, SR 41, and SR 48	Same response as Item 1.
3. Conduct a feasibility study of constructing a dedicated freight line along the NE corridor from Perryville, MD to Newark, DE	Given the size, scope, and bi-state nature of this study, we believe it is premature to begin work on this effort without explicit direction from the General Assembly.
4. Conduct a feasibility study of restricting trucks on SR 7, SR 41 and SR 48 during specified times, in specified directions, and based on loaded vs. unloaded conditions, determining impacts to, and improvements needed, on alternate routes	DeIDOT Study Underway. Data Collection Ongoing. <i>Expected Completion: Summer 2019</i>
5. Conduct a feasibility study for improvements to the SR 896 corridor, including a potential alternate parallel route, to encourage trucks to use I-95 to SR 896	Same response as Item 3.
6. Perform a Road Safety Audit on SR 7, SR 41 and SR 48	DeIDOT Study Underway. Bus Tour held on December 11, 2018 <i>Expected Completion: Fall 2019</i>
7. Perform a traffic engineering study to implement a school speed limit zone on SR 41 near Cooke Elementary School	DeIDOT Study Complete. No school speed zone recommended on SR 41. School speed zone with 20 mph speed limit recommended on Graves Road.
8. Perform a traffic engineering study to determine appropriate speed limits on SR 7, SR 41, and SR 48	DeIDOT Study Complete. Lower speed limits proposed on portions of SR 7, SR 41 and SR 48.
9. Continue to study options described in the 2016 Delaware Valley Regional Planning Commission (DVRPC) Chester County New Castle County Transit Study	There were two general recommendations from the study: limited bus service from Wilmington to West Chester and van pools. Bus service was not recommended on SR 41 or SR 48. We will continue to monitor the options and this effort should be part of the work of the bi-state working group recommended in Item 23.
10. Consider the use of quiet pavement technology on SR 7, SR 41 and SR 48	DeIDOT Implementing Quiet Pavement on SR 7, from SR 72 to Kirkwood Highway, under Pave & Rehab contract T201606118. The project is expected to start construction in Summer 2019.
11. Relocate existing engine compression brake prohibition signs to downhill locations approaching signalized intersections	Signs fabricated and installed Project Complete - Summer 2018
12. Install engine compression brake prohibition sign with flashing beacons at PA state line	DeIDOT Studied Concept. Decision to install larger signs w/o flashing beacons. Signs fabricated and installed. Project Complete – Summer 2018

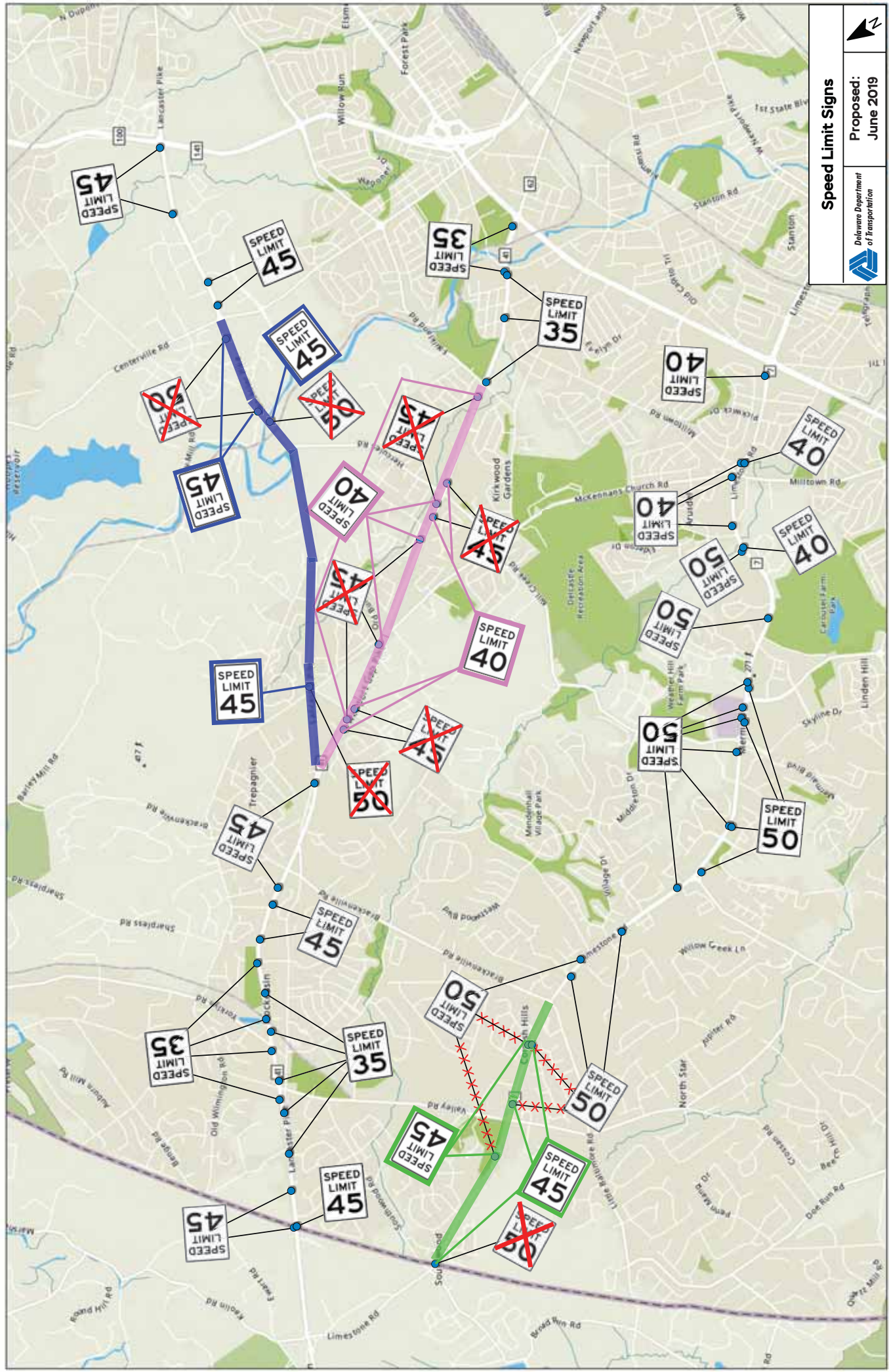
**Special Committee to Study and Make Recommendations
Regarding Truck Traffic and Freight Movements
Along SR 41, SR 48 & SR 7**

13. Conduct signal warrant studies for the following locations: SR 48 and Old Wilmington Road SR 48 and Courtney Road SR 48 and Harlech Drive/Hedgegrow Place SR 48 and Old Hobson Farm	DeIDOT Study Complete. Traffic Signal Resolution signed for SR 48 at Old Wilmington Road. Project is currently in Design phase. Traffic signals are not recommended at the other three intersections.
14. Install permanent YOUR SPEED XX MPH signs on SR 7, SR 41 and SR 48 and perform a “before” and “during” study to determine the effectiveness of these signs on arterial roadways over time	Dynamic Signs Purchased and Installed. “Before” Data Collection Complete. Signs Installed – September 2018 “After” Data Analysis: <i>In Progress</i>
15. Perform a traffic engineering study to determine any potential improvements for intersections on SR 7, SR 41 and SR 48 that are currently operating at LOS E or worse, based on WILMAPCO’s Congestion Management Program Results	DeIDOT Study Underway. Preliminary findings include additional lanes at 5 congested intersections. <i>Expected Completion: Summer 2019</i>
16. Provide additional enforcement of existing speed limits	This recommendation is for Delaware State Police.
17. Perform a study to identify feasible locations to install fixed virtual WIM stations on SR 7, SR 41 and SR 48	DeIDOT Study Complete. Recommendations for two (2) VWS Sites, one on SR 7 SB and one on SR 41 SB (north of split).
18. Increase the number of truck inspections	This recommendation is for Delaware State Police.
19. Recommend New Castle County Police increase enforcement of NCC Code Section 22.02.0008-B.2.a.i, which makes it unlawful to “race or gun any motor vehicle between the hours of 9:00 p.m. and 8:00 a.m.”	This recommendation is for New Castle County Police.
20. Increase enforcement of Delaware Code, Title 21 §4311(a), which makes it unlawful to “drive a motor vehicle, including a motorcycle, on a highway, including residential streets, unless such motor vehicle or motorcycle is equipped with a muffler in good working order and in accordance with manufacturer’s specifications and in constant operation to prevent excess or unusual noise.”	This recommendation is for Delaware State Police.
21. Increase enforcement of engine compression brake prohibition	This recommendation is for Delaware State Police.
22. Continue enhanced truck enforcement on SR 41 and SR 48, and expand enhanced truck enforcement to SR 7	DeIDOT continues to fund Delaware State Police with approximately \$100,000 for additional commercial vehicle enforcement on these corridors.
23. Establish a bi-state working/coordination group to discuss and address issues associated with regional freight movement. The working group should be comprised of representatives from DeIDOT, PennDOT, WILMAPCO, Delaware Valley Regional Planning Commission (DVRPC), Delaware State Police, Pennsylvania State Police, and other relevant stakeholders	Dialog between agencies in Delaware and Pennsylvania has been occurring. WILMAPCO and DVRPC coordinating data collection efforts along DE/ PA border in Spring/Summer 2019.
24. Request that existing legislation be re-written to bring Delaware’s truck length laws in-line with surrounding states	This recommendation is for the General Assembly.



Speed Limit Signs

Proposed:
June 2019



SR 7, SR 41, SR 48 Road Safety Audit
Tiered Safety Improvement Options
DRAFT --- July 9, 2019 --- DRAFT

Option Considered but NOT Recommended

1. Extensive tree clearing – Extensive cutting back could potentially increase speeds throughout the study area, which could present new safety issues. Selective tree trimming is recommended in some locations (see below).
2. Major widening – Carefully considered widening along SR 41 between Milltown Road and Harrison Avenue and SR 41 at Faulkland Road, but not recommending major widening from a road safety perspective at this time.
3. Speed limit reductions – Speed limit reductions are incorporated in other follow-up tasks from the SR 10 Committee’s recommendations.
4. Geometric modifications at SR 7 and Milltown Road – Feedback during the bus tour indicated that DelDOT’s previous improvements at this location have addressed past concerns.

Short-term Improvements (*signage, markings, flex posts, other low-cost improvements*)

1. Install centerline raised/recessed pavement markers (RPMs) on two-lane undivided portions of SR 7 & SR 41 (SR 48 has centerline RPMs)
 - Along SR 7 between Valley Road and Pennsylvania State Line
 - Along SR 41 between Washington Avenue and SR 41/SR 48 Split
 - Along SR 41 between Valley Road and Pennsylvania State Line
2. Guardrail improvements
 - Provide guardrail farther north along SB SR 41 between Faulkland Road and Harrison Avenue (critical slope not protected)
 - See **Table 1** at end of document for locations with identified barrier issues
 - General: Provide reflective delineators on W-beam to improve visibility at night
 - Note: A more comprehensive evaluation would be needed to determine if existing end treatment taper rates and barrier mounting heights are appropriate, identify critical foreslopes/backslashes requiring protection, and determine if posts are installed properly in mow strips where used. There are several locations where decorative monument signs and walls are located within clear zones.
3. Provide intersection lighting where criteria for lighting warrants are satisfied
 - Locations where the percentage of nighttime crashes is 40% or greater
 - SR 7 at Ascension Drive
 - SR 7 at Wagon Wheel Lane
 - SR 7 at Tims Lane
 - SR 41 near St. Mary Assumption Church / Coffee Run Shopping Center (near bus stop)
 - SR 41 at School House Road
 - SR 41 at McGovern Road
 - SR 41 at Arthur Drive
 - SR 41 at Ace Memorial Drive
 - SR 48 at Downs Drive

- SR 48 at Hickory Spring Road (Old Hobson Farm)
 - SR 48 at Coffee Run
 - Locations near public transit stops
 - SR 7 at near Pike Creek Sports Medicine and Professional Center (near bus stop)
 - Residential development entrances where the internal streets are lighted and there are at least 75 homes
 - SR 7 at Hockessin Drive
 - SR 7 at Sheringham Drive
 - SR 7 at Stenning Drive
 - SR 41 at Breckenridge Drive
 - Residential development entrances where there are at least 100 homes (may install)
 - SR 41 at Kenmore Drive
 - SR 48 at Hampton Way
- 4. Provide W11-2 Pedestrian Crossing signs at locations with unmarked crosswalks near bus stops
 - SR 7 near Pike Creek Sports Medicine and Professional Center
 - SR 41 near Brackenville Road (alternatively, mark crosswalk at intersection)
 - SR 41 near St. Mary Assumption Church / Coffee Run Shopping Center
 - SR 48 near Downs Drive
 - SR 48 near Hedgerow Place/Harlech Drive
 - SR 48 near Westgate Drive
 - SR 48 near Coffee Run
- 5. Provide ADA compliant bus pads
 - NB SR 7 north of Milltown Road
 - SB SR 7 near Pike Creek Sports Medicine and Professional Center
 - NB SR 41 north of Brackenville Road
 - SB SR 41 south of Brackenville Road
 - NB SR 41 north of Hockessin Community Center
 - EB SR 48 near Downs Drive
 - EB SR 48 near Weston Senior Living Center
 - EB SR 48 near Westgate Drive
 - WB SR 48 near Westgate Drive
 - WB SR 48 near Coffee Run
 - EB SR 48 east of Loveville Road (missing sign)
- 6. Provide bicycle marking improvements on all three corridors
 - A. Update pavement markings to match DE-MUTCD Figure 9C-4B for bicycle lane treatment at a right-turn only lane with shoulder on “Suggested Connector” bicycle routes
 - NB SR 7 approaching Weatherhill Drive
 - NB SR 7 approaching Ocheltree Lane
 - SB SR 7 approaching Steven Lane
 - SB SR 7 approaching Ferris Drive
 - SB SR 7 approaching Skyline Drive
 - SB SR 7 approaching Greenwood Drive
 - SB SR 7 approaching Old Linden Hill Road

- SB SR 7 approaching Limestone Road
 - SB SR 7 approaching Hopkins Drive
 - SB SR 7 approaching Arundel Drive
 - NB SR 41 approaching Wilmington & Western Railroad Parking Lot Access
 - NB SR 41 approaching Greenbank Road
 - NB SR 41 approaching Washington Avenue
 - NB SR 41 approaching Faulkland Road
 - NB SR 41 approaching Winterbury Circle
 - NB SR 41 approaching Loveville Road
 - NB SR 41 approaching entrance to Hockessin KinderCare
 - NB SR 41 approaching Withers Way / Old Lancaster Pike
 - NB SR 41 approaching Brackenville Road
 - SB SR 41 approaching Breckenridge Drive
 - SB SR 41 approaching Greenbank Road
 - SB SR 41 approaching SR 2
 - WB SR 48 approaching Courtney Road
 - WB SR 48 approaching Hedgerow Place
 - WB SR 48 approaching Centerville Road
 - WB SR 48 approaching Hampton Way
 - EB SR 48 approaching Coffee Run
 - EB SR 48 approaching Hercules Road
 - EB SR 48 approaching Centerville Road
 - EB SR 48 approaching Little Falls Drive
 - EB SR 48 approaching Harlech Drive
 - EB SR 48 approaching Weston Senior Living Center
 - EB SR 48 approaching Downs Drive
 - EB SR 48 approaching SR 141
- B. Update pavement markings to match DE-MUTCD Figure 9C-4C for bicycle lane treatment at a right-turn only lane with shoulder on “Regional” bicycle routes
- NB SR 7 approaching Vincent Lane
 - NB SR 7 approaching Wagon Wheel Lane
 - NB SR 7 approaching Village Drive
 - NB SR 7 approaching Mendenhall Mill Road
 - NB SR 7 approaching Hockessin Drive
 - NB SR 7 approaching Brackenville Road
 - NB SR 7 approaching Sheringham Drive
 - NB SR 7 approaching Lantana Drive
 - NB SR 7 approaching Valley Road (upstream of shopping entrance)
 - SB SR 7 approaching Tims Lane
 - SB SR 7 approaching Valley Road
 - SB SR 7 approaching Little Baltimore Road
 - SB SR 7 approaching Haileys Trail
 - SB SR 7 approaching Ennis Drive
 - SB SR 7 approaching Carrie Drive

- C. Provide bicycle lane markings with helmeted bicyclist symbols and directional arrows across painted channelizing islands as well as downstream “target” helmeted bicyclist symbols and directional arrows in wide shoulders on departure sides of intersections (See SB SR 7 at entrance to St. Philips Lutheran Church for example)
- NB SR 7 at Concord Drive
 - NB SR 7 at Stoney Batter Road
 - NB SR 7 at Ocheltree Lane
 - NB SR 7 at Vincent Lane
 - NB SR 7 at Mendenhall Mill Road
 - NB SR 7 at Hockessin Drive
 - NB SR 7 at Brackenville Road
 - NB SR 7 at Sheringham Drive
 - NB SR 7 at Lantana Drive
 - NB SR 7 at shopping entrance south of Valley Road
 - NB SR 7 at Valley Road
 - SB SR 7 at Valley Road
 - SB SR 7 at Farm Meadows Lane
 - SB SR 7 at Little Baltimore Road
 - SB SR 7 at Ennis Drive
 - SB SR 7 at Paper Mill Road
 - SB SR 7 at Steven Lane
 - SB SR 7 at Skyline Drive
 - SB SR 7 at New Linden Hill Road
 - NB SR 41 at Greenbank Road
 - NB SR 41 at Faulkland Road
 - NB SR 41 at entrance to Hockessin KinderCare
 - NB SR 41 at Mitchell Road
 - NB SR 41 at shopping entrance south of Yorklyn Road
 - SB SR 41 at shopping entrance south of Yorklyn Road
 - SB SR 41 at Breckenridge Drive
 - SB SR 41 at Greenbank Road
 - WB SR 48 at Courtney Road
 - WB SR 48 at Hedgerow Place
 - WB SR 48 at Centerville Road
 - WB SR 48 at Hampton Way
 - EB SR 48 at entrance to Hockessin KinderCare
 - EB SR 48 at Coffee Run
 - EB SR 48 at Hercules Road
 - EB SR 48 at Centerville Road
 - EB SR 48 at Little Falls Drive
 - EB SR 48 at Harlech Drive
 - EB SR 48 at Weston Senior Living Center
 - EB SR 48 at Downs Drive

- D. Provide pavement markings similar to the reverse of DE-MUTCD Figure 9C-4B with dashed lines along the end of acceleration lane tapers on all three corridors
 - NB SR 7 at Ocheltree Lane
 - SB SR 7 at New Linden Hill Road
 - SB SR 7 at Old Linden Hill Road
 - SB SR 7 at Limestone Road
 - NB SR 41 at SR 2
 - NB SR 41 at Graves Road
 - SB SR 41 at Graves Road
 - WB SR 48 at SR 141
 - WB SR 48 at Centerville Road
 - EB SR 48 at Centerville Road
- E. Provide pavement markings similar to DE-MUTCD Figure 9C-4B where bypass lanes and climbing lanes begin and the shoulder typically used for bicycle travel narrows (i.e., where bicycles would travel in the lane)
 - NB SR 7 near Stenning Drive
 - SB SR 7 near Stenning Drive
 - NB SR 41 north of Brackenville Road
 - NB SR 41 near Lora Lane
 - WB SR 48 near Hickory Spring Road (Old Hobson Farm)
 - EB SR 48 near Hickory Spring Road (Old Hobson Farm)
- F. Provide additional confirming helmeted bicyclist symbols and directional arrows within wide shoulders along all three corridors
- G. NB SR 7 at Arundel Drive
 - Install helmeted bicyclist symbol and directional arrow within designated bicycle lane near stop bar at Arundel Drive
- H. SB SR 7 between Lantana Drive and Farm Meadows Lane (near Sheringham Drive and Massafferri Way)
 - Perform a geometric review to determine if a 4-ft wide shoulder could be created by restriping alone, or if minor widening (which would likely require slope stabilization and moving the guardrail) is needed
- I. SB SR 7 between Skyline Drive and New Linden Hill Road
 - Restripe all lanes (currently approximately 12-ft wide) to narrower widths (11.5-ft wide) to create a 4-ft to 5-ft wide shoulder with bicycle lane markings
- J. SR 41 between Washington Avenue and Harrison Avenue
 - Install Bicycle Route Guide signs in DE-MUTCD Figure 9B-4 to provide an alternate route for bicyclists:
 - NB – direct bicyclists to turn right onto Washington Avenue, turn left onto Maple Avenue (which parallels SR 41), then turn left onto Harrison Avenue to return to NB SR 41
 - SB – direct bicyclists to turn left onto Harrison Avenue, turn right onto Maple Avenue (which parallels SR 41), then turn right onto Washington Avenue to return to SB SR 41

- K. SB SR 41 between Withers Way and Sanford School entrance
 - Shorten acceleration lane to eliminate pinch point for bicycles
- L. NB SR 48 @ Loveville Road
 - Shorten taper for northbound right-turn lane and update pavement markings to match DE-MUTCD Figure 9C-4B
 - Provide W11-1DE Bicycle IN LANE sign along NB SR 41, north of intersection
 - Provide dashed line where wide shoulder for bicycles begins
 - Perform a geometric review of the cross-section of SR 48 adjacent to the property on the northwest corner of SR 48 @ Loveville Road to determine the feasibility of providing a 4-ft to 5-ft wide paved shoulder/bicycle lane; This will likely require coordination with the adjacent property owner
- M. SB SR 48 from west of Coffee Run to Old Wilmington Road
 - Perform a geometric review to determine if a 4-ft to 5-ft wide shoulder could be created in both directions by restriping alone, or if minor widening (which would likely require modifications to the adjacent drainage channel and moving a short segment of guardrail) is needed
- 7. SB SR 7 @ Carrie Drive
 - Paint channelizing markings for Right-in, Right-out at Carrie Drive (median prevents left turns); install flex posts within channelizing markings
 - Extend edge line and bike lane from Carrie Drive to existing SB SR 7 edge line and bike lane
- 8. SB SR 7 @ Vincent Lane
 - Move R1-1 Stop Sign along turn lane, so as to not face SB SR 7 through traffic
 - Remove R4-7 Keep Right sign from channelizing island
- 9. SB SR 7 approaching Arundel Drive
 - Provide W3-3 Signal Ahead sign upstream of Arundel Drive
- 10. SR 7 @ Pike Creek Sports Medicine and Professional Center
 - Modify channelizing painted markings to allow left-in from SB SR 7
 - Provide R3-2 No Left Turn sign from medical/professional center onto SR 7 (sign for right-out only)
- 11. SR 7 @ Midway Shopping Center
 - Replace any damaged existing flex-posts and install additional flex-posts in painted channelization between Midway Shopping Center and WSFS Bank
- 12. SR 7 @ SR 2
 - Perform drainage study for channelized right-turn lanes
- 13. SB SR 41 approaching Brackenville Road
 - Add ONLY pavement marking between lane use arrows (Arrow – ONLY – Arrow) in right-turn lane and provide R3-7 Right Lane Must Turn Right sign
 - Relocate the Destination sign and Recreational and Cultural Interest Area sign
- 14. NB SR 41 north of Brackenville Road
 - Provide W11-1DE Bicycle IN LANE sign north of Walgreens access

15. SR 41 @ Old Lancaster Pike
 - Re-stripe end of painted median to round off median to eliminate appearance of tapers for northbound and southbound left-turn lanes
 - Provide W11-1 Bicycle Warning sign for SB Old Lancaster Pike to SB SR 41
16. SR 41 @ Sanford School
 - Re-position signal heads and/or provide hoods for SB SR 41 and Sunny Hill Lane signal heads so that they are not visible to conflicting traffic approaches
 - Replace upward diagonal arrow red signal indication for NB SR 41 left-turn lane at Sanford School with left arrow indication
 - Establish School Zone along SR 41 between Withers Way and Sanford School entrance and provide S1-1 School Zone and S5-2 End School Zone signs in each direction
17. SB SR 41 approaching Loveville Road
 - Provide W3-3 Signal Ahead warning sign
18. SR 41 @ Hercules Road
 - Remove R1-2 Yield signs on corners that do not have channelized right-turns (NE and SW quadrants)
19. SB SR 41 between Millcreek Road and Faulkland Road
 - Provide W21-9-DE Watch for Turning Traffic sign in southbound direction upstream of driveways
 - Provide W3-5 Reduced Speed Limit Ahead signs north of Faulkland Road
20. SR 41 @ Milltown Road
 - Prohibit RTOR from Jackson Avenue (limited sight distance)
21. SR 41 @ Greenbank Road
 - Flex post out painted channelized islands to further enforce right-out only along EB SR 48
 - Paint bicycle pavement markings for a painted channelizing island (See Option 6C above)
22. SR 41 between Greenbank Road and Kirkwood Highway
 - Incorporate traffic calming by providing buffered bicycle lanes along wide shoulders to help reduce speeds entering residential area north of Greenbank Road
23. SR 41 @ SR 2
 - Perform drainage study for channelized right-turn lanes
24. EB SR 48, approximately 700 ft east of Centerville Road
 - Provide R3-18 No U-Turn/No Left Turn sign at median opening for WB SR 48 U-turn (position sign facing EB SR 48 traffic)
25. WB SR 48, approximately 300 ft west of Hampton Way
 - Provide R3-18 No U-Turn/No Left Turn sign at median opening for EB SR 48 U-turn (position sign facing WB SR 48 traffic)
26. EB SR 48 @ Hedgerow Place
 - Modify channelizing painted markings to allow left-in from EB SR 48
27. EB SR 48 approaching Centerville Road
 - Provide W3-3 Signal Ahead sign on median side of EB SR 48 upstream of Centerville Road (provide on both sides of roadway, existing sign on right side)
28. SR 48 approximately 1,000 ft east of Hercules Road
 - Provide black contrast pavement markings on concrete bridge

29. SR 48 along curve west of Hercules Road
 - Selective tree trimming
 - Provide post mounted delineators along curb on south side of SR 48 throughout area with tree canopy
30. SR 48 @ Hickory Spring Road (Old Hobson Farm)
 - Provide W2-2 Side Road signs with street name plaques approaching Hickory Spring Road
 - Relocate the existing Watch for Turning Traffic sign in the westbound direction
 - Replace W11-1 Bicycle sign facing EB SR 48 with W11-1DE Bicycle IN LANE sign and move farther upstream of start of bypass lane
31. SR 48 @ Loveville Road
 - Provide W11-2 Pedestrian Crossing signs with diagonal downward pointing arrow W11-9 plaques on either side of the marked crossing across the channelized right turn from NB Loveville Road to EB SR 48
 - Relocate the R1-2 Yield sign posted on the right side further downstream of the yield
 - Perform drainage study at northwest corner along painted channelized right-turn from SB Loveville Road to WB SR 48
32. SR 41/ SR 48 Split
 - Remove access from Chapel Court to SB SR 41 and use flex posts to close off the small median between SB SR 41 and SB SR 48; reroute vehicles turning left from Chapel Court to SB SR 41 toward SB SR 48, then south to Loveville Road, and west to Graves Road
 - Move R1-1 Stop sign for cul-de-sac to appropriate location in median between SR 41 northbound and SR 41 southbound and install stop bar
 - Install W9-1 Right Lane Ends sign with supplemental Beyond Signal plaque along NB SR 41 approaching the split
 - Install R4-7 Keep Right sign along NB SR 41 at the split
 - Install W1-6L One Direction Large Arrow and supplemental Type 4 OM4-3 object markers just east of Chapel Court facing NB SR 41 traffic to provide additional emphasis and guidance for through traffic on NB SR 41 along curve

Mid-term Improvements (*lighting, guardrail, shoulder widening, minor access changes*)

1. NB SR 7 approaching Stenning Drive
 - Widen shoulder to create 4-ft to 5-ft wide shoulder/bicycle lane where truck climbing lane begins
 - At NB SR 7 @ Stenning Drive, provide pavement markings to match DE-MUTCD Figure 9C-4C for bicycle lane treatment at a right-turn only lane with shoulder
2. NB SR 7 from south of Tims Lane to the PA State Line
 - Widen shoulder to create a 4-ft to 5-ft wide shoulder/bicycle lane through the SR 7 @ Tims Lane intersection to the PA State Line
3. SB SR 7 @ Ascension Drive
 - Partially remove median to extend left-turn bay

4. NB SR 41 from north of Brackenville Road to south of Mitchell Road
 - Widen shoulder along truck climbing lane to provide 4-ft to 5-ft wide shoulder/bicycle lane
 - This will require modifications to drainage inlets and may also impact the slope adjacent to the shoulder
5. SR 41 @ Sanford School
 - Re-design signal with mast arms and include back plates
6. SR 41 @ Graves Road
 - Pull back curb line/guardrail to provide wide shoulder in NB direction for bicycles to use shoulder
7. SR 41 @ Loveville Road
 - Re-design signal with mast arms and include back plates – Design is complete, and project was handed off to Signal Construction for implementation in February 2019
 - As part of signal re-design, modify curb line to provide necessary width to continue SB bicycle lane through the intersection; mark bicycle lanes to match DE-MUTCD Figure 9C-4A (approaching) and DE-MUTCD 9C-1B (departing) through the intersection
8. SR 41 @ Milltown Road
 - Replace passive Signal Ahead 800 ft sign (with flashing beacons) located just north of Harrison Avenue with an active W3-3-DE Red Signal Ahead When Flashing sign
 - Bump out curb to surround utility pole north of signal
9. SR 48 @ Hercules Road
 - Re-design signal with mast arms and include back plates
10. EB SR 48 approaching Hercules Road
 - Install W3-4 Be Prepared to Stop sign with W16-13P When Flashing plaque and active beacons
11. WB SR 48 between Hickory Spring Road and Stratton Drive
 - Provide lighting near lane reduction (utility poles on south side of roadway)
12. EB SR 48 between Stratton Drive and Hercules Road
 - Widen shoulder to provide 4-ft to 5-ft wide shoulder/bicycle lane
 - This will require modifications to the adjacent drainage channel and may also impact the slope adjacent to the drainage channel
13. SR 41/ SR 48 Split
 - Partially remove curbed channelizing islands to provide wide shoulders throughout intersection to accommodate bicycle movements, in particular NB SR 41 through and NB SR 48 to SB SR 41

Long-term Improvements *(signal re-designs, major access changes to businesses)*

1. SR 7 @ SR 2
 - Channelize SB SR 7 double left-turn lanes to prevent right-turns from Midway Shopping Center and/or WSFS Bank into left-turn lane(s)
 - Close right-in access on SB SR 7 to WSFS bank and reroute vehicles to existing right-in access on SR 2 (right-turn from SB SR 7 to WB SR 2 into WSFS)
 - Pursue internal access agreements to close one or more access points to/from Midway Shopping Center and/or WSFS Bank on SB SR 7

2. SR 41 @ Old Lancaster Pike
 - Perform operational feasibility study to eliminate left-turn from NB SR 41 onto Old Lancaster Pike and reroute vehicles to left-turn at Brackenville Road
 - Move access to Well Coffeehouse farther south and/or pursue connections with Old Lancaster Pike to provide more separation between NB SR 41 left-turn to Old Lancaster Pike and SB SR 41 left-turn to coffeehouse
 - Convert Old Lancaster Pike south access on NB SR 41 to right-in, right-out only and reroute left-turns to signal at Sunny Hill Lane
3. SR 41 @ Milltown Road
 - Perform feasibility study to re-align Milltown Road to form a 90-degree intersection with SR 41 and Jackson Avenue
 - Reclaim additional intersection space to provide pedestrian facilities
 - Considered mini-roundabout, but NOT recommended due to preliminary operational analysis results – LOS F on Milltown Road approach during AM peak and LOS F on NB SR 41 approach during PM peak
 - NOTE: The study of these potential options could be considered a short or mid-term improvement, but the construction falls more appropriately under long-term
4. SR 41 / SR 48 Split
 - Perform feasibility study to reconstruct SR 41 / SR 48 Split. Options include:
 - Traditional T: SR 41 into SR 41 / SR 48
 - Continuous Green T: SR 41 into SR 41 / SR 48
 - Traditional T: SR 48 into SR 41
 - Continuous Green T: SR 48 into SR 41
 - Hybrid Roundabout
 - Considered single-lane roundabout, but NOT recommended due to preliminary operational analysis results – LOS F
 - NOTE: The study of these potential options could be considered a short or mid-term improvement, but the construction falls more appropriately under long-term
 - NOTE: Further analysis should account for queue spillback from downstream signals at SR 41 and Sunny Hill Lane and SR 41 and Brackenville Road. This could be most impactful for the hybrid roundabout option.

Table 1: Guardrail Improvements

Corridor	Direction	Location	Barrier Issue	Image Link
SR 7	SB	250 ft north of Tims Ln	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/PR2PqavQfLE2
SR 7	NB	225 ft north of Tims Ln	Downstream end treatment is Type 2, but within SB clearzone. Consider installing Type 1 end treatment.	https://goo.gl/maps/PR2PqavQfLE2
SR 7	NB	375 ft south of Tims Ln	Consider protecting cabinet for ATR.	https://goo.gl/maps/WzVdFIa1LqE2
SR 7	SB	SW corner of Lantana Dr	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/jhWFEFSHzeIG2
SR 7	SB	375 ft south of Lantana Dr	Damaged.	https://goo.gl/maps/HdDjQXvdLm
SR 7	NB	NW corner of Arundel Dr	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/JcCYBwfbwA2
SR 7	SB	SW corner of Milltown Rd	Should be Type 1 end treatment.	https://goo.gl/maps/sDbatJf47UE2
SR 41	SB	SE corner of Valley Rd	Damaged.	https://goo.gl/maps/nVikWvSjG4n
SR 41	SB	750 ft south of Yorklyn Rd	Consider protecting rail crossing structure.	https://goo.gl/maps/pPoFTALcAnm
SR 41	NB	NE corner of Brackenville Rd	Damaged.	https://goo.gl/maps/Fkzww128p8T2
SR 41	SB	330 ft south of Sunny Hill Ln	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/wfN1QFcNFDC2
SR 41	NB	330 ft south of Sunny Hill Ln	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/vWLp8kETsaD2
SR 41	SB	41 / 48 split	Discontinuity.	https://goo.gl/maps/oTDFAwjKG12
SR 41	SB	41 / 48 split	Should be Type 1 end treatment.	https://goo.gl/maps/fBxo82p8vh32
SR 41	SB	600 ft south of split	Should be Type 1 end treatment.	https://goo.gl/maps/BSPI6BRfDav
SR 41	SB	1650 ft south of McKennans Church Rd	Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/qFgeuC5Xs9t
SR 41	NB	1750 ft south of McKennans Church Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/tmdK85KMhbo
SR 41	SB	2000 ft south of McKennans Church Rd	Damaged. Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/VT8mjcaM39N2
SR 41	SB	675 ft north of Cheltenham Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/DWq9tbgWkwt
SR 41	SB	150 ft north of Faulkland Rd	Should be Type 1 end treatment. Curb height should nose down.	https://goo.gl/maps/2LuuWceW3ME2
SR 41	SB	SW corner of Faulkland Rd	Damaged.	https://goo.gl/maps/UG7yXjWksVx
SR 41	NB	250 ft south of Greenbank Rd	Consider a Type 1 end treatment.	https://goo.gl/maps/zmhNvAgZiNo
SR 41	NB & SB	700 ft south of Greenbank Rd	Protect rail crossing cantilever structures.	https://goo.gl/maps/mHuibeTSvko
SR 48	WB	600 ft south of split	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/Gre1JbKecdy
SR 48	WB	750 ft north of Loveville Rd	Both should be Type 1 end treatments.	https://goo.gl/maps/b7Ms8RXG1a52
SR 48	WB	840 ft north of Old Wilmington Rd	Downstream end treatment is Type 2. Consider installing Type 1 end treatment.	https://goo.gl/maps/sGUzuGLeiiJ2
SR 48	WB	NW corner of Hercules Rd	Damaged.	https://goo.gl/maps/9KnKNWFEVhf52

**SR 7, SR 41, SR 48 Road Safety Audit
Tiered Safety Improvement Options**

July 9, 2019

SR 48	WB	550 ft east of Hercules Rd	Should be Type 1 end treatment.	https://goo.gl/maps/T63VihbUby32
SR 48	EB & WB	650 ft east of Hercules Rd	Protect rail crossing cantilever structures.	https://goo.gl/maps/bvnW2MgMQBQ2
SR 48	WB	1000 ft west of Hampton Way	Should be Type 1 end treatment.	https://goo.gl/maps/ugBomYHAvdC2
SR 48	EB	400 ft west of Hampton Way	Should be Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope.	https://goo.gl/maps/aLeM2Af9D6n
SR 48	EB	150 ft east of Hampton Way	Should be Type 1 end treatment. Looks to be short of length-of-need (LON) to protect steep foreslope. Damaged.	https://goo.gl/maps/2c74IZBvVHD2
SR 48	WB	500 ft west of Centerville Rd	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/ZA8KBHcPmvR2
SR 48	EB	675 ft west of Downs Dr	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/oEvD7UaktlQ
SR 48	EB	400 ft west of Downs Dr	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/VWextZq6WA32
SR 48	WB	340 ft east of Chestnut Run	Should be Type 1 end treatment. Curb should nose down.	https://goo.gl/maps/5PwgiAM7zdH2
SR 48	EB & WB	800 ft west of N. Dupont Rd	Protect rail crossing cantilever structures.	https://goo.gl/maps/w2w4BoWkwx22











Appendix B
Crash Summary Data

Appendix B.1
SR 7 from Pennsylvania to SR 2

Delaware Crash Analysis Reporting System

Crash Study Time Period:	1/1/2015 - 12/31/2017
Query Type:	CrashBufferTool
Description:	Crash Summary SR7 from PA to SR 2
Study Requested By:	Stephanie Everett- RKK
Study Generated By:	TDTSKLG
Number of Crashes:	464
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary		Classification			Manner of Impact		
	# of Crashes		# of Crashes	% of Total Crashes		# of Crashes	% of Total Crashes
Total Crashes	464				Front to rear	238	51.29%
Fatal Crashes	0	Non-Reportable	0	0.00%	Front to front	17	3.66%
Total Alcohol-Related Crashes	15	Reportable	391	84.27%	Angle	88	18.97%
Total Non Alcohol-Related Crashes	449	Personal Injury	73	15.73%	Sideswipe, same direction	44	9.48%
Total Fatalities	0	Fatality	0	0.00%	Sideswipe, opposite direction	1	0.22%
Total Pedestrian Fatalities	0	Total	464		Rear to side	0	0.00%
Total Pedestrian Injuries	1				Rear to rear	1	0.22%
Total Pedestrian Crashes	1				Other	0	0.00%
Total Motorcycle Crashes	3				Unknown	2	0.43%
Total Pedalcyclist Crashes	1				Not a collision between two vehicles	73	15.73%
					Total	464	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	Total
Alcohol Related	0	10	5	0	15
Non-Alcohol Related	0	381	68	0	449
Total	0	391	73	0	464

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	Total
Front to rear	0	209	29	0	238
Front to front	0	10	7	0	17
Angle	0	62	26	0	88
Sideswipe, same direction	0	42	2	0	44
Sideswipe, opposite direction	0	1	0	0	1
Rear to side	0	0	0	0	0
Rear to rear	0	1	0	0	1
Other	0	0	0	0	0
Unknown	0	2	0	0	2
Not a collision between two vehicles	0	64	9	0	73
Total	0	391	73	0	464

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Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	43	9.27%
Monday	60	12.93%
Tuesday	73	15.73%
Wednesday	88	18.97%
Thursday	82	17.67%
Friday	76	16.38%
Saturday	42	9.05%
Total	464	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	6	1.29%
01:00 - 01:59	4	0.86%
02:00 - 02:59	7	1.51%
03:00 - 03:59	2	0.43%
04:00 - 04:59	4	0.86%
05:00 - 05:59	7	1.51%
06:00 - 06:59	22	4.74%
07:00 - 07:59	30	6.47%
08:00 - 08:59	24	5.17%
09:00 - 09:59	24	5.17%
10:00 - 10:59	15	3.23%
11:00 - 11:59	19	4.09%
Total	164	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	38	8.19%
13:00 - 13:59	23	4.96%
14:00 - 14:59	24	5.17%
15:00 - 15:59	30	6.47%
16:00 - 16:59	35	7.54%
17:00 - 17:59	43	9.27%
18:00 - 18:59	32	6.90%
19:00 - 19:59	21	4.53%
20:00 - 20:59	17	3.66%
21:00 - 21:59	19	4.09%
22:00 - 22:59	11	2.37%
23:00 - 23:59	7	1.51%
Total	300	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	386	83.19%
Wet	68	14.66%
Snow	4	0.86%
Ice/Frost	1	0.22%
Sand	0	0.00%
Water (standing, moving)	1	0.22%
Slush	3	0.65%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	1	0.22%
Total	464	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	312	67.24%
Dawn	9	1.94%
Dusk	9	1.94%
Dark-Lighted	92	19.83%
Dark-Not Lighted	40	8.62%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	2	0.43%
Total	464	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	323	69.61%
Cloudy	86	18.53%
Fog, Smog, Smoke	0	0.00%
Rain	50	10.78%
Sleet, Hail (freezing rain or drizzle)	2	0.43%
Snow	6	1.29%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	1	0.22%
Other	0	0.00%
Unknown	0	0.00%
Total	468	

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First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	1	0.22%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	4	0.86%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.22%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.22%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed	28	6.03%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed	379	81.68%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	2	0.43%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.22%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	1	0.22%
Curb, Collision With Fixed Object	10	2.16%
Ditch, Collision With Fixed Object	1	0.22%
Embankment, Collision With Fixed Object	1	0.22%
Guardrail Face, Collision With Fixed Object	0	0.00%
Guardrail End, Collision With Fixed Object	0	0.00%
	0	0.00%

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Concrete Traffic Barrier, Collision With Fixed Object		
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	1	0.22%
Utility Pole, Collision With Fixed Object	1	0.22%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	1	0.22%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	0	0.00%
Mailbox, Collision With Fixed Object	1	0.22%
Other Post, Pole or Support, Collision With Fixed Object	1	0.22%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	2	0.43%
Illegally Parked Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	0	0.00%
Stopped Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	25	5.39%
Unknown, Collision With Fixed Object	2	0.43%
Total	436	

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Primary Contributing Circumstance		
	# of Crashes	% of Total Crashes
Speeding	2	0.43%
Failed to yield right of way	53	11.42%
Passed Stop Sign	1	0.22%
Disregard Traffic Signal	19	4.09%
Wrong side or wrong way	1	0.22%
Improper passing	1	0.22%
Improper lane change	20	4.31%
Following too close	66	14.22%
Made improper turn	4	0.86%
Driving under the influence	14	3.02%
Driver inattention, distraction, or fatigue	122	26.29%
Driving in a careless or reckless manner	61	13.15%
Driving in an aggressive manner	0	0.00%
Improper backing	1	0.22%
Other improper driving	4	0.86%
Mechanical defects	8	1.72%
Animal in Roadway - Deer	34	7.33%
Animal in Roadway - Other Animal	1	0.22%
Other environmental circumstances - weather, glare	6	1.29%
Roadway circumstances - debris, holes, work zone,	1	0.22%
Other	17	3.66%
Unknown	26	5.60%
Total	462	

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Driver Action		
	# of Drivers	% of Total Crashes
No Contributing Action	477	53.24%
Failed to yield right of way	52	5.80%
Ran Red Light	21	2.34%
Ran Stop Sign	1	0.11%
Disregard other traffic sign	0	0.00%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	5	0.56%
Made an improper turn	5	0.56%
Improper backing	1	0.11%
Wrong side or wrong way	1	0.11%
Followed too closely	72	8.04%
Failure to keep in proper lane	21	2.34%
Ran off roadway	2	0.22%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	104	11.61%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	1	0.11%
Over-correcting/over-steering	1	0.11%
Improper Passing	3	0.33%
Other Contributing Action	98	10.94%
Unknown	31	3.46%
Total	896	

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00031	3.65	10.55	2	0615000571	01/03/2015	13:13	7	0	1	N	01	04	02	13	11	03	01
N	122338	0	0.00	3	0615001235	01/06/2015	07:07	3	0	0	N	02	06	03	13	19	02	01
N	00031	5.75	5.75	1	0615001327	01/06/2015	09:29	3	0	0	N	01	06	03	13	19	02	00
N	00031	1.19	1.19	1	0615003782	01/15/2015	11:50	5	0	0	N	01	01	01	13	11	02	01
N	00031	4.12	4.12	1	0615004255	01/16/2015	21:57	6	0	0	Y	04	01	01	13	16	02	01
N	00031	1.33	1.33	1	0615004594	01/18/2015	00:48	1	0	0	Y	04	01	01	13	10	02	01
N	00031	6.79	6.79	1	0615005193	01/20/2015	07:28	3	0	0	N	01	02	01	12	17	02	00
N	00283	0	0.00	2	0615005652	01/21/2015	21:17	4	0	0	N	04	02	02	13	04	02	03
N	00031	1.3	1.30	1	0615005694	01/22/2015	06:55	5	0	1	N	02	01	02	42	08	03	01
N	00031	3.61	10.51	2	0615006020	01/23/2015	11:50	6	0	0	N	01	01	01	13	12	02	01
N	00031	5.79	12.69	2	0615006150	01/23/2015	18:20	6	0	0	N	04	02	01	13	99	02	01
N	00031	5.29	5.29	1	0615006575	01/25/2015	11:40	1	0	0	N	04	01	01	13	08	02	01
N	00031	3.63	10.53	2	0615007367	01/28/2015	16:19	4	0	0	N	01	01	01	42	11	02	01
N	00031	1.93	1.93	1	0615009597	02/05/2015	19:07	5	0	0	N	04	01	01	13	11	02	01
N	00283	0	0.00	2	0615009601	02/05/2015	19:28	5	0	0	N	04	01	01	13	04	02	02
N	00031	1.63	1.63	1	0615009631	02/05/2015	22:32	5	0	0	N	04	01	01	13	88	02	03
N	00031	5.88	12.78	2	0615010144	02/07/2015	19:10	7	0	0	N	04	01	01	13	02	02	03
N	00031	2.58	9.48	2	0615010639	02/09/2015	23:48	2	0	0	N	05	05	04	32	12	02	00
N	00031	3.64	10.54	2	0615010965	02/11/2015	08:19	4	0	0	N	01	01	01	13	11	02	01
N	00031	4.65	11.55	2	0615011618	02/13/2015	13:13	6	0	0	N	01	01	01	13	11	02	01
N	00031	5.75	5.75	1	0615011758	02/13/2015	21:38	6	0	1	N	04	01	01	13	02	03	03
N	00031	4.1	11.00	2	0615013676	02/20/2015	13:23	6	0	0	N	01	01	01	42	08	02	04
N	00031	5.49	12.39	2	0615013881	02/21/2015	07:47	7	0	0	N	01	01	01	13	03	02	03
N	00031	5.75	5.75	1	0615016350	03/01/2015	15:10	1	0	1	N	01	05	07	13	11	03	03
N	00031	5.07	11.97	2	0615017250	03/04/2015	18:23	4	0	0	N	04	04	02	13	02	02	03
N	00031	1.68	8.58	2	0615018349	03/08/2015	16:22	1	0	0	N	01	01	01	13	12	02	04
N	00031	4.96	11.86	2	0615018861	03/10/2015	14:36	3	0	0	N	01	04	02	24	12	02	03
N	00031	3.6	10.50	2	0615019381	03/12/2015	12:16	5	0	0	N	01	01	01	13	11	02	01
N	00031	1.19	1.19	1	0615020854	03/17/2015	17:22	3	0	0	Y	01	01	01	13	10	02	01
N	00031	2.83	2.83	1	0615021379	03/19/2015	16:35	5	0	0	N	01	01	01	13	11	02	01
N	00031	5.22	5.22	1	0615023403	03/27/2015	16:18	6	0	0	N	01	01	01	13	11	02	01
N	00031	1.7	8.60	2	0615024290	03/31/2015	03:45	3	0	0	N	04	01	01	12	17	02	00
N	00031	3.04	3.04	1	0615024480	03/31/2015	17:59	3	0	0	N	03	02	01	13	08	02	01
N	00283	0.01	0.01	3	0615024778	04/01/2015	20:01	4	0	0	N	04	01	01	13	04	02	03
N					0615026291	04/07/2015	20:37	3	0	0	N	04	04	02	13	99	02	03
N	00031	1.64	1.64	1	0615026892	04/10/2015	13:49	6	0	0	N	01	02	02	13	99	02	04
N	00031	2.92	2.92	1	0615026933	04/10/2015	15:34	6	0	0	N	01	02	01	13	07	02	04
N	00031	3.15	3.15	1	0615027765	04/13/2015	18:01	2	0	0	N	01	01	01	13	08	02	01
N	00031	3.04	3.04	1	0615028309	04/15/2015	19:42	4	0	1	N	01	01	01	13	11	03	01
N					0615029719	04/21/2015	05:31	3	0	0	Y	04	04	02	24	10	02	00

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00031	1.62	1.62	1	0615029870	04/21/2015	15:21	3	0	0	N	01	01	01	13	12	02	01
N	00031	1.58	8.48	2	0615030093	04/22/2015	13:28	4	0	0	N	01	02	01	13	99	02	01
N	00031	1.69	1.69	1	0615030123	04/22/2015	15:02	4	0	0	N	01	04	02	13	08	02	01
N	00031	3.64	10.54	2	0615030169	04/22/2015	17:30	4	0	0	N	01	02	02	13	11	02	01
N					0615030412	04/23/2015	15:52	5	0	1	N	01	02	01	13	02	03	03
N	00031	1.19	1.19	1	0615031646	04/28/2015	09:09	3	0	0	N	01	01	01	13	08	02	01
N	00031	6.78	6.78	1	0615032765	05/02/2015	04:01	7	0	0	N	05	02	01	13	12	02	01
N	00280	0.01	0.01	1	0615033560	05/05/2015	08:42	3	0	0	N	01	02	01	13	04	02	03
N	00294	1.06	1.06	1	0615033722	05/05/2015	17:45	3	0	0	N	01	01	01	13	02	02	03
N	00031	5.2	5.20	1	0615033843	05/06/2015	08:51	4	0	0	N	01	02	01	13	08	02	01
N	00031	6.07	6.07	1	0615034514	05/08/2015	12:09	6	0	2	N	01	01	01	13	08	03	01
N	00031	3.85	3.85	1	0615036315	05/14/2015	12:55	5	0	0	N	01	01	01	13	11	02	01
N	00031	3.86	3.86	1	0615036855	05/15/2015	23:29	6	0	0	N	04	02	01	38	99	02	02
N	00031	3.26	3.26	1	0615036922	05/16/2015	08:41	7	0	0	N	01	01 - 01	01	13	11	02	01
N	00031	2.32	9.22	2	0615037580	05/18/2015	15:26	2	0	0	N	01	04	02	13	12	02	03
N	00031	3.54	3.54	1	0615038241	05/20/2015	17:40	4	0	0	N	01	01	01	13	11	02	03
N	00031	5.75	5.75	1	0615039273	05/24/2015	13:42	1	0	1	N	01	01	01	10	88	03	00
N	00320	0.7	0.70	2	0615040175	05/27/2015	14:22	4	0	0	N	01	01	01	13	07	02	03
N					0615040224	05/27/2015	16:18	4	0	2	N	01	02	01	13	12	03	01
N	00031	2.96	2.96	1	0615041451	05/31/2015	14:40	1	0	0	N	01	01	01	13	11	02	01
N	00031	1.66	1.66	1	0615042773	06/04/2015	08:54	5	0	0	N	01	01	01	13	07	02	04
N	00031	3.04	3.04	1	0615043229	06/05/2015	20:49	6	0	0	N	04	01	01	42	11	02	01
N	00031	5.21	12.11	2	0615043939	06/08/2015	07:37	2	0	1	N	01	01	01	13	88	03	00
N	00288	1.83	1.83	2	0615044482	06/10/2015	06:54	4	0	0	N	01	01	01	42	11	02	01
N	00288	1.84	1.84	1	0615044785	06/11/2015	04:56	5	0	1	N	02	01	01	13	04	03	03
N	00031	5.23	5.23	1	0615044787	06/11/2015	05:13	5	0	0	N	01	01	01	13	11	02	01
N	00031	1.63	1.63	1	0615045026	06/11/2015	18:34	5	0	0	N	01	02	01	13	11	02	01
N	00031	5.23	5.23	1	0615046712	06/16/2015	16:32	3	0	0	N	01	01	01	13	11	02	01
N	00031	3.3	10.20	2	0615047486	06/19/2015	10:35	6	0	0	N	01	01	01	13	07	02	04
N	00031	3.6	10.50	2	0615048442	06/22/2015	14:07	2	0	1	N	01	01	01	13	02	03	00
N	00031	5.95	5.95	1	0615050146	06/27/2015	14:49	7	0	0	N	01	04	02	13	02	02	03
N	00031	3.61	10.51	2	0615051076	06/30/2015	13:32	3	0	0	N	01	02	01	13	11	02	01
N					0615052682	07/05/2015	21:51	1	0	0	N	05	01 - 09	01	12	17	02	00
N	00031	5.96	5.96	1	0615052970	07/06/2015	19:15	2	0	0	N	01	02	02	13	08	02	01
N	00031	1.31	1.31	1	0615054495	07/11/2015	12:16	7	0	2	N	01	01	01	13	11	03	01
N	123650	0	0.00	1	0615055886	07/16/2015	08:54	5	0	0	N	01	01	01	13	88	02	01
N	00288	1.84	1.84	3	0615057251	07/20/2015	17:59	2	0	0	N	01	01	01	13	11	02	01
N	00031	2.53	9.43	2	0615059977	07/29/2015	10:06	4	0	0	N	01	01	01	13	11	02	04
N	00031	4.13	4.13	1	0615060147	07/29/2015	21:11	4	0	0	N	05	01	01	13	11	02	01
N	00031	5.23	5.23	1	0615060157	07/29/2015	22:00	4	0	0	N	05	01	01	13	02	02	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00031	5.95	5.95	1	0615060603	07/31/2015	10:15	6	0	0	N	01	01	01	13	08	02	01
N	00031	5.71	12.61	2	0615063119	08/08/2015	09:33	7	0	1	N	01	01	01	13	08	03	01
N	00031	5.89	5.89	1	0615063803	08/10/2015	18:28	2	0	0	N	01	02	01	13	11	02	01
N	00031	2.18	9.08	2	0615065476	08/15/2015	21:29	7	0	0	Y	04	01	01	42	10	02	01
N	00031	4.07	10.97	2	0615066143	08/18/2015	07:26	3	0	1	N	01	02	01	13	08	03	01
N	00031	5.49	12.39	2	0615066787	08/20/2015	09:10	5	0	0	N	01	01	01	13	88	02	04
N	00031	1.68	8.58	2	0615066913	08/20/2015	15:21	5	0	0	N	01	02 - 04	02	13	12	02	04
N	00031	4.25	11.15	2	0615067260	08/21/2015	14:10	6	0	0	N	01	01	01	13	11	02	02
N	00031	3.67	10.57	2	0615068046	08/24/2015	17:01	2	0	0	N	01	01	01	13	07	02	04
N	00031	5.94	5.94	1	0615071432	09/03/2015	17:24	5	0	0	N	01	01	01	13	02	02	03
N	00031	3.22	3.22	1	0615073374	09/09/2015	18:26	4	0	0	N	01	02	01	13	11	02	01
N	123250	0	0.00	2	0615075197	09/15/2015	20:17	3	0	3	N	04	01	01	13	02	03	03
N	00031	4.63	4.63	1	0615075263	09/16/2015	01:30	4	0	0	N	04	01	01	13	17	02	00
N	00031	5.13	12.03	2	0615075594	09/17/2015	00:16	5	0	0	N	04	01	01	12	17	02	00
N	123650	0	0.00	1	0615076246	09/18/2015	20:57	6	0	0	N	04	01	01	13	02	02	03
N	00031	3.53	10.43	2	0615076678	09/20/2015	12:36	1	0	0	N	01	01	01	13	08	02	01
N	00031	5.85	5.85	1	0615076695	09/20/2015	13:42	1	0	0	N	01	01	01	13	08	02	01
N	00031	3.63	10.53	2	0615077533	09/23/2015	11:02	4	0	0	N	01	01	01	13	08	02	01
N	00031	1.09	1.09	1	0615078247	09/25/2015	12:36	6	0	0	N	01	01	01	13	12	02	01
N	00031	5.92	12.82	2	0615079074	09/28/2015	13:42	2	0	0	N	01	01	01	42	11	02	01
N	00031	5.06	11.96	2	0615079630	09/30/2015	07:22	4	0	1	N	01	02	02	13	08	03	01
N	00031	3.26	3.26	1	0615079842	09/30/2015	19:23	4	0	0	N	04	04	02	13	11	02	01
N	00031	5.02	5.02	1	0615079941	10/01/2015	06:45	5	0	0	N	01	04	02	13	11	02	01
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N	00031	5.37	5.37	1	0615080100	10/01/2015	16:06	5	0	0	N	01	04	02	13	08	02	01
N	00031	1.1	1.10	1	0615081287	10/05/2015	12:44	2	0	0	N	01	01	01	13	11	02	01
N	00031	5.94	5.94	1	0615081561	10/06/2015	09:10	3	0	0	N	01	01	01	13	16	02	01
N	00031	6.39	6.39	1	0615082745	10/09/2015	17:26	6	0	0	N	03	04	02	13	12	02	01
N	00031	3.04	9.94	2	0615083925	10/13/2015	18:37	3	0	2	N	05	01	01	13	11	03	01
N	00031	5.22	5.22	1	0615085348	10/18/2015	15:03	1	0	0	N	01	01	01	13	11	02	01
N	00031	6.33	6.33	1	0615086348	10/21/2015	19:13	4	0	0	N	05	01	01	13	17	02	00
N	00031	1	1.00	1	0615088195	10/27/2015	21:03	3	0	0	N	04	01	01	13	08	02	01
N	00031	1.44	1.44	1	0615088311	10/28/2015	10:26	4	0	1	N	01	04	02	13	12	03	01
N	00031	4.13	4.13	1	0615088598	10/29/2015	07:27	5	0	0	N	01	04	02	13	12	02	02
N	00031	3.64	10.54	2	0615088949	10/30/2015	08:10	6	0	0	N	01	01	01	13	07	02	04
N	00031	1.06	1.06	1	0615089115	10/30/2015	17:15	6	0	0	N	03	01	01	13	07	02	04
N	00031	4.73	4.73	1	0615089610	11/01/2015	10:10	1	0	0	N	01	02	01	13	11	02	03
N	00031	1.77	8.67	2	0615089769	11/01/2015	18:00	1	0	0	N	05	01	01	12	17	02	00
N	00031	5.47	12.37	2	0615089841	11/02/2015	02:31	2	0	0	N	05	01	01	13	17	02	00
N	00031	5.14	5.14	1	0615091767	11/07/2015	16:58	7	0	0	N	01	01	01	13	08	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
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N	00031	3.63	10.53	2	0615092119	11/09/2015	03:33	2	0	0	N	04	01	01	12	17	02	00
N	00031	5.88	12.78	2	0615092519	11/10/2015	09:48	3	0	0	N	01	04	02	13	02	02	03
N	00031	3.68	3.68	1	0615093362	11/12/2015	17:45	5	0	0	N	05	01	01	12	17	02	00
N	00031	5.09	11.99	2	0615093521	11/13/2015	07:10	6	0	0	N	01	01	01	13	08	02	01
N	00280	0.01	0.01	3	0615093638	11/13/2015	13:52	6	0	0	N	01	01	01	13	12	02	04
N	00031	4.5	4.50	1	0615094091	11/14/2015	18:58	7	0	0	N	05	01	01	12	17	02	00
N	00031	2.22	9.12	2	0615094169	11/15/2015	01:55	1	0	0	N	05	01	01	12	17	02	00
N	00031	6.6	6.60	1	0615094314	11/15/2015	17:12	1	0	0	N	05	01	01	12	17	02	00
N	00031	3.61	3.61	1	0615094995	11/17/2015	23:12	3	0	0	N	05	01	01	12	17	02	00
N	120290	0	0.00	1	0615095065	11/18/2015	09:05	4	0	0	N	01	01	01	13	02	02	03
N	00031	1.93	1.93	1	0615095592	11/19/2015	18:14	5	0	0	N	04	04	02	13	12	02	01
N	00294	1.06	1.06	1	0615095958	11/20/2015	19:25	6	0	0	Y	04	01	01	13	10	02	01
N	00031	5.87	12.77	2	0615097298	11/25/2015	12:45	4	0	0	N	01	01	01	13	11	02	01
N	00031	4.09	10.99	2	0615097319	11/25/2015	14:20	4	0	0	N	01	01	01	13	11	02	01
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N	00031	5.95	5.95	1	0615099147	12/01/2015	00:00	3	0	0	N	04	04	02	13	02	02	03
N	00031	4.64	11.54	2	0615099436	12/02/2015	16:24	4	0	2	N	03	02	02	13	02	03	03
N	00031	3.64	10.54	2	0615100623	12/06/2015	06:45	1	0	0	N	01	01	01	34	12	02	00
N	00031	2.74	2.74	1	0615101346	12/08/2015	16:28	3	0	0	N	01	01	01	13	11	02	01
N	00031	5.65	5.65	1	0615102162	12/10/2015	17:56	5	0	0	N	05	01	01	13	11	02	01
N	00031	5.92	5.92	1	0615102461	12/11/2015	17:02	6	0	0	N	04	01	01	13	11	02	01
N	00031	3.76	10.66	2	0615102503	12/11/2015	19:03	6	0	0	N	04	01	01	08	16	02	00
N	00031	4.61	11.51	2	0615104231	12/17/2015	07:08	5	0	0	N	01	04	02	13	11	02	01
N	00031	2.47	2.47	1	0615104459	12/17/2015	19:23	5	0	0	N	04	04	02	13	12	02	01
N	00031	5.59	12.49	2	0615106180	12/23/2015	00:00	4	0	0	N	01	04	02	13	07	02	01
N	00031	1.02	1.02	1	0615106268	12/23/2015	12:57	4	0	0	N	01	02 - 04	02	13	88	02	03
N	00031	3.86	3.86	1	0615106753	12/24/2015	16:40	5	0	0	N	03	04	02	13	11	02	01
N	00031	4.73	4.73	1	0615108398	12/30/2015	16:54	4	0	2	N	04	01	01	13	02	03	03
N	00031	5.78	12.68	2	0615108646	12/31/2015	15:14	5	0	0	N	01	02	01	13	08	02	01
N	00031	2.48	2.48	1	3215051521	05/27/2015	09:40	4	0	0	N	01	02	01	13	14	02	01
N	00288	1.84	1.84	3	3215062397	06/25/2015	12:38	5	0	2	N	01	01	01	13	12	03	03
N	00280	0.01	0.01	3	3215099079	09/30/2015	08:00	4	0	0	N	01	01	01	13	99	02	07
N	00031	5.99	5.99	1	3215112565	11/06/2015	17:57	6	0	0	N	04	02	01	13	11	02	01

2016																		
N	00031	6.85	6.85	1	0616000731	01/03/2016	15:39	1	0	0	N	01	01	01	12	17	02	00
N	00031	1.62	1.62	1	0616001055	01/04/2016	18:59	2	0	0	N	01	01	01	13	08	02	01
N	00031	5.61	12.51	2	0616001487	01/06/2016	06:05	4	0	0	N	05	01	01	13	99	02	01
N	00031	3.64	10.54	2	0616001860	01/07/2016	09:34	5	0	0	N	01	02	01	13	11	02	01
N	00031	2.32	9.22	2	0616003597	01/13/2016	06:20	4	0	0	N	05	01	01	13	11	02	00
N	00031	5.99	5.99	1	0616003720	01/13/2016	14:57	4	0	0	N	01	01	01	13	02	02	04

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
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N	00031	2.99	9.89	2	0616003939	01/14/2016	07:12	5	0	0	N	02	01	01	13	11	02	01
N	00031	1.63	1.63	3	0616004138	01/14/2016	19:19	5	0	0	N	05	01	01	13	99	02	03
N	00031	3.31	10.21	2	0616004633	01/16/2016	14:06	7	0	0	N	01	02	01	12	17	02	03
N	00031	1.63	1.63	1	0616004811	01/17/2016	01:37	1	0	3	Y	04	01	01	13	10	03	02
N	00031	3.01	9.91	2	0616005606	01/19/2016	17:52	3	0	0	N	04	02	01	13	16	02	00
N	00031	5.61	12.51	2	0616007191	01/25/2016	11:21	2	0	0	N	01	01	07	13	11	02	01
N	00031	1.52	1.52	1	0616007333	01/25/2016	17:23	2	0	0	N	04	01	01	13	12	02	01
N	00031	5.23	5.23	1	0616007662	01/26/2016	17:21	3	0	0	N	04	04	02	13	12	02	01
N	00031	3.8	10.70	2	0616007807	01/27/2016	07:40	4	0	0	N	01	02	02	13	11	02	01
N	00031	1.07	1.07	1	0616008404	01/28/2016	21:56	5	0	0	N	04	01	01	13	07	02	04
N	00031	1.86	1.86	1	0616008827	01/30/2016	07:37	7	0	2	N	01	01	01	13	12	03	01
N	00031	5.23	5.23	1	0616009100	01/31/2016	02:47	1	0	0	N	04	01	01	26	12	02	00
N	00031	6.31	6.31	1	0616009390	02/01/2016	07:57	2	0	2	N	01	01	01	13	06	03	04
N	00031	1.02	1.02	1	0616009791	02/02/2016	12:53	3	0	0	N	01	01	01	13	07	02	04
N	00031	2.05	2.05	1	0616011738	02/08/2016	13:34	2	0	0	N	01	01	01	13	02	02	04
N					0616011764	02/08/2016	14:58	2	0	1	N	01	01	01	13	11	03	03
N	00031	3.86	3.86	1	0616013250	02/12/2016	21:47	6	0	0	N	04	02	01	13	11	02	01
N	00031	5.95	5.95	1	0616013515	02/13/2016	18:25	7	0	0	N	04	01	01	13	12	02	03
N					0616013744	02/14/2016	14:22	1	0	0	N	01	01	01	31	12	02	00
N	00031	5.89	12.79	2	0616014802	02/17/2016	16:00	4	0	0	N	01	02	01	13	11	02	01
N	00031	4.13	4.13	1	0616015935	02/20/2016	22:53	7	0	3	N	04	01	01	13	04	03	02
N	00031	1.19	1.19	1	0616016964	02/24/2016	07:04	4	0	0	N	01	04	02	13	12	02	01
N	00031	5.95	5.95	1	0616019328	02/29/2016	11:00	2	0	0	N	01	01	01	42	99	02	01
N	00031	3.86	3.86	1	0616020100	03/04/2016	16:13	6	0	0	N	01	01	01	13	02	02	03
N	00031	3.26	3.26	1	0616020681	03/06/2016	12:41	1	0	0	N	01	01	01	13	11	02	02
N	00283	0.01	0.01	3	0616021830	03/09/2016	20:33	4	0	2	N	04	01	01	13	04	03	03
N	00031	5.16	5.16	1	0616022299	03/11/2016	08:49	6	0	0	N	01	01	01	13	15	02	01
N	00031	3.32	3.32	1	0616022986	03/13/2016	09:44	1	0	0	N	01	02	01	42	11	02	01
N	00031	5.23	5.23	1	0616024130	03/16/2016	20:54	4	0	0	N	04	01	01	13	11	02	01
N	00031	3.29	3.29	1	0616024281	03/17/2016	09:42	5	0	0	N	01	01	01	13	04	02	03
N	00031	1.46	1.46	1	0616024326	03/17/2016	12:37	5	0	0	N	01	01	01	13	99	02	03
N	00031	5.53	12.43	2	0616024565	03/18/2016	06:41	6	0	2	N	02	01	01	13	12	03	01
N	00031	2.48	9.38	2	0616024986	03/19/2016	11:15	7	0	0	N	01	02	01	42	11	02	03
N	00031	2.73	2.73	1	0616025488	03/21/2016	06:53	2	0	0	N	02	02	02	13	02	02	00
N	00031	1.71	1.71	1	0616026953	03/25/2016	13:14	6	0	0	N	01	02	01	13	99	02	04
N	00031	4.73	4.73	1	0616031102	04/07/2016	18:04	5	0	1	N	01	04	02	13	12	03	02
N	00031	4.61	4.61	1	0616031124	04/07/2016	18:57	5	0	0	N	03	04	02	13	08	02	01
N	00031	1.72	8.62	2	0616031687	04/09/2016	14:43	7	0	0	N	01	04	02	13	08	02	01
N	00031	6.15	6.15	1	0616033738	04/16/2016	11:40	7	0	0	N	01	01	01	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00031	1.6	1.60	1	0616033750	04/16/2016	12:44	7	0	0	N	01	01	01	13	11	02	01
N	00031	4.18	11.08	2	0616033758	04/16/2016	13:22	7	0	0	N	01	01	01	13	11	02	01
N	00031	3.03	3.03	1	0616035681	04/22/2016	17:29	6	0	0	N	01	01	01	13	11	02	01
N	00031	3.1	3.10	1	0616035703	04/22/2016	18:12	6	0	0	N	01	01	01	13	08	02	01
N	00031	5.24	5.24	1	0616036669	04/26/2016	05:57	3	0	0	N	01	01	02	13	02	02	01
N	00031	1.63	8.53	2	0616036895	04/26/2016	18:42	3	0	0	N	01	02	01	13	11	02	01
N	00031	5.75	12.65	2	0616036987	04/27/2016	07:39	4	0	0	N	01	02	01	13	12	02	01
N	00031	4.13	4.13	1	0616037645	04/28/2016	15:15	5	0	0	N	01	02	02	12	17	02	00
N	00031	5.76	5.76	1	0616038902	05/03/2016	15:07	3	0	0	N	01	02	01	13	08	02	01
N	00031	5.62	12.52	2	0616041126	05/10/2016	11:31	3	0	0	N	01	01	01	13	11	02	01
N					0616042419	05/14/2016	11:10	7	0	0	N	01	02	01	13	09	02	03
N	00031	4.91	11.81	2	0616042676	05/15/2016	07:45	1	0	0	N	01	01	01	13	04	02	03
N	00031	4.71	4.71	1	0616043309	05/17/2016	06:41	3	0	0	N	01	02	01	13	17	02	00
N	00031	1.93	1.93	1	0616043514	05/17/2016	17:17	3	0	1	N	01	04	02	13	02	03	03
N	00031	4.09	10.99	2	0616044728	05/20/2016	17:32	6	0	0	N	01	01	01	13	11	02	01
N	00031	4.73	4.73	1	0616047044	05/26/2016	14:11	5	0	1	N	01	01	01	13	02	03	03
N	00031	1.88	8.78	2	0616047768	05/27/2016	23:05	6	0	0	N	05	01	01	12	17	02	00
N	00031	1.75	1.75	1	0616049026	05/31/2016	13:05	3	0	0	N	01	01	01	13	11	02	01
N	00031	4.05	10.95	2	0616050622	06/03/2016	21:45	6	0	0	N	04	01	01	12	17	02	00
N	00031	5.91	12.81	2	0616052376	06/08/2016	10:24	4	0	0	N	01	01	01	13	99	02	04
N	00031	5.95	5.95	1	0616052497	06/08/2016	14:42	4	0	0	N	01	01	02	13	12	02	01
N	00031	5.22	5.22	1	0616053266	06/10/2016	09:00	6	0	1	N	01	01	01	13	12	03	01
N	00031	2.02	2.02	1	0616053486	06/10/2016	17:14	6	0	0	N	01	01	01	13	08	02	01
N	00031	4.61	11.51	2	0616056239	06/17/2016	14:09	6	0	0	N	01	01	01	24	18	02	00
N	00031	3.44	10.34	2	0616056530	06/18/2016	02:13	7	0	0	N	05	01	01	12	17	02	00
N	00288	1.83	1.83	3	0616057808	06/21/2016	12:40	3	0	0	N	01	02	01	13	88	02	04
N	00031	2.02	2.02	1	0616058193	06/22/2016	11:10	4	0	0	N	01	01	01	13	12	02	01
N	00031	2.02	2.02	1	0616061472	06/30/2016	14:34	5	0	0	N	01	01	01	13	08	02	01
N	00031	1.69	8.59	2	0616062147	07/02/2016	08:09	7	0	0	N	01	01	01	13	07	02	04
N	00031	5.72	12.62	2	0616062872	07/04/2016	13:47	2	0	1	N	01	01	01	13	05	03	02
N	00288	1.83	1.83	2	0616063732	07/06/2016	17:48	4	0	0	Y	01	01	01	13	12	02	01
N	00031	1.67	8.57	2	0616064085	07/07/2016	14:10	5	0	0	N	01	01	01	13	11	02	01
N					0616064485	07/08/2016	14:50	6	0	0	N	01	02	01	13	11	02	01
N	00031	5.8	5.80	1	0616064522	07/08/2016	14:45	6	0	0	N	01	02	01	13	08	02	01
N	00283	0.01	0.01	1	0616064888	07/09/2016	16:43	7	0	0	N	01	04	02	13	12	02	01
N	00031	1.67	8.57	2	0616065649	07/11/2016	15:51	2	0	0	N	01	01	01	13	11	02	01
N	00031	3.28	3.28	1	0616066106	07/12/2016	19:16	3	0	0	N	01	01	01	13	11	02	01
N	00031	1.61	1.61	1	0616068165	07/18/2016	08:31	2	0	0	N	01	01	01	13	07	02	04
N	00031	3.84	3.84	1	0616069929	07/22/2016	15:50	6	0	2	N	01	01	01	13	02	03	03
N	00294	1.06	1.06	1	0616070734	07/24/2016	20:50	1	0	0	N	04	01	01	13	12	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00031	5.75	5.75	1	0616072616	07/29/2016	19:01	6	0	0	N	01	01	01	42	11	02	01
N	00031	1.33	1.33	1	0616074337	08/03/2016	13:18	4	0	0	N	01	01	01	13	16	02	00
N	00031	5.29	12.19	2	0616076935	08/10/2016	09:04	4	0	0	N	01	02	01	13	08	02	01
N	00031	5.76	12.66	2	0616076998	08/10/2016	11:52	4	0	0	N	01	01	01	13	11	02	01
N	00031	3.54	3.54	1	0616077415	08/11/2016	12:35	5	0	0	N	01	01	01	13	02	02	03
N	00031	4.13	4.13	1	0616079311	08/15/2016	21:34	2	0	0	N	04	04	02	13	12	02	03
N	00031	1.09	1.09	1	0616082244	08/23/2016	06:09	3	0	0	N	01	01	01	24	16	02	00
N					0616088022	09/06/2016	15:56	3	0	0	N	01	01	01	13	02	02	03
N	00031	4.09	10.99	2	0616088284	09/07/2016	10:15	4	0	0	N	01	01	01	13	07	02	04
N	00031	1.99	1.99	1	0616088435	09/07/2016	16:43	4	0	0	N	01	01 - 01	01	13	16	02	01
N	00031	4.23	4.23	1	0616091020	09/14/2016	06:25	4	0	0	N	01	01	01	13	11	02	01
N	00031	3.56	10.46	2	0616091348	09/14/2016	18:32	4	0	0	N	01	01	01	13	11	02	01
N	00031	2.85	9.75	2	0616092120	09/16/2016	16:52	6	0	0	N	01	01	01	13	11	02	01
N	00031	4.78	4.78	1	0616093324	09/20/2016	02:37	3	0	0	N	04	01	01	12	17	02	00
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N	00031	5.84	5.84	1	0616099407	10/06/2016	16:26	5	0	1	N	01	02	01	13	08	03	01
N	00031	5.83	5.83	1	0616099424	10/06/2016	17:33	5	0	0	N	01	02	01	13	11	02	01
N	00031	5.41	5.41	1	0616099434	10/06/2016	17:52	5	0	1	N	03	01	01	13	11	03	01
N	00031	4.22	4.22	1	0616099568	10/07/2016	02:47	6	0	0	N	05	01	01	13	17	02	00
N	00031	2.84	2.84	1	0616099582	10/07/2016	06:24	6	0	0	N	05	01	01	13	04	02	03
N	00031	1.05	1.05	1	0616100853	10/10/2016	15:56	2	0	0	N	01	01	01	13	02	02	04
N	00031	1.94	1.94	1	0616103996	10/19/2016	07:58	4	0	0	N	01	01	01	13	02	02	03
N	00031	5.74	12.64	2	0616105278	10/22/2016	15:57	7	0	0	N	01	01	01	13	08	02	01
N					0616105480	10/23/2016	06:10	1	0	0	N	05	01	01	40	21	02	00
N	00031	4.93	11.83	2	0616109166	11/02/2016	05:39	4	0	0	N	04	01	01	24	17	02	00
N	00031	2.09	2.09	1	0616109345	11/02/2016	15:09	4	0	0	N	01	01	01	13	08	02	01
N	00031	1.05	1.05	1	0616109657	11/03/2016	12:37	5	0	0	N	01	02	01	13	08	02	01
N	00031	2.82	2.82	1	0616111456	11/08/2016	12:22	3	0	2	N	01	01	01	13	02	03	03
N	00031	4.1	11.00	2	0616111630	11/08/2016	18:40	3	0	0	N	04	01	01	13	11	02	02
N	00031	3.12	3.12	1	0616112953	11/12/2016	11:55	7	0	0	N	01	01	01	13	11	02	01
N	00031A	0.31	0.31	2	0616113521	11/14/2016	07:10	2	0	0	N	02	01	01	13	02	02	03
N	00031	4.56	4.56	1	0616113806	11/14/2016	22:40	2	0	0	N	05	01	01	12	17	02	00
N	00031	4.77	11.67	2	0616115015	11/18/2016	07:37	6	0	0	N	01	01	01	13	08	02	01
N	00031	3.64	10.54	2	0616116258	11/21/2016	09:37	2	0	0	N	01	01	01	13	11	02	01
N	00031	1.02	1.02	1	0616117087	11/23/2016	14:14	4	0	0	N	01	01	01	13	07	02	04
N	00031	5.78	12.68	2	0616117206	11/23/2016	20:26	4	0	3	N	04	01	01	13	02	03	03
N	00031	3.05	9.95	2	0616118807	11/28/2016	17:31	2	0	0	N	04	01	01	13	08	02	01
N	00031	3.32	3.32	1	0616120759	12/03/2016	18:10	7	0	0	N	04	01	01	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00031	5.95	5.95	1	0616121098	12/04/2016	21:28	1	0	0	N	04	01	01	13	99	02	02
N	00031	1.62	1.62	1	0616121835	12/07/2016	06:56	4	0	0	N	01	04	02	13	07	02	04
N	00031	5.06	11.96	2	0616121844	12/07/2016	07:20	4	0	0	N	01	04	02	13	08	02	01
N	00031	3.81	3.81	1	0616122294	12/08/2016	12:01	5	0	0	N	01	02	01	13	08	02	01
N	00031	1.38	1.38	1	0616123640	12/12/2016	12:20	2	0	0	N	01	02	02	13	08	02	01
N	00031	3.67	10.57	2	0616123960	12/13/2016	08:25	3	0	1	N	01	01	01	13	08	03	01
N	00031	5.03	11.93	2	0616125973	12/18/2016	12:40	1	0	0	N	01	04	02	13	19	02	01
N	00294	1.06	1.06	1	0616126460	12/19/2016	17:11	2	0	0	N	04	01	01	13	04	02	03
N	00031	4.7	11.60	2	0616126648	12/20/2016	09:04	3	0	2	N	01	01	01	13	08	03	01
N	00031	1.57	1.57	1	0616126932	12/20/2016	21:35	3	0	0	N	04	01	01	13	11	02	01
N	123950	0	0.00	2	0616129778	12/28/2016	20:33	4	0	1	Y	04	01	01	13	10	03	00
N	00280	0	0.00	3	0616666925	07/14/2016	21:23	5	0	0	N	04	01	01	13	11	02	03
N	00031	4.16	11.06	2	3216029262	03/30/2016	11:50	4	0	0	N	01	01	01	13	09	02	04
N	00294	1.06	1.06	1	3216049692	05/27/2016	17:05	6	0	0	Y	01	01	01	13	10	02	01
N	00031	3.4	10.30	2	3216051903	06/03/2016	00:59	6	0	1	N	99	01	99	02	99	03	00
N	00031	4.59	4.59	1	3216055620	06/12/2016	22:46	1	0	0	N	05	01	01	14	99	02	02
N	00280	0.01	0.01	3	3216060221	06/25/2016	10:55	7	0	2	N	01	01	01	13	11	03	01
N	00280	0.01	0.01	3	3216080014	08/20/2016	12:15	7	0	1	N	01	01	01	13	88	03	02
N	00280	0.01	0.01	3	3216095427	10/05/2016	17:30	4	0	0	N	01	01	01	13	02	02	03
N	00031	3.53	3.53	1	3216118487	12/14/2016	10:30	4	0	0	N	01	01	01	42	11	02	01
N	00294	1.06	1.06	1	9416002552	07/24/2016	23:00	1	0	0	Y	04	01	01	24	10	02	00

2017

N	00031	1.63	1.63	1	0617000075	01/01/2017	09:17	1	0	0	N	01	01	01	13	04	02	03
N	00031	3.67	10.57	2	0617001864	01/06/2017	15:30	6	0	0	N	01	02	01	13	07	02	01
N	00294	1.06	1.06	1	0617001920	01/06/2017	17:36	6	0	0	N	05	01	01	13	12	02	04
N	00031	5.14	5.14	1	0617003815	01/12/2017	08:28	5	0	0	N	01	02	02	13	08	02	01
N	00031	4	4.00	1	0617005256	01/16/2017	09:57	2	0	0	N	01	01	01	13	88	02	04
N	00031	3.26	3.26	1	0617005552	01/17/2017	08:58	3	0	0	N	01	01	01	13	11	02	01
N	00031	1.66	8.56	2	0617005582	01/17/2017	10:46	3	0	0	N	01	02	02	13	08	02	01
N	00031	5.72	12.62	2	0617008078	01/24/2017	09:33	3	0	0	N	01	02	01	13	02	02	03
N	00294	1.06	1.06	1	0617008460	01/25/2017	08:52	4	0	0	N	01	01	01	13	11	02	01
N	00031	3.53	3.53	1	0617011010	02/01/2017	16:27	4	0	2	N	01	02	01	13	02	03	03
N	00031	5.19	5.19	1	0617012589	02/06/2017	12:05	2	0	0	N	01	01	01	13	11	02	01
N	00031	3.75	10.65	2	0617013417	02/08/2017	15:24	4	0	1	N	01	01	01	13	11	03	01
N	00031	3.52	3.52	1	0617013635	02/09/2017	07:39	5	0	0	N	01	06	07	13	02	02	03
N	00031	5.89	5.89	1	0617014103	02/10/2017	16:35	6	0	0	N	01	01	01	13	11	02	01
N	00031	1.53	1.53	1	0617016965	02/18/2017	10:48	7	0	0	N	01	01	01	13	12	02	01
N	00031	6.56	6.56	1	0617017717	02/20/2017	00:00	2	0	0	N	01	01	01	13	02	02	03
N	00031	4.13	4.13	1	0617018092	02/21/2017	14:08	3	0	0	N	01	01	01	13	04	02	03
N					0617019917	02/26/2017	04:33	1	0	1	Y	04	01	01	24	10	03	00
N	00031	1.69	1.69	1	0617021175	03/01/2017	17:57	4	0	0	N	04	02	01	13	99	02	04

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00031	5.29	12.19	2	0617022371	03/04/2017	18:44	7	0	0	N	04	01	01	13	99	02	01
N	00031	6.18	6.18	1	0617025110	03/12/2017	06:06	1	0	0	N	05	01	01	23	99	02	00
N	00031	1.74	1.74	1	0617025836	03/14/2017	06:12	3	0	0	N	04	06	03	13	12	02	00
N	00031	4.64	11.54	2	0617026056	03/14/2017	15:07	3	0	0	N	01	01	02	13	02	02	05
N	00031	6.74	6.74	1	0617026135	03/14/2017	19:52	3	0	0	N	05	02	02	17	20	02	00
N	00031	3.82	10.72	2	0617026312	03/15/2017	10:13	4	0	0	N	01	01	01	13	08	02	01
N	00031	3.03	3.03	1	0617026402	03/15/2017	14:35	4	0	0	N	01	06	02	13	11	02	01
N	00031	1.63	1.63	1	0617028838	03/21/2017	20:56	3	0	0	N	04	02	01	13	04	02	03
N	00031	0.99	0.99	1	0617029104	03/22/2017	15:22	4	0	0	N	01	01	01	13	02	02	04
N	00288	1.84	1.84	3	0617029630	03/23/2017	21:17	5	0	0	N	04	01	01	13	09	02	04
N	00031	5.94	5.94	1	0617029632	03/23/2017	21:53	5	0	0	N	04	01	01	12	17	02	00
N	00031	3.29	3.29	1	0617029727	03/24/2017	07:49	6	0	0	N	01	01	01	13	11	02	01
N	00031	5.98	5.98	1	0617029822	03/24/2017	12:36	6	0	0	N	01	01	01	13	11	02	01
N	00031	1.65	8.55	2	0617029934	03/24/2017	16:30	6	0	0	N	01	01	01	13	08	02	01
N	00031	5.69	12.59	2	0617029942	03/24/2017	16:42	6	0	0	N	01	01	01	13	99	02	01
N	00031	5.63	12.53	2	0617031939	03/30/2017	08:22	5	0	0	N	01	01	01	13	88	02	04
N	00031	1.05	1.05	1	0617033586	04/03/2017	15:01	2	0	0	N	02	02	01	13	08	02	01
N	00031	1.7	1.70	1	0617036241	04/10/2017	11:34	2	0	0	N	01	01	01	08	12	02	00
N	00031	6.18	6.18	1	0617036647	04/11/2017	11:08	3	0	1	N	01	01	01	13	12	03	04
N	00031	1.61	1.61	1	0617036663	04/11/2017	11:48	3	0	0	N	01	01	01	13	08	02	01
N	00031	3.65	10.55	2	0617037609	04/13/2017	16:09	5	0	0	N	01	01	01	13	08	02	01
N	00031	2.83	2.83	1	0617037694	04/13/2017	20:26	5	0	1	N	04	01	01	09	21	03	00
N	00031	2.84	9.74	2	0617038409	04/15/2017	15:14	7	0	2	N	01	02	01	13	11	03	01
N					0617038853	04/16/2017	23:08	1	0	0	N	04	01	01	13	12	02	00
N	00031	3.64	10.54	2	0617040408	04/20/2017	22:36	5	0	0	N	05	04	02	14	19	02	01
N					0617040640	04/17/2017	16:50	2	0	0	N	01	01	01	99	99	02	99
N	00031	5.94	5.94	1	0617041244	04/23/2017	04:46	1	0	0	N	04	01	01	13	01	02	00
N	00031	4.88	4.88	1	0617041737	04/24/2017	17:24	2	0	0	N	01	01	01	13	11	02	01
N	00031	3.53	10.43	2	0617042466	04/26/2017	20:09	4	0	0	N	05	01	01	13	08	02	01
N	00031	4.1	11.00	2	0617044212	05/01/2017	16:46	2	0	0	N	01	01	01	13	02	02	03
N	00031	4.21	4.21	1	0617045071	05/03/2017	21:09	4	0	0	N	04	01	01	13	07	02	03
N	00031	5	11.90	2	0617046253	05/08/2017	07:13	2	0	0	N	01	02	01	13	12	02	01
N	00031	2.17	9.07	2	0617047583	05/11/2017	18:02	5	0	0	N	01	04	02	13	88	02	03
N	00031	5.91	12.81	2	0617048492	05/14/2017	08:52	1	0	0	N	01	02	01	13	11	02	01
N	00031	1.57	1.57	1	0617049208	05/15/2017	17:50	2	0	1	N	01	01	01	13	11	03	01
N	00031	5.23	5.23	1	0617049398	05/16/2017	16:36	3	0	0	N	01	01	01	13	15	02	03
N	00031	6.02	6.02	1	0617049720	05/17/2017	12:18	4	0	0	N	01	01	01	13	11	02	01
N	00031	4.87	4.87	1	0617050730	05/19/2017	17:01	6	0	0	N	01	02	01	42	08	02	01
N	00031	5.24	5.24	1	0617050766	05/19/2017	17:41	6	0	0	N	01	02	01	13	02	02	03
N	00031	2	2.00	1	0617052870	05/25/2017	06:49	5	0	2	N	01	04	02	13	19	03	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00031	5.22	5.22	1	0617052890	05/25/2017	08:01	5	0	0	N	01	04	02	13	11	02	01
N	00031	5.23	5.23	1	0617052914	05/25/2017	09:27	5	0	0	N	01	04	02	13	11	02	01
N	00031	1.58	1.58	1	0617053912	05/27/2017	17:28	7	0	0	N	01	01	01	13	12	02	01
N	00031	5.93	5.93	1	0617054673	05/30/2017	07:22	3	0	0	N	01	01	01	42	11	02	01
N	00031	3.86	3.86	1	0617055931	06/02/2017	07:04	6	0	0	N	01	01	01	13	02	02	03
N	00031	2.19	2.19	1	0617057213	06/05/2017	10:25	2	0	1	N	01	02	01	08	16	03	00
N	00031	5.59	5.59	1	0617057250	06/05/2017	12:09	2	0	0	N	01	02	01	13	88	02	04
N	00031	5.28	5.28	1	0617058210	06/07/2017	16:49	4	0	0	N	01	01	01	13	11	02	01
N	00031	3.03	3.03	1	0617058228	06/07/2017	17:31	4	0	0	N	01	01	01	13	11	02	01
N	00031	3.06	3.06	1	0617058246	06/07/2017	18:10	4	0	0	N	04	01	01	13	08	02	01
N	00031	4.43	11.33	2	0617059065	06/09/2017	17:00	6	0	0	N	01	01	01	13	02	02	01
N	00031	1.01	1.01	1	0617060634	06/13/2017	16:16	3	0	0	N	01	01	01	13	11	02	04
N	00031	5.52	12.42	2	0617061773	06/16/2017	12:59	6	0	0	N	01	01	01	13	11	02	01
N	00031	5.91	12.81	2	0617062927	06/19/2017	10:13	2	0	0	N	01	01	01	13	08	02	01
N	00031	5.95	5.95	1	0617063113	06/19/2017	18:26	2	0	0	N	01	04	02	13	02	02	03
N	00031	5.76	12.66	2	0617063537	06/20/2017	18:24	3	0	1	N	01	02	01	13	11	03	01
N	123109	0	0.00	1	0617065926	06/25/2017	16:26	1	0	0	N	01	01	01	13	99	02	03
N	00280	0	0.00	3	0617066086	06/26/2017	23:20	2	0	2	N	04	01	01	13	04	03	03
N	00031	5.82	5.82	1	0617067314	06/30/2017	09:10	6	0	0	N	01	01	01	42	12	02	01
N	00031	3.01	9.91	2	0617068141	07/02/2017	08:31	1	0	1	N	01	01	01	24	11	03	03
N	00031	1.3	1.30	1	0617068984	07/04/2017	15:49	3	0	0	N	01	01	01	13	12	02	01
N	00031	1.63	1.63	1	0617069672	07/06/2017	13:08	5	0	0	N	01	04	06	13	12	02	01
N	00031	3.32	3.32	1	0617070230	07/07/2017	17:23	6	0	0	N	01	02	01	13	11	02	01
N	00031	5.62	12.52	2	0617070549	07/08/2017	13:09	7	0	0	N	01	01	01	13	11	02	01
N	00031	3.27	3.27	1	0617072698	07/13/2017	18:10	5	0	0	N	01	01	01	12	17	02	00
N	123069	0.01	0.01		0617073482	07/15/2017	19:44	7	0	0	N	01	01	01	42	11	02	01
N	00031	5.95	5.95	1	0617073961	07/17/2017	06:25	2	0	1	N	01	01	01	13	02	03	03
N	00031	3.01	3.01	1	0617074060	07/17/2017	12:38	2	0	0	N	01	01	01	13	08	02	01
N	00031	2.02	2.02	1	0617074066	07/17/2017	13:03	2	0	1	Y	01	01	01	13	12	03	00
N	00031	3.53	3.53	1	0617074090	07/17/2017	13:26	2	0	1	N	01	01	01	13	02	03	03
N	00031	1.67	8.57	2	0617074112	07/17/2017	14:49	2	0	2	N	01	01	01	13	04	03	03
N	00031	5.69	5.69	1	0617074754	07/19/2017	02:31	4	0	0	N	05	01	01	13	12	02	00
N					0617076411	07/23/2017	07:15	1	0	2	Y	01	02	01	13	04	03	03
N	00031	3.28	3.28	1	0617076594	07/23/2017	18:47	1	0	0	N	01	04	02	13	12	02	01
N	00031	3.28	3.28	1	0617077140	07/25/2017	07:28	3	0	0	N	01	02	01	13	12	02	01
N	00284	0.01	0.01	3	0617077645	07/26/2017	12:43	4	0	0	N	01	01	01	13	08	02	01
N	00031	6.17	6.17	1	0617078529	07/28/2017	15:59	6	0	1	N	01	02	01	13	08	03	01
N					0617078557	07/28/2017	16:28	6	0	0	N	01	02	01	99	99	02	99
N	00031	5.62	12.52	2	0617078825	07/29/2017	13:13	7	0	0	N	01	02	01	42	11	02	01
N	00031	2.18	9.08	2	0617079452	07/31/2017	08:15	2	0	0	N	01	01	01	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00031	5.78	5.78	1	0617080712	08/03/2017	11:24	5	0	0	N	01	01	01	13	11	02	04
N					0617081227	08/04/2017	15:17	6	0	2	N	01	01	01	13	10	03	02
N	00031	2.2	9.10	2	0617083775	08/11/2017	08:10	6	0	0	N	01	01	01	13	07	02	04
N	00031	5.71	12.61	2	0617086876	08/19/2017	13:18	7	0	0	N	01	01	01	13	08	02	02
N	00031	4.34	11.24	2	0617089223	08/25/2017	16:49	6	0	0	N	01	02	01	13	12	02	01
N	00031	3.53	3.53	1	0617089597	08/26/2017	15:19	7	0	1	N	01	01	01	13	02	03	03
N	00031	1.68	8.58	2	0617090428	08/28/2017	20:24	2	0	0	N	04	01	01	13	08	02	01
N					0617090519	08/29/2017	06:11	3	0	2	N	04	04	02	13	02	03	03
N	00031	3.63	10.53	2	0617091594	09/01/2017	05:44	6	0	0	N	05	01	01	13	12	02	01
N	00288	1.84	1.84	3	0617092974	09/05/2017	09:06	3	0	0	N	01	01	01	13	11	02	01
N	00031	5.7	12.60	2	0617093726	09/07/2017	08:27	5	0	1	N	01	01	01	13	12	03	01
N	00031	5.95	5.95	1	0617093782	09/07/2017	12:06	5	0	2	N	01	01	01	13	02	03	02
N	00031	5.35	5.35	1	0617095920	09/13/2017	05:20	4	0	0	N	05	01	01	12	17	02	00
N	00031	3.43	3.43	1	0617099255	09/21/2017	16:48	5	0	0	N	01	02	01	13	12	02	01
N	00031	2.2	2.20	1	0617099344	09/21/2017	21:08	5	0	0	N	04	01	01	08	88	02	00
N	00031	5.94	5.94	1	0617101048	09/26/2017	12:52	3	0	0	N	01	01	01	13	11	02	01
N	00031	6.59	6.59	1	0617101341	09/27/2017	08:15	4	0	0	N	01	01	01	12	17	02	00
N	00288	1.84	1.84	3	0617101624	09/27/2017	19:39	4	0	0	N	04	01	01	13	11	02	01
N	00031	5.61	12.51	2	0617105037	10/06/2017	12:49	6	0	0	N	01	02	01	13	11	02	01
N	00031	2.04	2.04	1	0617106170	10/09/2017	09:05	2	0	0	N	01	04	02	13	10	02	00
N	00031	1.57	8.47	2	0617108532	10/14/2017	19:06	7	0	0	N	05	01	01	13	07	02	04
N	00031	5.71	12.61	2	0617109664	10/17/2017	20:22	3	0	0	N	04	01	01	13	11	02	04
N	00031	6	6.00	1	0617110137	10/18/2017	22:30	4	0	0	N	05	02	01	12	17	02	00
N	00031	3.05	9.95	2	0617110798	10/20/2017	12:57	6	0	0	N	01	01 - 01	01	42	11	02	01
N	00031	2.72	9.62	2	0617112763	10/25/2017	12:29	4	0	0	N	01	01	01	13	15	02	03
N	00031	4.73	4.73	1	0617113055	10/26/2017	07:43	5	0	0	N	01	01	01	13	11	02	03
N	00031	5.16	5.16	1	0617113156	10/26/2017	13:48	5	0	0	N	01	01	01	13	08	02	01
N	00031	3.86	3.86	1	0617114935	10/31/2017	06:49	3	0	0	N	04	01	01	13	02	02	00
N					0617118615	11/09/2017	12:58	5	0	0	N	01	02	01	42	88	02	01
N	00031	4.74	4.74	1	0617118735	11/09/2017	18:01	5	0	0	N	04	01	01	13	02	02	03
N	00031	5.95	5.95	1	0617119266	11/10/2017	22:50	6	0	0	N	04	01	01	13	88	02	03
N	00031	3.21	3.21	1	0617120598	11/14/2017	12:32	3	0	0	N	01	01	01	13	10	02	03
N	00031	2.19	9.09	2	0617121098	11/15/2017	17:02	4	0	0	N	05	01	01	24	02	02	00
N	00031	5.95	5.95	1	0617121596	11/16/2017	20:08	5	0	0	N	04	01	01	12	17	02	00
N	00031	3.12	10.02	2	0617121618	11/16/2017	21:06	5	0	0	N	04	01	01	12	17	02	00
N	00031	1.67	8.57	2	0617122696	11/19/2017	16:52	1	0	2	N	03	02	01	13	04	03	03
N	00031	3.83	10.73	2	0617122854	11/20/2017	07:10	2	0	0	N	01	01	01	13	12	02	01
N	00031	3.04	9.94	2	0617125360	11/27/2017	06:45	2	0	1	N	02	01	01	42	88	03	01
N	00031	5.55	5.55	1	0617129205	12/07/2017	01:36	5	0	0	Y	04	01	01	25	10	02	03
N	00031	5.54	5.54	1	0617129292	12/07/2017	09:54	5	0	0	N	99	01	01	13	99	02	00

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00031	2.01	2.01	1	0617130927	12/11/2017	18:57	2	0	0	N	04	01	01	13	08	02	01
N	00031	5.75	5.75	1	0617131805	12/14/2017	08:50	5	0	0	N	01	01	02	13	08	02	01
N	00031	3.03	3.03	1	0617132405	12/15/2017	15:49	6	0	0	N	01	02 - 06	03	13	19	02	01
N	00280	0	0.00	2	0617132758	12/16/2017	12:51	7	0	3	N	01	02	01	13	04	03	03
N	00031	3.86	3.86	1	0617133115	12/17/2017	11:00	1	0	0	N	01	01	01	13	09	02	03
N	00031	5.2	5.20	1	0617133145	12/17/2017	12:20	1	0	0	N	01	01	01	42	08	02	01
N	00031	2.83	2.83	1	0617133383	12/18/2017	02:15	2	0	0	N	04	02	01	39	99	02	00
N	00031	4.73	4.73	1	0617133701	12/18/2017	22:01	2	0	0	N	04	02	01	24	01	02	00
N	00031	5.36	5.36	1	0617134057	12/19/2017	18:33	3	0	0	N	04	01	01	13	02	02	04
N	00031	5.71	12.61	2	0617135278	12/22/2017	15:52	6	0	0	N	01	01	01	13	99	02	01
N	00294	1.06	1.06	1	0617136097	12/24/2017	19:27	1	0	0	N	04	04	02	13	02	02	03
N	00031	2.47	9.37	2	0617137364	12/28/2017	22:45	5	0	0	N	05	01	01	13	88	02	00
N	00283	0.01	0.01	3	3217021552	03/05/2017	14:49	1	0	0	N	01	01	01	13	07	02	04
N	00278	0	0.00	3	3217031931	04/04/2017	17:56	3	0	1	N	01	01	01	42	11	03	01
N	00288	1.84	1.84	3	3217035261	04/13/2017	19:45	5	0	0	N	03	01	01	13	08	02	01
N	00280	0.01	0.01	3	3217061075	06/29/2017	18:23	5	0	0	N	01	01	01	42	11	02	01
N	123684	0	0.00		3217061274	06/30/2017	10:11	6	0	0	N	01	01	01	42	11	02	01
N	00288	1.84	1.84	3	3217077565	08/15/2017	16:09	3	0	0	N	01	04	02	40	12	02	00
N	00288	1.84	1.84	3	3217080602	08/24/2017	17:31	5	0	0	N	01	01	01	42	12	02	01
N	00031	3.67	10.57	2	3217085489	09/07/2017	19:15	5	0	0	N	04	01	01	13	08	02	01
N	00283	0.01	0.01	3	3217087054	09/12/2017	18:05	3	0	0	N	01	01	01	13	11	02	01
N	123069	0	0.00		3217098720	10/18/2017	06:50	4	0	0	N	01	01	01	13	08	02	01
N	00031	2.55	9.45	2	3217120830	12/26/2017	09:39	3	0	0	N	01	01	01	13	15	02	02
N	00031	5.44	5.44	1	3917006133	05/05/2017	22:13	6	0	1	N	05	04	02	13	12	03	01

Report generated by TDTSKLG at 2018-07-25 10:21:59.938

Report Legend

Cty - County
Rd - Maintenance Road
MP - Milepoint
C-MP - Continuous Milepoint
Dir - Direction of Highway
COMP/HQ# - Complaint Number/Headquarters Number
DAY - Day Of Week Code
Fat - Fatality
Inj - Injury
AL - Alcohol Involved
LC - Lighting Condition
WC - Weather Condition
SC - Surface Condition
MHE - Most Harmful Event
PC - Primary Contributing Circumstance
Class - Report Classification
MOI - Manner of Impact

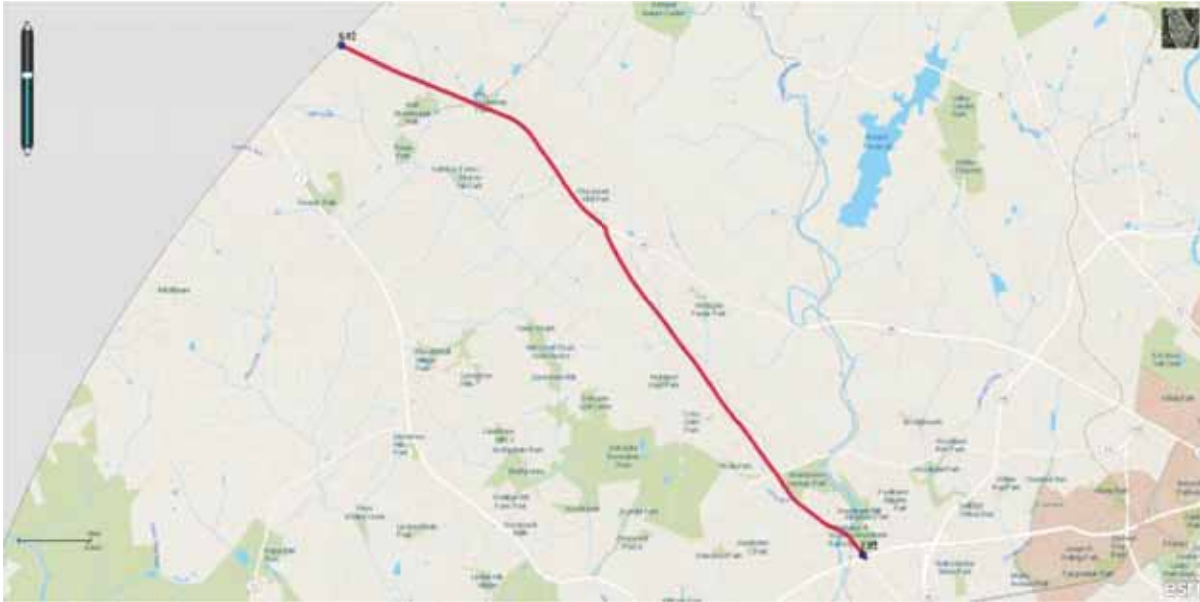
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Appendix B.2

SR 41 from Pennsylvania to SR 2

Delaware Crash Analysis Reporting System

Crash Study Time Period:	1/1/2015 - 12/31/2017
Query Type:	CrashBufferTool
Description:	Crash Summary SR 41 from PA to SR2
Study Requested By:	Stephanie Everett- RKK
Study Generated By:	TDTSKLG
Number of Crashes:	483
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary		Classification			Manner of Impact		
	# of Crashes		# of Crashes	% of Total Crashes		# of Crashes	% of Total Crashes
Total Crashes	483				Front to rear	248	51.35%
Fatal Crashes	3	Non-Reportable	0	0.00%	Front to front	18	3.73%
Total Alcohol-Related Crashes	26	Reportable	384	79.50%	Angle	105	21.74%
Total Non Alcohol-Related Crashes	457	Personal Injury	96	19.88%	Sideswipe, same direction	41	8.49%
Total Fatalities	3	Fatality	3	0.62%	Sideswipe, opposite direction	7	1.45%
Total Pedestrian Fatalities	1	Total	483		Rear to side	1	0.21%
Total Pedestrian Injuries	3				Rear to rear	0	0.00%
Total Pedestrian Crashes	3				Other	3	0.62%
Total Motorcycle Crashes	6				Unknown	1	0.21%
Total Pedalcyclist Crashes	0				Not a collision between two vehicles	59	12.22%
					Total	483	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	Total
Alcohol Related	0	17	8	1	26
Non-Alcohol Related	0	367	88	2	457
Total	0	384	96	3	483

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	Total
Front to rear	0	202	46	0	248
Front to front	0	8	10	0	18
Angle	0	80	24	1	105
Sideswipe, same direction	0	38	2	1	41
Sideswipe, opposite direction	0	5	2	0	7
Rear to side	0	1	0	0	1
Rear to rear	0	0	0	0	0
Other	0	2	1	0	3
Unknown	0	1	0	0	1
Not a collision between two vehicles	0	47	11	1	59
Total	0	384	96	3	483

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Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	43	8.90%
Monday	71	14.70%
Tuesday	78	16.15%
Wednesday	62	12.84%
Thursday	83	17.18%
Friday	82	16.98%
Saturday	64	13.25%
Total	483	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	16	3.31%
01:00 - 01:59	5	1.04%
02:00 - 02:59	4	0.83%
03:00 - 03:59	1	0.21%
04:00 - 04:59	6	1.24%
05:00 - 05:59	12	2.48%
06:00 - 06:59	19	3.93%
07:00 - 07:59	34	7.04%
08:00 - 08:59	30	6.21%
09:00 - 09:59	17	3.52%
10:00 - 10:59	24	4.97%
11:00 - 11:59	22	4.55%
Total	190	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	27	5.59%
13:00 - 13:59	23	4.76%
14:00 - 14:59	22	4.55%
15:00 - 15:59	27	5.59%
16:00 - 16:59	35	7.25%
17:00 - 17:59	52	10.77%
18:00 - 18:59	33	6.83%
19:00 - 19:59	20	4.14%
20:00 - 20:59	19	3.93%
21:00 - 21:59	12	2.48%
22:00 - 22:59	14	2.90%
23:00 - 23:59	9	1.86%
Total	293	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	413	85.51%
Wet	61	12.63%
Snow	4	0.83%
Ice/Frost	4	0.83%
Sand	0	0.00%
Water (standing, moving)	0	0.00%
Slush	0	0.00%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	1	0.21%
Total	483	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	322	66.67%
Dawn	11	2.28%
Dusk	13	2.69%
Dark-Lighted	78	16.15%
Dark-Not Lighted	57	11.80%
Dark-Unknown Lighting	1	0.21%
Other	0	0.00%
Unknown	1	0.21%
Total	483	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	367	75.98%
Cloudy	66	13.66%
Fog, Smog, Smoke	0	0.00%
Rain	37	7.66%
Sleet, Hail (freezing rain or drizzle)	1	0.21%
Snow	10	2.07%
Blowing Snow	0	0.00%
Severe Crosswinds	1	0.21%
Blowing Sand, Soil, Dirt	0	0.00%
Other	0	0.00%
Unknown	4	0.83%
Total	486	

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First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	3	0.62%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	5	1.04%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed	3	0.62%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed	17	3.52%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed	399	82.61%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.21%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.21%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	0	0.00%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	3	0.62%
Ditch, Collision With Fixed Object	2	0.41%
Embankment, Collision With Fixed Object	1	0.21%
Guardrail Face, Collision With Fixed Object	1	0.21%
Guardrail End, Collision With Fixed Object	1	0.21%
	0	0.00%

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Concrete Traffic Barrier, Collision With Fixed Object		
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	0	0.00%
Utility Pole, Collision With Fixed Object	2	0.41%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	5	1.04%
Overhead Sign Support, Collision With Fixed Object	0	0.00%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	1	0.21%
Mailbox, Collision With Fixed Object	1	0.21%
Other Post, Pole or Support, Collision With Fixed Object	1	0.21%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	1	0.21%
Illegally Parked Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	0	0.00%
Stopped Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	33	6.83%
Unknown, Collision With Fixed Object	2	0.41%
Total	466	

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Primary Contributing Circumstance		
	# of Crashes	% of Total Crashes
Speeding	2	0.41%
Failed to yield right of way	51	10.56%
Passed Stop Sign	0	0.00%
Disregard Traffic Signal	31	6.42%
Wrong side or wrong way	1	0.21%
Improper passing	4	0.83%
Improper lane change	13	2.69%
Following too close	76	15.73%
Made improper turn	9	1.86%
Driving under the influence	21	4.35%
Driver inattention, distraction, or fatigue	131	27.12%
Driving in a careless or reckless manner	47	9.73%
Driving in an aggressive manner	2	0.41%
Improper backing	2	0.41%
Other improper driving	4	0.83%
Mechanical defects	3	0.62%
Animal in Roadway - Deer	21	4.35%
Animal in Roadway - Other Animal	0	0.00%
Other environmental circumstances - weather, glare	5	1.04%
Roadway circumstances - debris, holes, work zone,	3	0.62%
Other	17	3.52%
Unknown	38	7.87%
Total	481	

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Driver Action		
	# of Drivers	% of Total Crashes
No Contributing Action	480	51.06%
Failed to yield right of way	52	5.53%
Ran Red Light	25	2.66%
Ran Stop Sign	1	0.11%
Disregard other traffic sign	2	0.21%
Disregard other road markings	1	0.11%
Exceeded authorized speed limit	0	0.00%
Driving too fast for conditions	8	0.85%
Made an improper turn	10	1.06%
Improper backing	0	0.00%
Wrong side or wrong way	0	0.00%
Followed too closely	82	8.72%
Failure to keep in proper lane	16	1.70%
Ran off roadway	2	0.21%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	100	10.64%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	2	0.21%
Over-correcting/over-steering	2	0.21%
Improper Passing	4	0.43%
Other Contributing Action	99	10.53%
Unknown	54	5.74%
Total	940	

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00294	2.38	2.38	1	0115050730	06/29/2015	12:08	2	0	0	N	01	01	01	13	11	02	01
N	00237	7.09	16.97	4	0115094359	11/15/2015	20:28	1	0	0	N	04	01	01	13	11	02	01
N	00021	1.41	1.41	1	0215023059	03/26/2015	12:52	5	0	0	N	01	04	02	42	12	02	01
N	00257	0.1	0.10	1	0615000284	01/02/2015	12:38	6	0	0	N	01	01	01	13	02	02	03
N					0615000409	01/02/2015	19:00	6	0	2	N	04	01	01	13	88	03	03
N	00021	3.12	3.12	1	0615000786	01/04/2015	12:35	1	0	0	N	01	02	02	12	17	02	00
N	00237	2.82	2.82	1	0615001248	01/06/2015	06:46	3	0	0	N	01	06	03	13	15	02	02
N	00011	3.97	18.73	1	0615003131	01/12/2015	20:30	2	0	0	Y	04	04 - 02	02	37	10	02	00
N	00021	2.27	2.27	1	0615003480	01/14/2015	11:41	4	0	0	N	01	01	01	13	01	02	00
N	00237	1.65	1.65	3	0615003800	01/15/2015	12:56	5	1	0	N	01	01	01	13	12	04	03
N	00021	3.07	3.07	1	0615004645	01/18/2015	08:00	1	0	0	N	01	05 - 05	04	01	19	02	00
N	00021	1.75	1.75	1	0615005924	01/23/2015	00:45	6	0	0	N	05	01	01	27	17	02	00
N	00237	1.18	1.18	3	0615006096	01/23/2015	16:09	6	0	0	N	01	02	01	13	02	02	03
N	00237	0.92	0.92	3	0615008114	01/31/2015	09:39	7	0	0	N	01	01	01	13	02	02	03
N	00237	2.62	2.62	3	0615008151	01/31/2015	12:02	7	0	0	N	01	01	01	13	02	02	04
N	00021	4.27	4.27	1	0615008320	02/01/2015	02:22	1	1	2	N	05	01	01	13	13	04	04
N	00280	1.74	1.74	3	0615009747	02/06/2015	10:13	6	0	0	N	01	01	01	13	08	02	01
N	00237	1.17	1.17	3	0615009830	02/06/2015	16:05	6	0	1	N	01	01	01	13	02	03	03
N	00011	10.74	10.74	3	0615011869	02/14/2015	11:01	7	0	0	N	01	02	01	42	88	02	03
N	00021	1.48	1.48	1	0615012481	02/16/2015	09:50	2	0	0	N	01	01	01	13	04	02	03
N	00021	4.41	4.41	1	0615012948	02/17/2015	21:46	3	0	0	N	04	02	01	13	04	02	03
N	00237	2.35	2.35	3	0615012994	02/18/2015	07:16	4	0	0	N	01	01	04	13	08	02	01
N	00237	0.88	0.88	3	0615013482	02/19/2015	18:12	5	0	0	N	03	01	01	13	02	02	03
N	00021	2.85	2.85	1	0615014098	02/21/2015	16:49	7	0	0	N	01	06	03	13	04	02	02
N	00011	10.75	10.75	3	0615014261	02/21/2015	23:43	7	0	1	Y	04	04	02	13	11	03	01
N	00021	2.71	2.71	1	0615014768	02/23/2015	18:13	2	0	0	N	05	02	01	42	11	02	01
N	00237	0.46	0.46	3	0615015098	02/24/2015	22:41	3	0	0	N	04	01	01	13	99	02	03
N	00237	1.33	1.33	3	0615015700	02/27/2015	07:18	6	0	0	N	01	06	02	13	12	02	01
N	00011	3.98	18.74	4	0615016798	03/03/2015	10:55	3	0	0	N	01	01	01	13	11	02	01
N	00237	0.81	0.81	3	0615017558	03/05/2015	17:10	5	0	0	Y	01	06	03	13	10	02	04
N	00021	0.98	0.98	1	0615017955	03/07/2015	04:03	7	0	0	Y	04	01	01	13	12	02	01
N	00021	4.3	4.30	1	0615018034	03/07/2015	12:09	7	0	0	N	01	01	01	13	19	02	01
N	00021	1.93	1.93	1	0615018460	03/09/2015	07:21	2	0	1	N	01	02	01	13	11	03	01
N	00021	1.11	1.11	1	0615018668	03/09/2015	18:35	2	0	0	N	03	01	01	13	07	02	03
N	00237	1.8	1.80	3	0615018723	03/09/2015	23:42	2	0	0	N	05	01	01	08	20	02	00
N	00237	0.55	0.55	3	0615018916	03/10/2015	16:59	3	0	0	N	01	04	02	13	12	02	01
N	00237	0.81	0.81	3	0615021300	03/19/2015	11:03	5	0	0	N	01	01	01	13	99	02	03
N	00021	1.03	1.03	1	0615022354	03/23/2015	14:15	2	0	0	N	01	01	01	13	15	02	04
N	00021	3.58	3.58	1	0615022809	03/25/2015	12:22	4	0	1	N	01	02	01	13	11	03	03
N	00021	3.58	3.58	1	0615023000	03/26/2015	08:51	5	0	2	N	01	01	01	13	99	03	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00270	0.23	0.23	1	0615023991	03/29/2015	19:51	1	0	3	N	05	01	01	13	04	03	03
N	00237	2.12	2.12	3	0615024299	03/31/2015	06:12	3	0	0	N	02	01	01	13	11	02	04
N	00277	0.91	0.91	1	0615025603	04/04/2015	21:31	7	0	0	N	04	01	01	13	02	02	02
N	00237	2.71	2.71	3	0615029004	04/18/2015	10:48	7	0	1	N	01	01	01	13	12	03	00
N	00237	1.34	1.34	3	0615031824	04/28/2015	20:15	3	0	0	N	05	01	01	13	99	02	01
N	00237	2.37	2.37	3	0615032178	04/30/2015	08:05	5	0	0	N	01	01	01	13	11	02	01
N	00237	2.53	2.53	3	0615032619	05/01/2015	18:02	6	0	0	N	01	01	01	13	08	02	01
N	00237	1.05	1.05	3	0615033136	05/03/2015	16:02	1	0	1	N	01	01	01	13	88	03	00
N	00237	0.74	0.74	3	0615033558	05/05/2015	08:01	3	0	0	N	01	01	01	13	08	02	01
N	00237	0.22	0.22	3	0615033951	05/06/2015	15:40	4	0	0	N	01	01	01	13	02	02	03
N	00237	2.11	2.11	3	0615034181	05/07/2015	12:57	5	0	1	N	01	01	01	13	08	03	01
N	00294	2.38	2.38	1	0615035892	05/12/2015	20:37	3	0	0	N	04	02	01	13	04	02	03
N	00237	1.79	1.79	3	0615036301	05/14/2015	12:18	5	0	0	N	01	01	01	12	17	02	00
N	00237	0.99	0.99	3	0615037456	05/18/2015	07:43	2	0	0	N	01	01	01	13	12	02	03
N	00237	2.12	2.12	3	0615037584	05/18/2015	15:21	2	0	0	N	01	04	02	13	99	02	01
N	00277	0.91	0.91	3	0615037715	05/18/2015	23:32	2	0	0	N	04	04	02	13	04	02	03
N	00237	1.21	1.21	3	0615037942	05/19/2015	17:11	3	0	0	N	01	04	02	13	12	02	03
N					0615038994	05/23/2015	12:22	7	0	3	N	01	01	01	42	88	03	01
N	00237	1.55	1.55	3	0615039834	05/26/2015	15:13	3	0	0	N	01	01	01	13	08	02	01
N	00237	1.19	1.19	3	0615040538	05/28/2015	16:02	5	0	0	N	01	02	01	13	11	02	01
N	00237	1.66	1.66	3	0615040834	05/29/2015	00:00	6	0	0	N	01	01	01	13	99	02	03
N	00237	0.46	0.46	3	0615041347	05/31/2015	04:44	1	0	0	N	05	01	01	13	02	02	03
N	00237	0.87	0.87	3	0615043886	06/08/2015	11:06	2	0	0	N	01	01	01	13	11	02	03
N	00237	1.15	1.15	3	0615044360	06/09/2015	17:59	3	0	2	N	01	01	01	13	02	03	05
N	00011	10.75	10.75	3	0615044477	06/10/2015	05:40	4	0	0	N	01	01	01	13	09	02	04
N	00294	2.38	2.38	1	0615045179	06/12/2015	10:30	6	0	0	N	01	01	01	13	12	02	01
N	00237	1.73	1.73	3	0615047174	06/18/2015	09:10	5	0	1	N	01	01	01	13	12	03	01
N	00237	1.17	1.17	3	0615047858	06/20/2015	12:20	7	0	0	N	01	02	01	13	07	02	03
N	00021	1.76	1.76	1	0615048542	06/22/2015	18:53	2	0	0	N	01	01	01	13	88	02	01
N	00021	1.52	1.52	1	0615049100	06/24/2015	09:50	4	0	0	N	01	02	01	13	12	02	01
N	00021	1.28	1.28	1	0615049313	06/24/2015	19:51	4	0	0	N	01	02	02	13	08	02	01
N	00021	1.83	1.83	1	0615049802	06/26/2015	16:03	6	0	0	N	01	01	01	13	16	02	04
N	00237	2.12	2.12	3	0615049806	06/26/2015	15:55	6	0	0	N	01	01	01	13	11	02	03
N	00021	1.48	1.48	1	0615050655	06/29/2015	07:48	2	0	0	N	01	01	01	13	08	02	01
N	00237	2.11	2.11	3	0615050851	06/29/2015	17:18	2	0	0	N	01	01	01	13	11	02	01
N	00237	2.33	2.33	3	0615052361	07/04/2015	16:35	7	0	0	N	01	02	01	13	12	02	02
N	00237	1.34	1.34	3	0615052740	07/06/2015	05:13	2	0	0	N	02	01	01	42	11	02	01
N	00237	0.81	0.81	3	0615053102	07/07/2015	08:21	3	0	0	N	01	02	01	13	11	02	01
N	00021	4.29	4.29	1	0615053793	07/09/2015	11:56	5	0	1	N	01	01	01	13	02	03	03
N	00237	1.21	1.21	3	0615054163	07/10/2015	13:29	6	0	0	N	01	01	01	13	88	02	01

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2015																		
N	00021	2.77	2.77	1	0615055377	07/14/2015	12:22	3	0	0	N	01	01	01	13	11	02	01
N	00237	0.87	0.87	3	0615056053	07/16/2015	18:30	5	0	0	N	01	01	01	13	06	02	03
N	00021	2.65	2.65	1	0615056664	07/18/2015	18:48	7	0	0	N	01	01	01	13	11	02	01
N	00237	2.38	2.38	3	0615056732	07/18/2015	23:59	7	0	0	Y	04	01	01	42	10	02	01
N					0615059301	07/27/2015	10:29	2	0	1	N	01	01	01	13	04	03	03
N					0615061196	08/02/2015	00:29	1	0	5	N	05	01	01	13	04	03	03
N	00021	3.17	3.17	1	0615061384	08/02/2015	19:04	1	0	0	N	01	01	01	08	20	02	00
N	00257	0.11	0.11	1	0615062810	08/07/2015	11:49	6	0	0	N	01	01	01	13	07	02	05
N	00021	2.79	2.79	1	0615064896	08/14/2015	08:38	6	0	0	N	01	01	01	13	11	02	01
N	00237	1.72	1.72	3	0615065164	08/14/2015	22:06	6	0	0	Y	04	01	01	34	10	02	03
N	00021	2.68	2.68	1	0615065856	08/17/2015	10:12	2	0	0	N	01	01	01	16	12	02	03
N					0615067683	08/23/2015	02:37	1	0	0	Y	04	01	01	28	10	02	00
N	00237	1.07	1.07	3	0615068024	08/24/2015	15:20	2	0	1	N	01	01	01	09	20	03	00
N	00237	1.83	1.83	3	0615068243	08/25/2015	11:26	3	0	0	N	01	01	01	13	05	02	05
N	00021	3.57	3.57	1	0615068341	08/25/2015	16:11	3	0	1	N	01	01	01	13	11	03	01
N	00021	1.62	1.62	1	0615070545	09/01/2015	09:34	3	0	0	N	01	01	01	13	99	02	05
N	00021	2.68	2.68	1	0615072392	09/06/2015	16:20	1	0	0	N	01	01	01	13	02	02	03
N	00237	1.56	1.56	3	0615074107	09/11/2015	19:51	6	0	0	N	05	01	01	34	11	02	00
N	00021	4.07	4.07	1	0615074372	09/12/2015	19:47	7	0	0	N	04	04	02	13	04	02	03
N	00237	2.44	2.44	3	0615074722	09/14/2015	07:09	2	0	0	N	01	01	01	13	08	02	01
N	00237	0.8	0.80	3	0615074997	09/15/2015	07:32	3	0	0	N	01	01	01	13	08	02	01
N	00021	2.35	2.35	1	0615075161	09/15/2015	17:12	3	0	0	N	01	01	01	13	11	02	01
N	00237	1.09	1.09	3	0615075812	09/17/2015	15:29	5	0	0	N	01	01	01	42	11	02	01
N	00021	3.52	3.52	1	0615075876	09/17/2015	18:22	5	0	0	N	01	01	01	13	11	02	01
N	00021	3.56	3.56	1	0615075896	09/17/2015	19:32	5	0	0	N	03	01	01	13	08	02	01
N	00021	1.43	1.43	1	0615076801	09/20/2015	19:46	1	0	0	N	05	01	01	13	11	02	01
N	00021	2	2.00	1	0615076892	09/21/2015	08:13	2	0	0	N	01	01	01	42	08	02	01
N	00021	2.73	2.73	1	0615077971	09/24/2015	16:05	5	0	0	N	01	01	01	13	11	02	01
N	00237	0.46	0.46	3	0615078363	09/25/2015	19:18	6	0	2	Y	05	01	01	13	10	03	03
N	00011	3.97	18.73	4	0615079771	09/30/2015	15:14	4	0	0	N	01	01	01	42	08	02	01
N	00237	1.78	1.78	3	0615082031	10/07/2015	16:52	4	0	0	N	01	01	01	13	08	02	01
N	00237	2.12	2.12	3	0615082089	10/07/2015	19:20	4	0	0	N	04	01	01	13	02	02	04
N	00237	2.12	2.12	3	0615082566	10/09/2015	07:16	6	0	0	N	01	02	01	42	08	02	01
N	00237	1.21	1.21	3	0615082925	10/10/2015	10:53	7	0	0	N	01	01	01	13	08	02	01
N	00021	4.07	4.07	1	0615082937	10/10/2015	11:40	7	0	0	Y	01	01	01	13	10	02	01
N	00021	4.3	4.30	1	0615082977	10/10/2015	14:32	7	0	0	N	01	01	01	13	08	02	01
N	00021	1	1.00	1	0615083107	10/10/2015	22:59	7	0	0	N	04	01	01	13	11	02	01
N	00021	2.67	2.67	1	0615087927	10/26/2015	22:34	2	0	0	N	04	01	01	13	08	02	01
N	00021	2.68	2.68	1	0615088039	10/27/2015	11:15	3	0	0	N	01	01	01	13	88	02	01
N	00270	0.23	0.23	1	0615088246	10/28/2015	05:46	4	0	0	N	05	02	02	13	04	02	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00237	0.53	0.53	3	0615089741	11/01/2015	18:15	1	0	0	N	05	01	01	12	17	02	00
N	00237	2.65	2.65	3	0615090726	11/04/2015	17:45	4	0	0	N	04	01	01	13	08	02	01
N	00021	2.17	2.17	1	0615090728	11/04/2015	18:12	4	0	0	N	05	01	01	12	17	02	00
N	00237	1.5	1.50	3	0615090842	11/05/2015	04:55	5	0	0	N	05	01	01	12	17	02	00
N					0615091349	11/06/2015	14:46	6	0	1	N	01	01	01	42	11	03	01
N	00021	1.68	1.68	1	0615091812	11/07/2015	00:00	7	0	1	Y	05	01	01	32	10	03	00
N	00237	1.72	1.72	3	0615091827	11/07/2015	21:50	7	0	0	N	05	01	01	12	17	02	03
N	00237	2.54	2.54	3	0615093369	11/11/2015	17:30	4	0	0	N	04	01	01	13	08	02	01
N	00021	4.08	4.08	1	0615093755	11/13/2015	17:24	6	0	0	N	04	01	01	13	99	02	05
N	00237	1.36	1.36	3	0615094728	11/17/2015	06:48	3	0	0	N	02	01	01	12	17	02	00
N	00021	1.03	1.03	1	0615094736	11/17/2015	07:23	3	0	0	N	01	01	01	13	12	02	01
N	00277	0.91	0.91	3	0615095513	11/19/2015	15:39	5	0	1	N	03	04	02	13	04	03	03
N	00021	1.05	1.05	1	0615095837	11/20/2015	13:51	6	0	1	N	01	01	01	13	08	03	01
N	00021	2.71	2.71	1	0615096155	11/21/2015	13:22	7	0	0	N	01	02	01	13	12	02	01
N	00021	4.09	4.09	1	0615097670	11/26/2015	20:40	5	0	3	N	05	01	01	13	12	03	01
N	00021	1.91	1.91	1	0615097993	11/27/2015	21:05	6	0	0	N	05	01	01	13	17	02	00
N	00237	0.04	0.04	3	0615098370	11/29/2015	08:45	1	0	0	N	01	02 - 04	02	24	12	02	00
N					0615098745	11/30/2015	15:50	2	0	2	N	01	02 - 04	02	13	02	03	02
N	00237	7.12	17.00	4	0615099063	12/01/2015	16:39	3	0	0	N	05	04	02	13	08	02	01
N	00237	0.22	0.22	3	0615099799	12/03/2015	18:05	5	0	3	Y	05	01	01	13	08	03	01
N	00021	3.85	3.85	1	0615100808	12/06/2015	17:29	1	0	0	N	05	01	01	13	11	02	03
N	00021	1.17	1.17	1	0615103346	12/14/2015	17:28	2	0	0	N	05	01	01	13	11	02	01
N	00237	1.71	1.71	3	0615103686	12/15/2015	16:24	3	0	0	N	01	01	01	13	02	02	03
N	00021	0.98	0.98	1	0615105194	12/19/2015	20:55	7	0	0	N	04	01	01	13	12	02	01
N	00280	1.74	1.74	3	3215000568	01/02/2015	16:45	6	0	0	N	03	01	01	13	11	02	01
N	122590	0.01	0.01		3215043160	05/04/2015	09:30	2	0	0	N	01	01	01	13	19	02	02
N	00277	0.9	0.90	3	3215071859	07/21/2015	07:21	3	0	0	N	01	02	01	13	11	02	04
N	00282	0.98	0.98	1	3215072317	07/22/2015	11:40	4	0	1	N	01	01	01	13	11	03	01
N	00280	1.73	1.73	3	3215113422	11/09/2015	09:35	2	0	0	N	01	01	01	42	11	02	01
N					3215122432	12/06/2015	04:00	1	0	1	N	05	01	01	32	11	03	00
N	00282	0.98	0.98	1	3215124669	12/11/2015	12:02	6	0	0	N	06	01	01	13	99	02	01

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N	00237	1.05	1.05	3	0116061541	06/30/2016	17:17	5	0	0	N	01	01	01	13	09	02	03
N	00021	0.98	0.98	1	0616000597	01/03/2016	03:17	1	0	0	Y	04	01	01	34	10	02	00
N	00237	2.17	2.17	3	0616001010	01/04/2016	17:13	2	0	0	N	04	01	01	13	08	02	01
N	00237	1.12	1.12	3	0616001322	01/05/2016	16:42	3	0	0	N	03	01	01	42	12	02	01
N					0616003397	01/12/2016	14:59	3	0	2	N	01	01	01	13	04	03	88
N	00237	0.21	0.21	3	0616004093	01/14/2016	16:46	5	0	0	N	03	01	01	13	02	02	03
N	00270	0.23	0.23	3	0616004458	01/15/2016	20:50	6	0	1	N	04	04	01	13	12	03	03
N	00021	1.31	1.31	1	0616004547	01/16/2016	05:33	7	0	0	N	05	04	02	13	07	02	04
N	00237	0.04	0.04	3	0616004655	01/16/2016	15:21	7	0	1	N	01	01	01	13	11	03	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00237	0.22	0.22	3	0616004701	01/16/2016	17:48	7	0	0	N	04	01	01	13	99	02	01
N	00237	1.63	1.63	3	0616004815	01/17/2016	01:48	1	0	0	Y	04	01	01	25	10	02	00
N	00021	1.14	1.14	1	0616005094	01/18/2016	08:23	2	0	0	N	01	01	01	13	11	02	01
N	00021	0.99	0.99	1	0616005771	01/20/2016	10:52	4	0	0	N	01	02	01	13	07	02	04
N	00237	1.41	1.41	3	0616006217	01/21/2016	17:43	5	0	0	N	05	01	01	13	11	02	01
N	00021	0.99	0.99	1	0616006249	01/21/2016	17:55	5	0	0	N	04	01	01	13	99	02	03
N	00011	10.75	10.75	3	0616007372	01/25/2016	20:02	2	0	0	N	05	02	02	13	99	02	04
N	00237	0.99	0.99	3	0616008014	01/27/2016	20:05	4	0	0	N	04	01	01	13	99	02	01
N	00282	0.98	0.98	1	0616008480	01/29/2016	06:42	6	0	1	N	01	01	02	13	04	03	03
N	00237	2.38	2.38	3	0616008490	01/29/2016	07:37	6	0	0	N	01	01 - 01	01	13	12	02	01
N	00237	1.24	1.24	3	0616008890	01/30/2016	12:43	7	0	0	N	01	01	01	08	11	02	00
N	00021	2.66	2.66	1	0616009175	01/29/2016	17:00	6	0	0	N	01	01	01	08	88	02	00
N	00021	0.98	0.98	1	0616009720	02/02/2016	09:14	3	0	0	N	01	01	02	13	08	02	01
N	00237	7.1	16.98	4	0616010619	02/04/2016	21:24	5	0	0	N	05	04	02	12	17	02	00
N	00237	1.07	1.07	3	0616012140	02/09/2016	17:28	3	0	0	N	04	06	02	13	99	02	01
N	00237	2.15	2.15	3	0616012653	02/11/2016	07:39	5	0	0	N	01	01	01	13	08	02	01
N	00237	1.33	1.33	3	0616012839	02/11/2016	17:04	5	0	0	N	01	01	01	13	11	02	01
N	00237	0.81	0.81	3	0616015173	02/18/2016	18:04	5	0	0	N	04	01	01	13	99	02	01
N	00237	2.34	2.34	3	0616015209	02/18/2016	19:40	5	0	0	N	05	01	01	13	16	02	01
N	00237	2.81	2.81	3	0616015337	02/19/2016	09:41	6	0	0	N	01	01	01	13	08	02	01
N	00011	10.74	10.74	3	0616015558	02/19/2016	18:51	6	0	0	N	04	01	01	13	08	02	01
N	00237	2.12	2.12	3	0616017055	02/24/2016	12:16	4	0	0	N	01	04	02	13	12	02	01
N	00237	1.24	1.24	3	0616017486	02/25/2016	16:31	5	0	0	N	01	01	01	13	08	02	01
N	00237	0.08	0.08	3	0616018531	02/28/2016	21:28	1	1	0	Y	05	01	01	09	21	04	00
N	00021	1.48	1.48	3	0616019950	03/04/2016	08:15	6	0	0	N	01	06	02	13	11	02	01
N	00021	3.58	3.58	1	0616020512	03/05/2016	19:53	7	0	0	N	05	01	01	13	04	02	03
N	00021	2.01	2.01	1	0616021890	03/10/2016	01:38	5	0	1	N	05	01	01	13	02	03	02
N	00237	2.12	2.12	3	0616022305	03/11/2016	09:56	6	0	1	N	01	01	01	13	11	03	01
N	00021	1.57	1.57	1	0616024063	03/16/2016	17:46	4	0	0	N	01	01	01	13	08	02	01
N	00021	2.81	2.81	1	0616025582	03/21/2016	13:23	2	0	0	N	01	01	01	42	11	02	01
N	00011	10.75	10.75	1	0616028183	03/29/2016	16:18	3	0	0	N	01	01	01	13	07	02	04
N	00021	0.99	0.99	1	0616029248	04/02/2016	01:31	7	0	0	Y	04	01	02	13	10	02	01
N	00021	4.35	4.35	1	0616029316	04/02/2016	11:08	7	0	0	N	01	04	02	13	12	02	01
N	00237	0.53	0.53	3	0616030242	04/05/2016	06:29	3	0	1	N	02	01	01	42	11	03	01
N	00237	2.28	2.28	3	0616032531	04/12/2016	15:12	3	0	0	N	01	01	01	13	02	02	03
N	00021	4.38	4.38	1	0616032760	04/13/2016	11:43	4	0	0	N	01	01	01	42	07	02	04
N	00021	4.03	4.03	1	0616033162	04/14/2016	16:07	5	0	0	N	01	01	01	13	08	02	01
N	00257	0.1	0.10	3	0616034960	04/20/2016	15:04	4	0	1	N	01	01	01	13	02	03	02
N	00237	1.15	1.15	3	0616035210	04/21/2016	12:01	5	0	0	N	01	01	01	13	02	02	04
N	00021	2	2.00	1	0616036159	04/24/2016	10:51	1	0	0	N	01	01	01	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00021	3.51	3.51	1	0616036691	04/26/2016	08:01	3	0	0	N	01	01	01	13	11	02	01
N	00011	3.96	18.72	4	0616038015	04/30/2016	15:11	7	0	0	N	01	02	01	13	11	02	01
N	00237	0.81	0.81	3	0616038282	05/01/2016	15:42	1	0	3	N	01	04	02	13	04	03	03
N	00237	0.81	0.81	3	0616039388	05/05/2016	05:49	5	0	5	N	02	02	01	13	08	03	01
N	00021	2.94	2.94	1	0616039409	05/04/2016	07:13	4	0	0	N	99	99	99	42	99	02	04
N	00237	7.09	16.97	4	0616040085	05/07/2016	04:15	7	0	0	N	04	01	01	25	17	02	00
N	00237	0.47	0.47	3	0616040938	05/09/2016	21:07	2	0	3	N	05	01	01	13	02	03	03
N	00237	2.2	2.20	3	0616041338	05/11/2016	07:25	4	0	0	N	01	01	01	13	11	02	01
N	00237	1.33	1.33	3	0616042161	05/13/2016	15:24	6	0	2	N	01	04	02	13	09	03	01
N	00237	1.05	1.05	3	0616042196	05/13/2016	17:09	6	0	1	N	01	02	02	13	02	03	03
N	00011	3.97	18.73	4	0616043328	05/17/2016	08:11	3	0	0	N	01	02	01	13	12	02	01
N	00011	10.75	10.75	3	0616044100	05/19/2016	08:55	5	0	2	N	01	01	01	13	12	03	01
N	00237	0.8	0.80	3	0616044747	05/20/2016	18:09	6	0	0	N	01	01	01	13	12	02	01
N					0616044880	05/21/2016	00:36	7	0	0	N	04	01	01	13	09	02	03
N	00011	3.97	18.73	4	0616045827	05/23/2016	17:10	2	0	1	N	01	02	01	13	12	03	01
N	00237	2.12	2.12	3	0616045983	05/24/2016	05:34	3	0	0	N	02	02	01	13	11	02	01
N	00237	7.12	17.00	4	0616046276	05/24/2016	17:59	3	0	0	N	01	01	01	13	11	02	01
N	00280	1.73	1.73	3	0616046423	05/25/2016	07:10	4	0	0	N	01	01	01	13	11	02	01
N	00270	0.23	0.23	3	0616047604	05/27/2016	16:48	6	0	0	N	01	01	01	13	02	02	03
N	00237	2.51	2.51	3	0616049338	06/01/2016	06:56	4	0	0	N	01	01	01	42	11	02	01
N	00237	0.22	0.22	3	0616050445	06/03/2016	16:16	6	0	0	N	01	02	01	13	08	02	01
N	00021	2.67	2.67	1	0616050457	06/03/2016	00:00	6	0	0	N	01	01	01	13	02	02	04
N	00280	1.74	1.74	3	0616050795	06/04/2016	11:31	7	0	0	N	01	02	01	13	11	02	01
N	00011	10.75	10.75	3	0616051859	06/06/2016	22:02	2	0	0	N	04	01	01	13	08	02	01
N	00021	1.28	1.28	1	0616052087	06/07/2016	14:49	3	0	0	N	01	01	01	13	12	02	04
N	00280	1.74	1.74	1	0616052905	06/09/2016	13:39	5	0	0	N	01	01	01	42	08	02	01
N	00237	0.06	0.06	3	0616055819	06/16/2016	13:22	5	0	0	N	01	04	02	26	12	02	00
N	00237	2.8	2.80	3	0616057341	06/20/2016	09:24	2	0	0	N	01	01	01	13	08	02	01
N	00237	2.12	2.12	3	0616059014	06/24/2016	11:24	6	0	0	N	01	02	01	13	11	02	01
N	00237	0.92	0.92	3	0616059204	06/24/2016	18:35	6	0	0	N	01	01	01	13	11	02	01
N	00237	1.05	1.05	3	0616059963	06/26/2016	18:20	1	0	0	N	01	01	01	13	11	02	04
N	00257	0.1	0.10	1	0616060669	06/28/2016	15:43	3	0	1	N	01	01	01	13	02	03	02
N					0616060980	06/29/2016	12:28	4	0	0	N	01	01	01	13	14	02	06
N	00237	1.48	1.48	3	0616061489	06/30/2016	15:13	5	0	0	N	01	01	01	13	11	02	01
N	00237	0.26	0.26	3	0616061561	06/30/2016	18:42	5	0	0	N	01	01	01	13	11	02	03
N	00021	1.14	1.14	1	0616061886	07/01/2016	14:47	6	0	1	N	01	01	01	13	11	03	01
N	00237	0.43	0.43	3	0616062083	07/01/2016	23:29	6	0	0	N	05	01	01	13	11	02	01
N	00021	4.07	4.07	1	0616064892	07/09/2016	16:43	7	0	1	N	01	04	02	13	04	03	03
N	00021	1.29	1.29	1	0616068575	07/18/2016	17:10	2	0	0	N	01	04	02	13	06	02	03
N	00021	4.07	4.07	1	0616069600	07/21/2016	16:45	5	0	0	N	01	01	01	13	04	02	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00021	1.48	1.48	3	0616069865	07/22/2016	12:58	6	0	1	N	01	01	01	13	08	03	01
N	00237	2.15	2.15	3	0616071097	07/25/2016	20:12	2	0	3	N	04	04	02	13	08	03	01
N	00237	1.06	1.06	3	0616071411	07/26/2016	17:01	3	0	0	N	01	01	01	34	88	02	00
N	00021	1.02	1.02	1	0616072216	07/28/2016	17:40	5	0	0	N	01	02	01	13	11	02	01
N	00011	10.74	10.74	3	0616076236	08/08/2016	00:00	2	0	0	N	01	01	01	13	07	02	01
N	00021	4.07	4.07	1	0616076247	08/08/2016	13:43	2	0	1	N	01	01	01	13	04	03	03
N	00237	2.24	2.24	3	0616076300	08/08/2016	00:00	2	0	1	N	01	01	01	13	08	03	01
N	00021	1.15	1.15	1	0616077116	08/10/2016	16:32	4	0	4	N	01	01	01	13	08	03	01
N	00282	0.98	0.98	1	0616078887	08/14/2016	00:37	1	0	0	Y	05	01	01	13	10	02	03
N	00237	1.16	1.16	3	0616079125	08/15/2016	14:41	2	0	0	N	01	01	01	13	11	02	01
N	00237	2.22	2.22	3	0616079562	08/16/2016	13:39	3	0	0	N	01	02	01	13	08	02	01
N	00294	2.38	2.38	1	0616079838	08/17/2016	07:00	4	0	0	N	01	01	01	13	04	02	03
N	00021	2.68	2.68	1	0616080016	08/17/2016	14:35	4	0	0	N	01	01	01	13	11	02	01
N	00237	2.11	2.11	3	0616080191	08/17/2016	20:42	4	0	0	N	04	01	01	13	11	02	01
N	00237	0.22	0.22	3	0616080944	08/19/2016	19:43	6	0	0	N	03	01	01	13	02	02	03
N	00237	0.27	0.27	3	0616082030	08/22/2016	16:56	2	0	0	N	01	01	01	13	07	02	04
N	00237	1.88	1.88	3	0616083228	08/25/2016	13:16	5	0	1	N	01	01	01	13	02	03	04
N	00237	7.13	17.01	4	0616086018	08/31/2016	16:30	4	0	0	N	01	01	01	13	99	02	03
N	00237	2.1	2.10	3	0616087813	09/06/2016	06:14	3	0	0	N	01	01	01	13	11	02	01
N	00021	1.4	1.40	1	0616087983	09/06/2016	14:28	3	0	0	N	01	01	01	13	11	02	01
N	00237	7.18	17.06	4	0616089583	09/10/2016	09:52	7	0	0	N	01	01	01	13	08	02	01
N	00237	2.62	2.62	3	0616089782	09/10/2016	19:02	7	0	1	N	03	01	01	17	88	03	00
N	00021	0.97	0.97	1	0616091397	09/14/2016	19:21	4	0	0	N	01	01	01	13	11	02	01
N	00021	4.1	4.10	1	0616093140	09/19/2016	15:58	2	0	1	N	01	02	02	13	11	03	01
N	00011	3.97	18.73	4	0616093461	09/20/2016	14:09	3	0	1	N	01	02	01	13	99	03	01
N	00021	1.01	1.01	1	0616094086	09/22/2016	07:45	5	0	0	N	01	01	01	13	11	02	04
N	00237	1.35	1.35	3	0616099431	10/06/2016	17:49	5	0	0	N	01	01	01	13	08	02	01
N	00021	2.52	2.52	1	0616099930	10/07/2016	21:36	6	0	0	N	04	01	01	12	17	02	00
N	00021	2.09	2.09	1	0616101121	10/11/2016	00:00	3	0	1	N	01	01	01	13	11	03	01
N	00237	1.65	1.65	3	0616102085	10/13/2016	17:11	5	0	0	N	01	01	01	13	02	02	03
N	00237	1.05	1.05	1	0616102316	10/14/2016	12:09	6	0	0	N	01	01	01	13	02	02	03
N	00021	4.03	4.03	1	0616102413	10/14/2016	17:07	6	0	0	N	01	01	01	13	02	02	03
N	00021	1.53	1.53	1	0616102517	10/14/2016	21:50	6	0	0	N	04	01	01	13	08	02	01
N	00021	4.42	4.42	1	0616102590	10/15/2016	02:59	7	0	0	N	04	01	01	99	99	02	00
N	00237	2.12	2.12	3	0616102727	10/15/2016	13:36	7	0	0	N	01	01	01	13	02	02	03
N	00237	0.22	0.22	3	0616103171	10/16/2016	18:57	1	0	1	N	05	01	01	09	21	03	00
N	00280	1.74	1.74	1	0616103273	10/17/2016	08:40	2	0	0	N	01	01	01	13	11	02	01
N	00237	2.35	2.35	3	0616103646	10/18/2016	07:14	3	0	0	N	01	01	01	13	12	02	01
N	00021	0.98	0.98	1	0616103844	10/18/2016	18:07	3	0	0	N	03	01	01	13	08	02	01
N	00237	2.28	2.28	3	0616104367	10/20/2016	06:51	5	0	0	N	02	01	01	13	08	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00021	0.97	0.97	1	0616105931	10/24/2016	13:38	2	0	0	N	01	01	01	13	02	02	03
N	00237	0.1	0.10	3	0616106549	10/26/2016	05:50	4	0	0	N	05	01	01	13	88	02	05
N	00021	1.41	1.41	1	0616106581	10/26/2016	08:14	4	0	0	N	01	01	01	13	11	02	03
N	00294	2.38	2.38	1	0616107508	10/28/2016	12:30	6	0	0	N	01	01	01	13	02	02	03
N	00011	3.97	18.73	4	0616107652	10/28/2016	17:25	6	0	0	N	01	01	01	13	08	02	01
N	00237	1.55	1.55	3	0616108052	10/29/2016	21:18	7	0	0	N	05	99	01	12	17	02	00
N					0616108155	10/30/2016	05:02	1	0	0	Y	05	01	01	34	10	02	00
N	00021	2	2.00	1	0616109056	11/01/2016	18:46	3	0	0	N	04	01	01	13	11	02	01
N	00237	1.09	1.09	3	0616109189	11/02/2016	08:01	4	0	0	N	01	01	01	13	08	02	01
N	00270	0.23	0.23	3	0616109955	11/04/2016	10:37	6	0	2	N	01	01	01	13	04	03	03
N	00021	2.64	2.64	1	0616110870	11/06/2016	16:09	1	0	0	N	01	01	01	12	17	02	00
N	00021	4.39	4.39	1	0616110969	11/06/2016	23:02	1	0	1	N	04	01	01	24	12	03	00
N	00021	4.06	4.06	1	0616111357	11/08/2016	07:30	3	0	0	N	01	01	01	13	12	02	01
N	00021	1.27	1.27	1	0616111995	11/09/2016	17:50	4	0	0	N	04	04	02	24	88	02	03
N	00237	1.78	1.78	3	0616112290	11/10/2016	14:42	5	0	2	N	01	01	01	13	11	03	02
N	00237	0.09	0.09	3	0616112486	11/11/2016	04:46	6	0	1	N	05	01	01	13	11	03	02
N	00237	1.07	1.07	3	0616113494	11/14/2016	02:24	2	0	0	Y	04	01	01	13	02	02	03
N	00237	1.17	1.17	3	0616114829	11/17/2016	17:20	5	0	0	N	04	01	01	42	08	02	01
N	00021	3.58	3.58	1	0616115400	11/18/2016	23:03	6	0	1	Y	05	01	01	13	10	03	05
N	00237	1.05	1.05	3	0616115671	11/19/2016	17:26	7	0	0	N	04	01	01	13	02	02	03
N	00237	2.57	2.57	3	0616116300	11/21/2016	11:29	2	0	2	N	01	01	01	13	12	03	02
N	00021	1.99	1.99	1	0616116806	11/22/2016	17:43	3	0	1	N	05	01	01	13	12	03	01
N	00237	2.13	2.13	3	0616116979	11/23/2016	08:45	4	0	1	N	01	01	01	13	02	03	02
N	00237	0.83	0.83	3	0616117149	11/23/2016	17:00	4	0	0	N	01	01	01	13	99	02	01
N	00237	1.98	1.98	3	0616117886	11/25/2016	20:15	6	0	0	N	05	02	01	13	09	02	03
N					0616118497	11/27/2016	17:19	1	0	0	Y	01	02	01	13	10	02	01
N	00021	1.15	1.15	1	0616118824	11/28/2016	18:16	2	0	1	N	05	01	01	13	08	03	01
N	00237	1.95	1.95	3	0616120139	12/02/2016	07:14	6	0	0	N	01	01	01	13	11	02	01
N	00021	2	2.00	1	0616120162	12/02/2016	08:28	6	0	0	N	01	01	01	13	99	02	01
N	00237	1.11	1.11	3	0616123854	12/12/2016	20:02	2	0	0	N	04	01	01	13	11	02	01
N	00021	1.47	1.47	1	0616124007	12/13/2016	10:31	3	0	0	N	01	01	01	13	07	02	03
N	00021	4.41	4.41	3	0616124388	12/14/2016	10:29	4	0	2	N	01	01	01	13	12	03	02
N	00237	1.05	1.05	3	0616125440	12/16/2016	23:42	6	0	0	Y	04	01	01	13	10	02	01
N	00237	0.81	0.81	3	0616126469	12/19/2016	13:40	2	0	0	N	01	99	01	13	99	02	01
N	00021	2.03	2.03	1	0616128439	12/24/2016	14:47	7	0	0	N	01	01	02	13	12	02	01
N	00237	2.82	2.82	3	0616128496	12/24/2016	17:17	7	0	0	N	04	01	02	13	12	02	02
N	00237	0.41	0.41	3	0616128527	12/24/2016	19:38	7	0	0	N	05	01	01	13	11	02	04
N	00021	1.48	1.48	1	0616129016	12/26/2016	20:36	2	0	1	N	04	01	01	42	11	03	01
N	00237	1.06	1.06	3	0616130196	12/30/2016	11:03	6	0	0	N	01	01	01	13	08	02	01
N	00280	1.74	1.74	3	3216002370	01/08/2016	09:10	6	0	0	N	01	02	01	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00237	2.12	2.12	3	3216011109	02/04/2016	22:35	5	0	0	N	04	04	02	13	99	02	01
N	00021	4.07	4.07	1	3216014311	02/15/2016	14:18	2	0	0	N	01	06	04	13	19	02	03
N	00282	0.98	0.98	1	3216050954	05/31/2016	14:30	3	0	0	N	01	01	01	42	11	02	01
N	00280	1.73	1.73	3	3216084825	09/03/2016	18:25	7	0	0	N	01	01	01	13	08	02	01
N	00280	1.73	1.73	3	3216102731	10/27/2016	11:25	5	0	1	N	01	02	01	13	11	03	01
N	00282	0.98	0.98	1	3216112794	11/27/2016	13:33	1	0	0	N	01	01	01	13	02	02	04

2017																		
N	00237	0.9	0.90	3	0617000991	01/04/2017	07:54	4	0	0	N	01	01	01	13	02	02	03
N	00237	2.37	2.37	3	0617001080	01/04/2017	12:11	4	0	0	N	01	01	01	13	08	02	01
N	00237	1.36	1.36	3	0617001210	01/04/2017	00:00	4	0	0	N	04	01	01	13	02	02	03
N	00021	1.84	1.84	1	0617001582	01/05/2017	17:26	5	0	0	N	01	01	01	13	08	02	01
N	00237	2.12	2.12	3	0617002510	01/08/2017	13:27	1	0	0	N	01	01	01	13	11	02	01
N	00237	0.57	0.57	3	0617003075	01/10/2017	08:42	3	0	1	N	01	01	01	13	08	03	01
N	00011	10.74	10.74	3	0617004710	01/14/2017	14:32	7	0	0	N	01	02	01	13	15	02	01
N	00237	2.53	2.53	3	0617006254	01/19/2017	07:03	5	0	0	N	02	02	01	13	11	02	01
N	00237	1.36	1.36	3	0617006430	01/19/2017	15:29	5	0	0	N	01	01	01	13	08	02	01
N	00011	10.74	10.74	3	0617006808	01/20/2017	16:10	6	0	0	N	01	02	02	13	08	02	01
N	00237	1.88	1.88	3	0617008256	01/24/2017	17:23	3	0	1	N	01	01	01	42	11	03	01
N	00237	1.71	1.71	3	0617008941	01/26/2017	14:32	5	0	1	N	01	08	01	13	02	03	03
N	00237	0.81	0.81	3	0617010088	01/29/2017	19:20	1	0	0	N	04	01	01	13	11	02	01
N	00021	0.98	0.98	3	0617011062	02/01/2017	18:20	4	0	0	N	04	01	01	13	09	02	04
N	00237	2.12	2.12	3	0617011964	02/04/2017	12:24	7	0	0	N	01	01	01	13	02	02	03
N	00237	1.13	1.13	3	0617012515	02/06/2017	08:38	2	0	0	N	01	01	01	13	08	02	01
N	00237	2.12	2.12	3	0617012595	02/06/2017	12:28	2	0	0	N	01	01	01	13	08	02	01
N	00021	1.51	1.51	1	0617013644	02/09/2017	08:21	5	0	0	N	01	06	02	13	04	02	02
N	00021	2.7	2.70	1	0617014648	02/12/2017	06:59	1	0	0	N	01	02	01	13	99	02	04
N	00237	0.67	0.67	3	0617014970	02/13/2017	07:18	2	0	0	N	01	01	01	13	19	02	01
N	00237	0.46	0.46	3	0617017823	02/20/2017	21:10	2	0	0	N	04	02	01	13	99	02	03
N	00021	2.66	2.66	1	0617018678	02/23/2017	01:34	5	0	0	N	04	01	01	13	11	02	00
N	00237	1.05	1.05	3	0617018752	02/23/2017	09:44	5	0	0	N	01	01	01	13	11	02	01
N	00237	2.09	2.09	3	0617019065	02/24/2017	06:15	6	0	0	N	02	01	01	13	11	02	01
N	00011	3.98	18.74	4	0617019663	02/25/2017	14:05	7	0	0	N	01	01	01	13	02	02	03
N	00237	1.16	1.16	3	0617020771	02/28/2017	18:04	3	0	0	N	05	04	02	13	08	02	01
N	00274	0.69	0.69	3	0617021435	03/02/2017	11:51	5	0	0	N	01	01	01	13	11	02	03
N	00021	1.48	1.48	1	0617021504	03/02/2017	14:49	5	0	0	N	01	01	01	13	11	02	04
N	00257	0.1	0.10	3	0617021966	03/03/2017	16:33	6	0	1	N	01	01	01	13	04	03	03
N	00237	2.16	2.16	3	0617029018	03/22/2017	11:31	4	0	0	N	01	01	01	13	12	02	01
N	00021	1.61	1.61	1	0617029589	03/23/2017	19:01	5	0	0	N	03	01	01	13	08	02	01
N	00237	1.85	1.85	3	0617029782	03/24/2017	10:27	6	0	1	N	01	01	01	12	17	03	00
N	00237	7.09	16.97	4	0617031211	03/28/2017	10:47	3	0	0	N	01	99	02	13	99	02	04
N	00237	0.22	0.22	3	0617031587	03/29/2017	11:53	4	0	0	N	01	01	01	13	02	02	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00021	4.41	4.41	1	0617032348	03/31/2017	09:45	6	0	0	N	01	04	02	13	04	02	02
N	00021	4.03	4.03	1	0617033252	04/02/2017	16:10	1	0	0	N	01	01	01	13	11	02	01
N					0617034228	04/05/2017	05:14	4	0	0	Y	01	02	01	13	10	02	00
N	00282	0.98	0.98	1	0617035433	04/08/2017	06:24	7	0	0	N	01	01	01	13	88	02	03
N	00237	1.97	1.97	3	0617038751	04/16/2017	14:50	1	0	0	N	01	01	01	13	17	02	00
N	00237	2.31	2.31	3	0617038844	04/16/2017	21:42	1	0	0	N	04	01	01	13	12	02	03
N	00021	4.41	4.41	1	0617038917	04/17/2017	07:49	2	0	0	N	01	04	02	13	11	02	01
N	00237	2.16	2.16	3	0617039614	04/18/2017	17:45	3	0	0	N	01	02	01	13	07	02	04
N					0617040209	04/20/2017	14:31	5	0	1	N	01	01	01	13	10	03	00
N	00237	0.77	0.77	3	0617040894	04/22/2017	08:45	7	0	0	N	01	02	02	13	11	02	01
N	00237	2.12	2.12	3	0617041447	04/23/2017	19:45	1	0	0	N	03	01	01	13	11	02	01
N	00237	1.17	1.17	3	0617042106	04/25/2017	17:12	3	0	0	N	01	04	02	13	08	02	04
N	00237	2.57	2.57	3	0617042185	04/25/2017	22:09	3	0	0	N	04	04	02	12	17	02	00
N	00011	3.98	18.74	4	0617042934	04/28/2017	08:26	6	0	0	N	01	01	01	13	08	02	01
N					0617043277	04/29/2017	00:48	7	0	2	Y	05	01	01	13	10	03	01
N	00021	2.68	2.68	1	0617044100	05/01/2017	12:43	2	0	0	N	01	02	01	13	09	02	03
N	00021	0.97	0.97	1	0617047030	05/10/2017	10:54	4	0	0	N	01	02	01	42	08	02	01
N	00237	0.86	0.86	3	0617049441	05/16/2017	18:08	3	0	0	N	01	01	01	13	08	02	01
N	00257	0.1	0.10	3	0617049803	05/17/2017	15:57	4	0	0	N	01	01	01	13	08	02	01
N	00021	1.5	1.50	1	0617051698	05/22/2017	06:38	2	0	0	N	01	04	02	13	08	02	01
N	00257	0.1	0.10	3	0617051820	05/22/2017	13:51	2	0	0	N	01	04	02	13	07	02	00
N	00237	1.5	1.50	3	0617053450	05/26/2017	15:16	6	0	1	N	01	01	01	13	11	03	01
N	00237	2.66	2.66	3	0617054213	05/28/2017	16:43	1	0	0	N	01	02	01	13	88	02	04
N	00021	1.15	1.15	1	0617055848	06/01/2017	20:55	5	0	0	N	05	01	01	13	09	02	01
N	00237	7.09	16.97	4	0617057135	06/05/2017	06:43	2	0	0	N	01	01	01	01	01	02	00
N	00237	2.04	2.04	3	0617057606	06/06/2017	08:29	3	0	2	N	01	04	02	13	08	03	01
N	00021	1.84	1.84	1	0617057834	06/06/2017	17:45	3	0	0	N	01	01	01	13	11	02	01
N	00237	0.81	0.81	3	0617058496	06/08/2017	10:27	5	0	0	N	01	01	01	13	11	02	01
N	00237	0.84	0.84	3	0617060602	06/13/2017	15:04	3	0	0	N	01	01	01	13	07	02	04
N	00021	1.49	1.49	1	0617062041	06/17/2017	00:06	7	0	3	N	04	01	01	13	11	03	01
N	00274	0.69	0.69	3	0617064403	06/22/2017	17:51	5	0	0	N	01	01	01	13	02	02	03
N	00237	0.79	0.79	3	0617064893	06/23/2017	22:03	6	0	0	N	04	01	01	13	11	02	01
N	00021	4.07	4.07	1	0617065802	06/26/2017	10:53	2	0	0	N	01	01	01	13	08	02	01
N	00280	1.74	1.74	3	0617066926	06/29/2017	07:52	5	0	0	N	01	01	01	13	11	02	01
N	00237	0.81	0.81	3	0617067307	06/30/2017	08:18	6	0	0	N	01	01	01	13	04	02	03
N	00011	10.75	10.75	3	0617068506	07/03/2017	08:28	2	0	0	N	01	01	01	13	11	02	01
N	00277	0.91	0.91	1	0617068739	07/03/2017	18:49	2	0	0	N	01	01	01	13	04	02	03
N					0617068992	07/04/2017	16:47	3	0	0	N	01	01	01	40	15	02	00
N	00237	2.12	2.12	3	0617069687	07/06/2017	13:26	5	0	0	N	01	04	02	42	11	02	01
N	00237	2.12	2.12	3	0617070209	07/07/2017	17:11	6	0	0	N	01	01	01	13	08	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00282	0.98	0.98	1	0617070548	07/08/2017	13:28	7	0	0	N	01	01	01	13	11	02	01
N	00237	0.21	0.21	3	0617072251	07/12/2017	18:32	4	0	2	N	01	01	01	13	11	03	01
N	00282	0.98	0.98	1	0617073856	07/16/2017	00:00	1	0	3	N	04	01	01	13	04	03	03
N	00021	3.94	3.94	1	0617076660	07/23/2017	22:27	1	0	0	N	04	02	02	13	99	02	01
N	00237	2.11	2.11	3	0617077168	07/25/2017	08:22	3	0	0	N	01	01	01	13	11	02	01
N	00237	2.11	2.11	3	0617077618	07/26/2017	11:28	4	0	0	N	01	01	01	13	11	02	01
N	00237	2.65	2.65	3	0617080684	08/03/2017	10:04	5	0	0	N	01	01	01	13	99	02	03
N	00021	1.02	1.02	1	0617080890	08/03/2017	17:39	5	0	0	N	01	02	02	42	99	02	01
N	00237	2.76	2.76	3	0617081058	08/04/2017	05:31	6	0	0	N	02	01	01	13	09	02	01
N					0617083300	08/09/2017	22:44	4	0	0	N	04	01	01	13	11	02	00
N	00021	1.62	1.62	1	0617085322	08/15/2017	13:06	3	0	0	N	01	04	02	13	11	02	01
N	00021	2.37	2.37	1	0617086398	08/18/2017	09:57	6	0	0	N	01	02	01	13	99	02	01
N					0617087490	08/21/2017	01:47	2	0	1	Y	04	01	01	01	10	03	00
N	00021	1.99	1.99	1	0617088150	08/22/2017	20:22	3	0	0	N	05	01	01	42	11	02	01
N	00237	0.21	0.21	3	0617088494	08/23/2017	17:46	4	0	0	N	01	01	01	13	11	02	01
N	00237	1.22	1.22	3	0617088738	08/24/2017	10:18	5	0	0	N	01	01	01	13	04	02	88
N	00282	0.98	0.98	1	0617090967	08/30/2017	13:57	4	0	3	N	01	01	01	13	16	03	03
N	00237	2.4	2.40	3	0617093327	09/06/2017	06:43	4	0	0	N	01	04	02	13	12	02	01
N	00021	3.58	3.58	1	0617094437	09/08/2017	22:33	6	0	0	N	05	01	01	13	04	02	03
N	00237	7.08	16.96	4	0617095604	09/12/2017	10:12	3	0	0	N	01	02	01	13	99	02	01
N	00237	2.51	2.51	3	0617096104	09/13/2017	15:37	4	0	1	N	01	02	01	13	10	03	01
N	00237	1.54	1.54	3	0617097438	09/16/2017	22:01	7	0	0	N	05	01	01	12	17	02	00
N	00282	0.98	0.98	1	0617098867	09/20/2017	18:16	4	0	0	N	03	01	01	13	12	02	04
N	00021	1.64	1.64	1	0617099708	09/22/2017	16:58	6	0	0	N	01	02	01	42	12	02	01
N	00237	1.05	1.05	3	0617101115	09/26/2017	15:30	3	0	0	N	01	01	01	13	02	02	04
N	00237	2.33	2.33	3	0617103792	10/03/2017	14:14	3	0	0	N	01	01	01	08	88	02	00
N	122900	0	0.00	3	0617104058	10/04/2017	08:33	4	0	0	N	01	01	01	13	02	02	03
N	00021	1.41	1.41	1	0617105559	10/07/2017	15:30	7	0	0	N	01	01	01	13	08	02	01
N	00274	0.69	0.69	3	0617106623	10/10/2017	11:29	3	0	0	N	01	01	01	13	08	02	01
N	00237	0.82	0.82	3	0617106805	10/10/2017	17:26	3	0	1	N	01	01	01	99	99	03	04
N	00237	2.52	2.52	3	0617107726	10/12/2017	19:16	5	0	0	N	04	02	01	42	08	02	01
N	00237	1.61	1.61	3	0617108285	10/14/2017	05:02	7	0	0	N	05	02	02	13	11	02	00
N	00237	2.36	2.36	3	0617110548	10/19/2017	18:48	5	0	0	N	04	01	01	13	11	02	01
N	00021	1.41	1.41	1	0617110826	10/20/2017	13:50	6	0	0	N	01	01	01	13	02	02	03
N	00021	4.02	4.02	1	0617111272	10/21/2017	14:27	7	0	2	N	01	01	01	13	11	03	01
N	00237	0.91	0.91	3	0617111290	10/21/2017	15:06	7	0	0	N	01	01	01	13	11	02	01
N	00237	0.81	0.81	3	0617112519	10/24/2017	20:08	3	0	0	N	04	01	01	13	11	02	01
N	00021	4.06	4.06	1	0617113037	10/26/2017	06:30	5	0	0	N	05	01	01	12	17	02	00
N	00011	10.74	10.74	3	0617113433	10/27/2017	07:53	6	0	1	N	01	01	01	13	12	03	01
N	00237	0.83	0.83	3	0617113775	10/27/2017	22:18	6	0	0	N	04	01	01	13	11	02	04

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00237	2.31	2.31	3	0617114949	10/31/2017	07:19	3	0	0	N	01	01	01	13	11	02	01
N	00237	0.21	0.21	3	0617116097	11/03/2017	06:52	6	0	0	N	05	02	01	12	17	02	00
N	00237	0.22	0.22	3	0617117440	11/06/2017	15:21	2	0	0	N	01	01	01	13	11	02	01
N	00021	4.07	4.07	1	0617119218	11/10/2017	20:22	6	0	0	N	04	01	01	13	11	02	03
N	00237	1.41	1.41	3	0617121152	11/15/2017	18:54	4	0	0	N	05	01	01	13	17	02	00
N	00237	0.81	0.81	3	0617121268	11/16/2017	05:37	5	0	0	N	04	01	01	13	02	02	03
N	00011	3.97	18.73	4	0617121833	11/17/2017	13:47	6	0	0	N	01	01	01	13	99	02	01
N	00270	0.23	0.23	3	0617122356	11/18/2017	18:59	7	0	0	N	04	01	01	13	11	02	03
N	00237	0.16	0.16	3	0617123044	11/20/2017	17:16	2	0	1	Y	05	01	01	13	02	03	02
N	00237	2.82	2.82	3	0617123216	11/21/2017	07:42	3	0	0	N	01	01	01	13	04	02	03
N	00021	3.87	3.87	1	0617124759	11/25/2017	10:12	7	0	0	N	01	01	01	39	11	02	00
N	00237	0.82	0.82	3	0617127389	12/02/2017	10:50	7	0	0	N	01	02	01	13	02	02	04
N	00021	4.07	4.07	1	0617128050	12/04/2017	07:24	2	0	0	N	01	01	01	13	04	02	03
N	00237	2.12	2.12	3	0617128398	12/04/2017	23:47	2	0	1	N	04	01	01	13	12	03	01
N	00021	1.66	1.66	1	0617129255	12/07/2017	07:58	5	0	2	N	01	01	01	13	12	03	01
N	00021	4.12	4.12	1	0617129298	12/07/2017	00:00	5	0	0	N	01	01	01	13	11	02	01
N	00237	1.08	1.08	3	0617130139	12/09/2017	13:55	7	0	0	N	01	06	04	13	88	02	00
N	00021	4.41	4.41	1	0617130397	12/10/2017	10:03	1	0	1	N	01	01	02	13	04	03	03
N					0617130700	12/11/2017	08:26	2	0	0	N	05	06	03	38	99	02	99
N	00021	1.48	1.48	1	0617131398	12/13/2017	06:37	4	0	0	N	01	01	01	13	11	02	01
N	00237	1.75	1.75	3	0617133163	12/17/2017	13:07	1	0	0	N	01	01	01	13	99	02	04
N	00257	0.1	0.10	3	0617133251	12/17/2017	17:21	1	0	0	N	04	01	01	13	99	02	03
N	00237	0.82	0.82	3	0617133283	12/17/2017	18:52	1	0	0	N	04	01	01	13	06	02	04
N	00237	0.1	0.10	3	0617133781	12/19/2017	07:15	3	0	2	N	01	01	02	42	11	03	01
N	00021	2.01	2.01	1	0617133817	12/19/2017	09:49	3	0	0	N	01	01	01	13	08	02	01
N	00021	1.59	1.59	1	0617134028	12/19/2017	17:46	3	0	0	Y	04	01	01	42	08	02	01
N	00021	2.03	2.03	1	0617134892	12/21/2017	20:13	5	0	0	N	04	01	01	13	11	02	01
N	00237	2.12	2.12	3	0617137759	12/30/2017	00:34	7	0	1	N	04	02	01	13	02	03	03
N	00294	2.38	2.38	3	3017061045	07/13/2017	07:15	5	0	0	N	01	02	01	13	88	02	00
N	122900	0.01	0.01	4	3217003267	01/11/2017	07:55	4	0	0	N	01	01	01	13	99	02	04
N					3217024244	03/13/2017	06:45	2	0	1	N	02	02	01	13	11	03	01
N	00280	1.74	1.74	3	3217025438	03/16/2017	18:20	5	0	0	N	01	01	01	13	11	02	01
N	00270	0.23	0.23	3	3217048842	05/25/2017	12:45	5	0	0	N	01	02	02	13	12	02	88
N	00280	1.74	1.74	3	3217051973	06/02/2017	22:30	6	0	0	N	04	01	01	13	99	02	01
N	00294	2.38	2.38	1	3217067894	07/19/2017	08:19	4	0	0	N	01	01	01	42	11	02	01
N	00280	1.74	1.74	3	3217073219	08/03/2017	06:41	5	0	0	N	01	01	01	13	11	02	01
N	00280	1.74	1.74	3	3217075839	08/10/2017	17:07	5	0	1	N	01	01	01	13	12	03	01
N	00270	0.24	0.24	3	3217084784	09/05/2017	16:40	3	0	0	N	01	01	01	12	13	02	00
N	00280	1.74	1.74	3	3217088968	09/16/2017	12:00	7	0	0	N	01	01	01	13	14	02	01
N	00282	0.98	0.98	1	3217093718	10/02/2017	17:20	2	0	0	N	01	01	01	13	06	02	04

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00021	4.06	4.06	1	3217096742	10/12/2017	07:45	5	0	0	N	01	04	02	13	11	02	03
N	00280	1.74	1.74	3	3217105365	11/08/2017	10:20	4	0	0	N	01	01	01	42	08	02	01
N					3917006116	05/05/2017	17:17	6	0	2	N	01	02	02	13	11	03	01

Report generated by TDTSKLG at 2018-07-25 08:50:37.446

Report Legend

Cty - County
Rd - Maintenance Road
MP - Milepoint
C-MP - Continuous Milepoint
Dir - Direction of Highway
COMP/HQ# - Complaint Number/Headquarters Number
DAY - Day Of Week Code
Fat - Fatality
Inj - Injury
AL - Alcohol Involved
LC - Lighting Condition
WC - Weather Condition
SC - Surface Condition
MHE - Most Harmful Event
PC - Primary Contributing Circumstance
Class - Report Classification
MOI - Manner of Impact

Appendix B.3
SR 48 from SR 41 to SR 141

Delaware Crash Analysis Reporting System

Crash Study Time Period:	1/1/2015 - 12/31/2017
Query Type:	CrashBufferTool
Description:	Crash Summary SR 48 from SR 41 to SR141
Study Requested By:	Stephanie Everett- RKK
Study Generated By:	TDTSKLG
Number of Crashes:	151
Includes Non-Reportable Crashes:	N
Study Code:	



State of Delaware Crash Study

Summary		Classification			Manner of Impact		
	# of Crashes		# of Crashes	% of Total Crashes		# of Crashes	% of Total Crashes
Total Crashes	151				Front to rear	71	47.02%
Fatal Crashes	3	Non-Reportable	0	0.00%	Front to front	9	5.96%
Total Alcohol-Related Crashes	6	Reportable	126	83.44%	Angle	25	16.56%
Total Non Alcohol-Related Crashes	145	Personal Injury	22	14.57%	Sideswipe, same direction	7	4.64%
Total Fatalities	4	Fatality	3	1.99%	Sideswipe, opposite direction	2	1.32%
Total Pedestrian Fatalities	0	Total	151		Rear to side	0	0.00%
Total Pedestrian Injuries	0				Rear to rear	1	0.66%
Total Pedestrian Crashes	0				Other	0	0.00%
Total Motorcycle Crashes	1				Unknown	1	0.66%
Total Pedalcyclist Crashes	0				Not a collision between two vehicles	35	23.18%
					Total	151	

Alcohol Related Crashes By Classification					
	Non-reportable	Reportable	Personal Injury	Fatality	Total
Alcohol Related	0	2	3	1	6
Non-Alcohol Related	0	124	19	2	145
Total	0	126	22	3	151

Manner of Impact By Classification					
	Non-Reportable	Reportable	Personal Injury	Fatality	Total
Front to rear	0	65	6	0	71
Front to front	0	4	4	1	9
Angle	0	17	7	1	25
Sideswipe, same direction	0	6	1	0	7
Sideswipe, opposite direction	0	2	0	0	2
Rear to side	0	0	0	0	0
Rear to rear	0	1	0	0	1
Other	0	0	0	0	0
Unknown	0	1	0	0	1
Not a collision between two vehicles	0	30	4	1	35
Total	0	126	22	3	151

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Day Of Week		
	# of Crashes	% of Total Crashes
Sunday	16	10.60%
Monday	18	11.92%
Tuesday	35	23.18%
Wednesday	28	18.54%
Thursday	19	12.58%
Friday	23	15.23%
Saturday	12	7.95%
Total	151	

Time Of Day (AM)		
	# of Crashes	% of Total Crashes
00:00 - 00:59	5	3.31%
01:00 - 01:59	1	0.66%
02:00 - 02:59	2	1.32%
03:00 - 03:59	1	0.66%
04:00 - 04:59	4	2.65%
05:00 - 05:59	2	1.32%
06:00 - 06:59	5	3.31%
07:00 - 07:59	20	13.25%
08:00 - 08:59	9	5.96%
09:00 - 09:59	10	6.62%
10:00 - 10:59	5	3.31%
11:00 - 11:59	5	3.31%
Total	69	

Time Of Day (PM)		
	# of Crashes	% of Total Crashes
12:00 - 12:59	7	4.64%
13:00 - 13:59	5	3.31%
14:00 - 14:59	2	1.32%
15:00 - 15:59	9	5.96%
16:00 - 16:59	5	3.31%
17:00 - 17:59	14	9.27%
18:00 - 18:59	16	10.60%
19:00 - 19:59	5	3.31%
20:00 - 20:59	6	3.97%
21:00 - 21:59	7	4.64%
22:00 - 22:59	4	2.65%
23:00 - 23:59	2	1.32%
Total	82	
Unknown Time	0	

Surface Conditions		
	# of Crashes	% of Total Crashes
Dry	113	74.83%
Wet	29	19.21%
Snow	1	0.66%
Ice/Frost	4	2.65%
Sand	0	0.00%
Water (standing, moving)	1	0.66%
Slush	2	1.32%
Oil	0	0.00%
Mud, Dirt, Gravel	0	0.00%
Other	0	0.00%
Unknown	1	0.66%
Total	151	

Lighting Conditions		
	# of Crashes	% of Total Crashes
Daylight	90	59.60%
Dawn	5	3.31%
Dusk	2	1.32%
Dark-Lighted	15	9.93%
Dark-Not Lighted	38	25.17%
Dark-Unknown Lighting	0	0.00%
Other	0	0.00%
Unknown	1	0.66%
Total	151	

Weather Conditions		
	# of Crashes	% of Total Crashes
Clear	100	66.23%
Cloudy	24	15.89%
Fog, Smog, Smoke	0	0.00%
Rain	22	14.57%
Sleet, Hail (freezing rain or drizzle)	3	1.99%
Snow	3	1.99%
Blowing Snow	0	0.00%
Severe Crosswinds	0	0.00%
Blowing Sand, Soil, Dirt	0	0.00%
Other	1	0.66%
Unknown	1	0.66%
Total	154	

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First Harmful Event		
	# of Crashes	% of Total Crashes
Overturn/Rollover, Non-Collision	0	0.00%
Fire/Explosion, Non-Collision	0	0.00%
Immersion, Non-Collision	0	0.00%
Jackknife, Non-Collision	0	0.00%
Cargo/Equipment Loss or Shift, Non-Collision	0	0.00%
Fell/Jumped From Motor Vehicle, Non-Collision	0	0.00%
Thrown or Falling Object, Non-Collision	0	0.00%
Other Non-Collision, Non-Collision	1	0.66%
Pedestrian, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Pedalcycle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Railway Vehicle (train, engine), Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Animal, Collision With Person, Motor Vehicle, or Non-Fixed	11	7.28%
Motor Vehicle in Transport, Collision With Person, Motor Vehicle, or Non-Fixed	112	74.17%
Legally Parked Motor Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Struck by Anything Set in Motion by Vehicle, Collision With Person, Motor Vehicle, or Non-Fixed	1	0.66%
Work Zone / Maintenance Equipment, Collision With Person, Motor Vehicle, or Non-Fixed	0	0.00%
Other Non-Fixed Object, Collision With Person, Motor Vehicle, or Non-Fixed	2	1.32%
Impact Attenuator/Crash Cushion, Collision With Fixed Object	2	1.32%
Bridge Overhead Structure, Collision With Fixed Object	0	0.00%
Bridge Pier or Support, Collision With Fixed Object	0	0.00%
Bridge Rail, Collision With Fixed Object	0	0.00%
Cable Barrier, Collision With Fixed Object	0	0.00%
Culvert, Collision With Fixed Object	0	0.00%
Curb, Collision With Fixed Object	0	0.00%
Ditch, Collision With Fixed Object	2	1.32%
Embankment, Collision With Fixed Object	0	0.00%
Guardrail Face, Collision With Fixed Object	8	5.30%
Guardrail End, Collision With Fixed Object	2	1.32%
	0	0.00%

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Concrete Traffic Barrier, Collision With Fixed Object		
Other Traffic Barrier, Collision With Fixed Object	0	0.00%
Tree (standing), Collision With Fixed Object	0	0.00%
Utility Pole, Collision With Fixed Object	1	0.66%
Light Support, Collision With Fixed Object	0	0.00%
Traffic Sign Support, Collision With Fixed Object	2	1.32%
Overhead Sign Support, Collision With Fixed Object	1	0.66%
Traffic Signal Support, Collision With Fixed Object	0	0.00%
Fence, Collision With Fixed Object	1	0.66%
Mailbox, Collision With Fixed Object	0	0.00%
Other Post, Pole or Support, Collision With Fixed Object	1	0.66%
Other Fixed Object (wall, building, tunnel, etc.), Collision With Fixed Object	0	0.00%
Illegally Parked Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	0	0.00%
Stopped Motor Vehicle, Collision With Person, Vehicle, Or Object Not Fixed	3	1.99%
Unknown, Collision With Fixed Object	1	0.66%
Total	140	

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Primary Contributing Circumstance		
	# of Crashes	% of Total Crashes
Speeding	0	0.00%
Failed to yield right of way	12	7.95%
Passed Stop Sign	2	1.32%
Disregard Traffic Signal	11	7.28%
Wrong side or wrong way	2	1.32%
Improper passing	1	0.66%
Improper lane change	2	1.32%
Following too close	25	16.56%
Made improper turn	2	1.32%
Driving under the influence	4	2.65%
Driver inattention, distraction, or fatigue	40	26.49%
Driving in a careless or reckless manner	13	8.61%
Driving in an aggressive manner	0	0.00%
Improper backing	0	0.00%
Other improper driving	1	0.66%
Mechanical defects	3	1.99%
Animal in Roadway - Deer	13	8.61%
Animal in Roadway - Other Animal	1	0.66%
Other environmental circumstances - weather, glare	3	1.99%
Roadway circumstances - debris, holes, work zone,	1	0.66%
Other	6	3.97%
Unknown	9	5.96%
Total	151	

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Driver Action		
	# of Drivers	% of Total Crashes
No Contributing Action	146	52.33%
Failed to yield right of way	14	5.02%
Ran Red Light	10	3.58%
Ran Stop Sign	2	0.72%
Disregard other traffic sign	1	0.36%
Disregard other road markings	0	0.00%
Exceeded authorized speed limit	1	0.36%
Driving too fast for conditions	3	1.08%
Made an improper turn	2	0.72%
Improper backing	0	0.00%
Wrong side or wrong way	1	0.36%
Followed too closely	32	11.47%
Failure to keep in proper lane	11	3.94%
Ran off roadway	2	0.72%
Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	31	11.11%
Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway, etc.	2	0.72%
Over-correcting/over-steering	0	0.00%
Improper Passing	1	0.36%
Other Contributing Action	11	3.94%
Unknown	9	3.23%
Total	279	

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00237	4.89	14.77	4	0115004710	01/18/2015	09:47	1	0	1	N	01	05	04	27	19	03	00
N	00237	3.17	3.17	3	0115005018	01/19/2015	13:57	2	0	0	N	01	02	01	13	99	02	01
N	00237	4.38	4.38	3	0115006230	01/24/2015	00:09	7	0	0	N	05	04 - 06	02	13	12	02	00
N					0115014340	02/22/2015	08:15	1	0	3	N	02	02	07	13	12	03	03
N	00237	4.77	14.65	4	0115016667	03/02/2015	18:42	2	0	0	N	05	01	01	12	17	02	00
N	00237	4.67	4.67	3	0115019638	03/13/2015	07:48	6	0	0	N	01	01	01	13	08	02	01
N	00237	4.34	14.22	4	0115020681	03/17/2015	08:27	3	0	0	N	01	01	01	13	08	02	01
N	00237	3.73	3.73	3	0115022490	03/23/2015	22:36	2	2	3	N	05	01	01	13	03	04	03
N	00237	6.45	6.45	3	0115023831	03/29/2015	02:29	1	0	0	N	05	01	01	27	99	02	00
N	00237	3.2	3.20	3	0115042859	06/04/2015	13:50	5	0	0	N	01	02	01	13	08	02	01
N					0115049007	06/24/2015	00:35	4	0	0	N	05	04	02	25	88	02	00
N	00237	6.04	6.04	3	0115049395	06/25/2015	04:42	5	0	1	N	02	01	01	12	17	03	00
N	00273	0	0.00	1	0115050839	06/29/2015	17:00	2	0	0	N	01	01	01	42	11	02	01
N	00237	5.13	15.01	4	0115059738	07/28/2015	15:21	3	0	0	N	01	01	01	13	08	02	01
N	00237	3.13	3.13	3	0115060314	07/30/2015	12:34	5	0	0	N	01	02	01	13	08	02	01
N	00237	3.83	3.83	3	0115068991	08/27/2015	17:24	5	0	0	N	01	01	01	13	09	02	03
N	00237	4.31	14.19	4	0115073235	09/09/2015	11:40	4	0	0	N	01	01	01	13	11	02	01
N	00237	4.42	4.42	3	0115077419	09/22/2015	20:20	3	0	2	N	05	01	01	13	11	03	01
N					0115078894	09/27/2015	21:13	1	0	2	N	05	01	01	13	11	03	02
N					0115078926	09/28/2015	01:40	2	0	1	N	05	01	01	28	17	03	00
N	00237	4.7	4.70	3	0115079671	09/30/2015	09:48	4	0	1	N	01	02	02	13	18	03	01
N	00237	4.31	14.19	4	0115080641	10/03/2015	08:54	7	0	0	N	01	02	02	42	11	02	01
N	00237	5.2	15.08	4	0115081419	10/05/2015	18:42	2	0	0	N	03	01	01	08	16	02	00
N	00237	4.34	14.22	4	0115082805	10/09/2015	22:02	6	0	0	N	04	01	01	13	11	02	01
N	00237	3.51	13.39	4	0115087271	10/24/2015	17:39	7	0	0	N	01	01	01	12	17	02	00
N	00237	4.35	14.23	4	0115087557	10/25/2015	18:15	1	0	3	N	03	01	01	13	04	03	02
N	00237	3.28	13.16	4	0115088138	10/27/2015	17:14	3	0	0	N	01	02	01	13	11	02	07
N	00237	3.37	3.37	3	0115093509	11/13/2015	04:30	6	0	0	N	05	01	01	39	11	02	00
N	00237	4.51	4.51	3	0115099907	12/04/2015	03:22	6	0	0	N	05	01	01	13	11	02	00
N	00237	4.15	14.03	4	0115101056	12/07/2015	17:02	2	0	0	N	05	01	01	13	08	02	01
N	00237	3.52	3.52	3	0115101248	12/08/2015	11:54	3	0	0	N	01	01	01	13	11	02	01
N	00237	4.3	14.18	4	0115105523	12/21/2015	04:37	2	0	0	N	05	01	01	12	17	02	00
N	00237	4.35	14.23	4	0115108406	12/30/2015	17:32	4	0	0	N	04	02	01	13	99	02	03
N	00237	2.82	2.82	1	0615001248	01/06/2015	06:46	3	0	0	N	01	06	03	13	15	02	02
N	00237	4.47	14.35	4	0615009998	01/18/2015	23:00	1	0	0	N	05	04	04	13	99	02	04
N	00021	4.41	4.41	1	0615012948	02/17/2015	21:46	3	0	0	N	04	02	01	13	04	02	03
N	00237	2.9	2.90	3	0615036043	05/13/2015	12:28	4	0	0	N	01	01	01	12	17	02	00
N	00237	3.92	13.80	4	0615049106	06/23/2015	18:07	3	0	0	N	05	04	02	13	99	02	01
N	00237	7.04	16.92	4	0615055370	07/14/2015	11:38	3	0	0	N	01	01	01	13	11	02	01
N	00237	4.3	4.30	3	0615098351	11/29/2015	06:46	1	0	0	Y	05	04	02	28	10	02	00

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2015																		
N	00282	0.01	0.01	1	3215006002	01/18/2015	09:40	1	0	0	N	01	05	04	13	19	02	01
N	00237	4.94	14.82	4	3215013329	02/07/2015	12:56	7	0	0	N	01	01	01	13	99	02	05
N	00275	0	0.00	1	3215014295	02/10/2015	07:15	3	0	0	N	01	88	04	13	11	02	05
N	00282	0.01	0.01	3	3215034233	04/08/2015	11:25	4	0	1	N	01	04	02	13	11	03	04
N	00275	0	0.00	1	3215036323	04/14/2015	13:29	3	0	0	N	01	02	02	15	16	02	00
2016																		
N	00275	0	0.00	3	0116001685	01/06/2016	18:46	4	0	0	N	05	01	01	13	03	02	03
N	00237	4.86	14.74	4	0116005321	01/18/2016	23:38	2	0	0	N	05	01	01	27	88	02	00
N	00237	4.55	4.55	3	0116009321	01/31/2016	22:58	1	0	2	N	05	01	01	13	11	03	01
N	00237	5.15	15.03	4	0116014215	02/15/2016	21:19	2	0	0	N	05	05	07	13	19	02	00
N	00237	4.3	14.18	4	0116014952	02/18/2016	07:52	5	0	0	N	01	01	01	13	08	02	01
N	00237	5.42	5.42	3	0116017469	02/25/2016	15:44	5	0	0	N	01	02	02	13	88	02	01
N	00237	3.28	13.16	4	0116017917	02/26/2016	20:50	6	0	0	N	01	01	01	13	02	02	04
N	00237	4.89	14.77	4	0116020066	03/04/2016	15:01	6	0	0	N	01	02	01	13	11	02	04
N	00237	5.9	5.90	3	0116021931	03/10/2016	06:59	5	0	0	N	02	01	01	13	11	02	01
N					0116028089	03/29/2016	11:13	3	0	1	N	01	01 - 01	01	13	08	03	01
N	00237	3.26	3.26	3	0116036872	04/26/2016	05:45	3	0	0	N	02	01	01	17	17	02	00
N	00237	3.18	3.18	3	0116038427	05/02/2016	07:59	2	0	0	N	01	02	02	13	08	02	01
N	00237	7.05	16.93	4	0116043515	05/17/2016	17:04	3	0	0	N	01	04 - 02	02	13	08	02	01
N	00282	0.01	0.01	1	0116044659	05/20/2016	15:06	6	0	0	N	01	01	01	13	04	02	03
N	00237	5.16	15.04	4	0116055332	06/15/2016	09:24	4	0	0	N	01	01	01	13	11	02	01
N	00237	4.58	14.46	4	0116071421	07/26/2016	17:23	3	0	0	N	01	01	01	34	99	02	00
N	00237	4.54	4.54	3	0116073819	08/02/2016	04:28	3	0	0	N	05	01	01	27	12	02	00
N	00237	3.82	3.82	3	0116073836	08/02/2016	07:47	3	0	0	N	01	02	01	13	11	02	01
N	00237	3.2	3.20	3	0116077611	08/11/2016	19:46	5	0	0	N	01	01	01	13	04	02	03
N	00237	3.13	3.13	3	0116078412	08/13/2016	16:54	7	0	0	N	01	01	01	13	02	02	03
N	00237	3.5	3.50	3	0116083811	08/26/2016	19:03	6	0	0	N	01	01	01	12	17	02	00
N	00237	5.37	5.37	3	0116087851	09/06/2016	08:50	3	0	0	N	01	01	01	13	08	02	01
N	00237	3.25	3.25	3	0116088215	09/07/2016	07:16	4	0	0	N	01	01	01	13	08	02	01
N	00237	4.26	14.14	4	0116091512	09/15/2016	07:47	5	0	0	N	01	01	01	13	11	02	01
N	00237	3.73	3.73	3	0116097190	09/30/2016	14:06	6	0	1	N	01	04	02	13	02	03	03
N	00237	6.37	6.37	3	0116098901	10/05/2016	07:38	4	0	0	N	01	01	01	13	12	02	01
N	00237	4.35	14.23	4	0116099918	10/07/2016	21:19	6	0	3	Y	04	01	01	13	10	03	01
N	00237	3.31	13.19	4	0116103987	10/19/2016	07:46	4	0	0	N	01	01	01	13	11	02	01
N	00237	3.5	3.50	3	0116105323	10/22/2016	18:29	7	0	0	N	05	01	01	12	17	02	00
N	00237	4.35	14.23	4	0116107780	10/29/2016	00:54	7	0	1	Y	04	01	01	13	02	03	03
N					0116111813	11/09/2016	10:41	4	1	1	N	01	02 - 04	02	13	05	04	02
N	00237	3.13	3.13	3	0116113394	11/13/2016	17:32	1	0	0	N	05	01	01	13	08	02	01
N					0116116613	11/22/2016	07:50	3	0	2	N	01	01	01	13	02	03	03
N	00237	4.35	14.23	4	0116117216	11/23/2016	20:28	4	0	0	N	04	01	01	13	02	02	03

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2016																		
N	00237	4.26	14.14	4	0116118759	11/28/2016	15:03	2	0	0	N	01	01	01	13	08	02	01
N	00237	4.88	14.76	4	0116121829	12/07/2016	06:21	4	0	0	N	05	04	02	13	08	02	01
N	00237	3.29	13.17	4	0116121841	12/07/2016	07:14	4	0	0	N	04	04	02	37	11	02	00
N	00237	3.13	3.13	3	0116122795	12/09/2016	18:05	6	0	0	N	05	01	01	13	11	02	01
N	00237	3.2	3.20	3	0116128981	12/26/2016	18:34	2	0	0	N	05	04	02	13	08	02	01
N	00237	3.73	3.73	3	0116129886	12/29/2016	09:50	5	0	0	N	01	04	02	13	02	02	01
N	00237	5.2	15.08	4	0116130031	12/29/2016	18:25	5	0	0	N	04	01	01	13	11	02	01
N	00237	2.81	2.81	3	0616015337	02/19/2016	09:41	6	0	0	N	01	01	01	13	08	02	01
N	00237	7.03	16.91	4	0616021271	03/08/2016	09:36	3	0	0	N	01	02	01	13	11	02	01
N	00237	2.91	2.91	3	0616055339	06/15/2016	09:26	4	0	0	N	01	01	01	42	08	02	01
N	00237	5.28	15.16	4	0616065533	07/10/2016	13:00	1	0	0	N	01	01	01	27	88	02	00
N	00237	3.23	3.23	3	0616091068	09/14/2016	08:43	4	0	0	N	01	01	01	13	11	02	01
N					0616108155	10/30/2016	05:02	1	0	0	Y	05	01	01	34	10	02	00
N	00021	4.41	4.41	3	0616124388	12/14/2016	10:29	4	0	2	N	01	01	01	13	12	03	02
N	00237	2.82	2.82	3	0616128496	12/24/2016	17:17	7	0	0	N	04	01	02	13	12	02	02

2017																		
N	00237	3.4	13.28	4	0117004975	01/15/2017	12:05	1	0	0	N	01	01	01	12	17	02	00
N	00237	3.27	13.15	4	0117005547	01/17/2017	08:52	3	0	0	N	01	02	01	13	08	02	01
N	00237	6.46	6.46	3	0117008042	01/24/2017	07:34	3	0	0	N	99	99	99	99	99	02	99
N	00237	4.35	14.23	4	0117008279	01/24/2017	17:54	3	0	0	N	04	01	01	13	11	02	01
N	00237	3.72	3.72	3	0117013046	02/07/2017	17:08	3	0	1	Y	01	02	01	27	10	03	00
N	00237	5.08	14.96	4	0117020689	02/28/2017	14:51	3	0	0	N	01	01	01	13	08	02	01
N	00237	4.32	14.20	4	0117021593	03/02/2017	18:58	5	0	0	N	04	01	01	13	12	02	01
N	00237	3.28	13.16	4	0117024376	03/10/2017	08:33	6	0	0	N	01	06	02	13	08	02	01
N	00237	3.03	3.03	3	0117027428	03/17/2017	21:06	6	0	0	N	05	01	01	27	16	02	00
N	00237	3.61	3.61	3	0117028925	03/22/2017	02:42	4	0	0	N	05	01	01	27	12	02	00
N	00237	3.27	13.15	4	0117029146	03/22/2017	16:20	4	0	0	N	01	01	01	13	11	02	01
N	00237	4.65	4.65	3	0117034338	04/05/2017	12:42	4	0	0	N	01	01	01	13	07	02	04
N	00237	5.16	15.04	4	0117036846	04/11/2017	18:11	3	0	0	N	01	01	01	13	08	02	01
N	00237	3.15	3.15	3	0117039884	04/19/2017	17:53	4	0	0	N	01	01	01	13	08	02	01
N	00237	4.3	14.18	4	0117040376	04/20/2017	20:51	5	0	0	N	05	02	01	13	11	02	01
N	00237	4.34	14.22	4	0117042443	04/26/2017	17:03	4	0	1	N	01	01	01	13	11	03	02
N	00237	3.61	3.61	3	0117042809	04/27/2017	19:55	5	0	0	N	05	01	01	13	88	02	01
N	00237	3.18	3.18	3	0117045346	05/04/2017	16:56	5	0	0	N	01	01	01	13	11	02	01
N	00237	3.86	3.86	3	0117046179	05/07/2017	20:37	1	0	0	N	05	01	01	12	17	02	00
N	00237	4.26	14.14	4	0117054880	05/30/2017	15:54	3	0	0	N	01	04	06	35	11	02	01
N	00237	4.08	4.08	3	0117059914	06/12/2017	00:39	2	1	0	Y	05	01	01	32	05	04	00
N	00237	3.28	13.16	4	0117072326	07/12/2017	21:25	4	0	0	N	04	01	01	13	11	02	01
N	00237	3.67	3.67	3	0117078926	07/29/2017	18:32	7	0	0	N	01	01	01	13	06	02	03
N	00237	4.18	14.06	4	0117082139	08/07/2017	06:27	2	0	0	N	02	04	02	12	17	02	00
N	00237	4.67	4.67	3	0117085383	08/15/2017	15:27	3	0	0	N	01	04	02	13	12	02	02
N	00237	3.27	13.15	4	0117090547	08/29/2017	07:56	3	0	0	N	01	04	02	13	11	02	01

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CTY	RD	MP	C-MP	DIR	COMP/HQ#	Date	Time	Day	Fat	Inj	AL	LC	WC	SC	FHE	PC	Class	MOI
2017																		
N	00272	0	1.67	4	0117095061	09/10/2017	19:56	1	0	2	N	04	01	01	13	04	03	03
N	00237	5.09	14.97	4	0117096877	09/15/2017	15:37	6	0	0	N	01	01	01	18	11	02	01
N	00237	3.73	3.73	3	0117098627	09/20/2017	07:19	4	0	1	N	01	01	01	18	11	03	03
N	00237	4.52	14.40	4	0117106224	10/09/2017	12:28	2	0	0	N	01	04	02	13	12	02	01
N	00237	4	4.00	3	0117110209	10/19/2017	07:07	5	0	0	N	01	01	01	12	17	02	00
N	00237	4.13	14.01	4	0117110975	10/20/2017	18:53	6	0	0	N	05	01	01	13	02	02	03
N	00237	3.48	3.48	3	0117112254	10/24/2017	08:21	3	0	0	N	01	04	02	13	02	02	01
N	00237	4.32	14.20	4	0117113562	10/27/2017	00:00	6	0	0	N	01	01	01	13	11	02	01
N	00237	3.6	3.60	3	0117115110	10/31/2017	15:09	3	0	0	N	01	01	01	13	09	02	01
N	00237	4.26	4.26	3	0117115682	11/02/2017	07:24	5	0	0	N	01	01	01	13	08	02	01
N	00237	3.2	3.20	3	0117116593	11/04/2017	10:30	7	0	0	N	01	01	01	13	11	02	01
N	00237	6.3	6.30	3	0117118967	11/10/2017	09:35	6	0	0	N	01	01	01	13	12	02	03
N	00237	3.77	13.65	4	0117119216	11/10/2017	20:03	6	0	0	N	05	01	01	17	20	02	00
N	00237	3.2	3.20	3	0117120084	11/13/2017	08:12	2	0	0	N	01	02	02	13	02	02	03
N	00237	6.5	6.50	3	0117121555	11/16/2017	18:47	5	0	0	N	05	01	01	13	11	02	01
N	00237	6.46	6.46	3	0117121956	11/17/2017	18:30	6	0	1	N	05	01	01	13	88	03	01
N	00282	0.01	0.01	3	0117124773	11/25/2017	10:53	7	0	0	N	01	01	01	13	04	02	03
N	00237	4.4	4.40	3	0117126152	11/29/2017	07:09	4	0	0	N	01	01	01	25	12	02	00
N	00237	4.35	14.23	4	0117126301	11/29/2017	13:47	4	0	0	N	01	01	01	13	04	02	03
N	00237	4.67	4.67	3	0117126913	12/01/2017	07:48	6	0	0	N	01	01	01	13	04	02	03
N	00237	3.47	13.35	4	0117129709	12/08/2017	12:07	6	0	0	N	01	02	01	13	07	02	04
N	00237	5.2	15.08	4	0117137297	12/28/2017	18:01	5	0	0	N	04	01	01	13	12	02	01
N	00237	3.28	13.16	4	0617022573	03/04/2017	22:30	7	0	0	N	05	01	01	13	99	02	01
N	00021	4.41	4.41	1	0617032348	03/31/2017	09:45	6	0	0	N	01	04	02	13	04	02	02
N	00237	7.02	16.90	4	0617036802	04/11/2017	16:51	3	0	0	N	01	01	01	13	08	02	01
N	00021	4.41	4.41	1	0617038917	04/17/2017	07:49	2	0	0	N	01	04	02	13	11	02	01
N	00237	3.14	3.14	3	0617096115	09/13/2017	16:07	4	0	0	N	01	02	01	13	02	02	03
N	00237	2.82	2.82	3	0617123216	11/21/2017	07:42	3	0	0	N	01	01	01	13	04	02	03
N	00237	7.06	16.94	4	0617128742	12/05/2017	19:59	3	0	0	N	04	04	02	13	11	02	01
N	00021	4.41	4.41	1	0617130397	12/10/2017	10:03	1	0	1	N	01	01	02	13	04	03	03
N	00237	3.22	3.22	3	0617134094	12/19/2017	21:12	3	0	0	N	05	02	01	13	02	02	04

Report generated by TDTSKLG at 2018-07-25 10:54:05.317

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Report Legend

Cty - County

Rd - Maintenance Road

MP - Milepoint

C-MP - Continuous Milepoint

Dir - Direction of Highway

COMP/HQ# - Complaint Number/Headquarters Number

DAY - Day Of Week Code

Fat - Fatality

Inj - Injury

AL - Alcohol Involved

LC - Lighting Condition

WC - Weather Condition

SC - Surface Condition

MHE - Most Harmful Event

PC - Primary Contributing Circumstance

Class - Report Classification

MOI - Manner of Impact

Appendix C

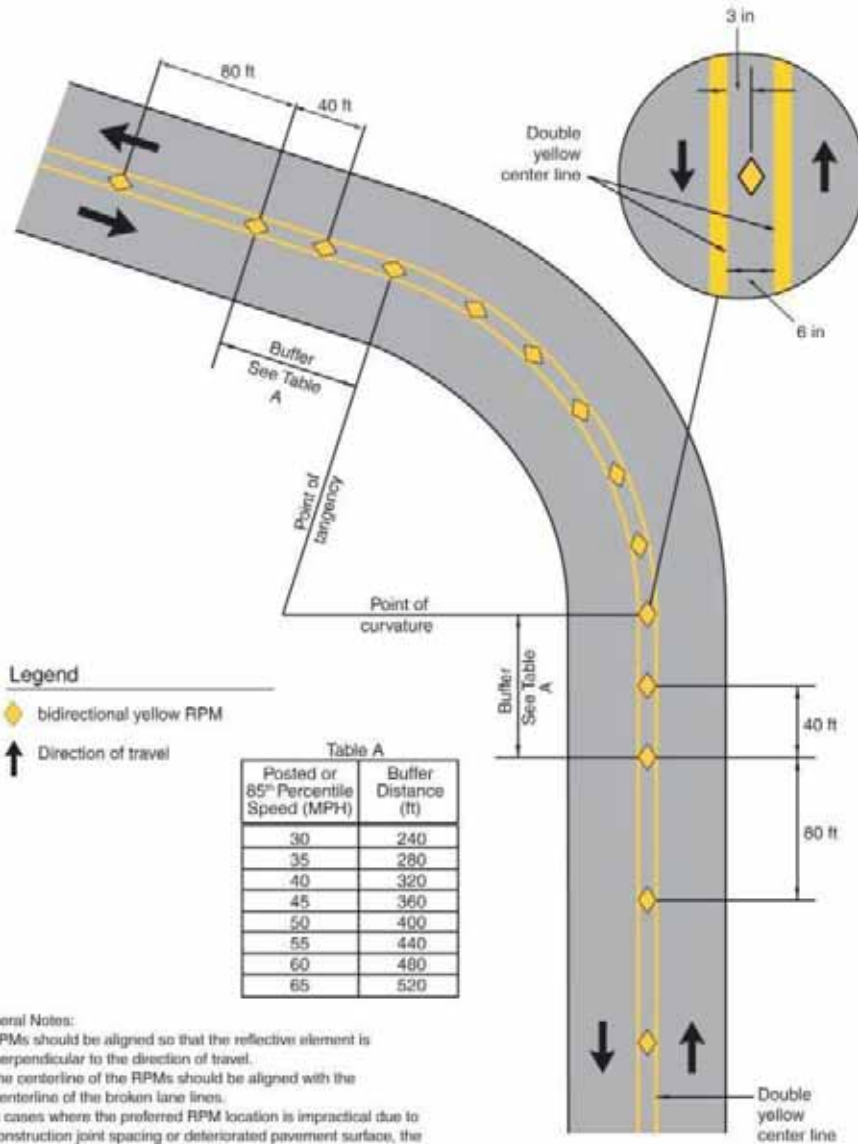
Short-Term Improvement Recommendations

SR 7, SR 41, SR 48 Road Safety Audit Short-Term Improvement Recommendations Raised/Recessed Pavement Markers

Page 3B-52

DE MUTCD

Figure 3B-15D. Example of Raised Pavement Marker (RPM) Application at Curves along Two-Lane Roads (Delaware Revision)



Revision 3, May 2018

Notes:

- Separates the two directions of travel in areas of low lighting and higher speeds

Locations:

1. SR 7 between Valley Road and PA State Line
2. SR 41 between Washington Avenue and SR 41/SR 48 Split
3. SR 41 between Valley Road and PA State Line

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
Pedestrian Crossing Signs
Sample Location: SR 48 near Coffee Run Condominiums



Notes:

- Provides warning to vehicles alerting of the possibility of pedestrians crossing near the bus stops

Locations:

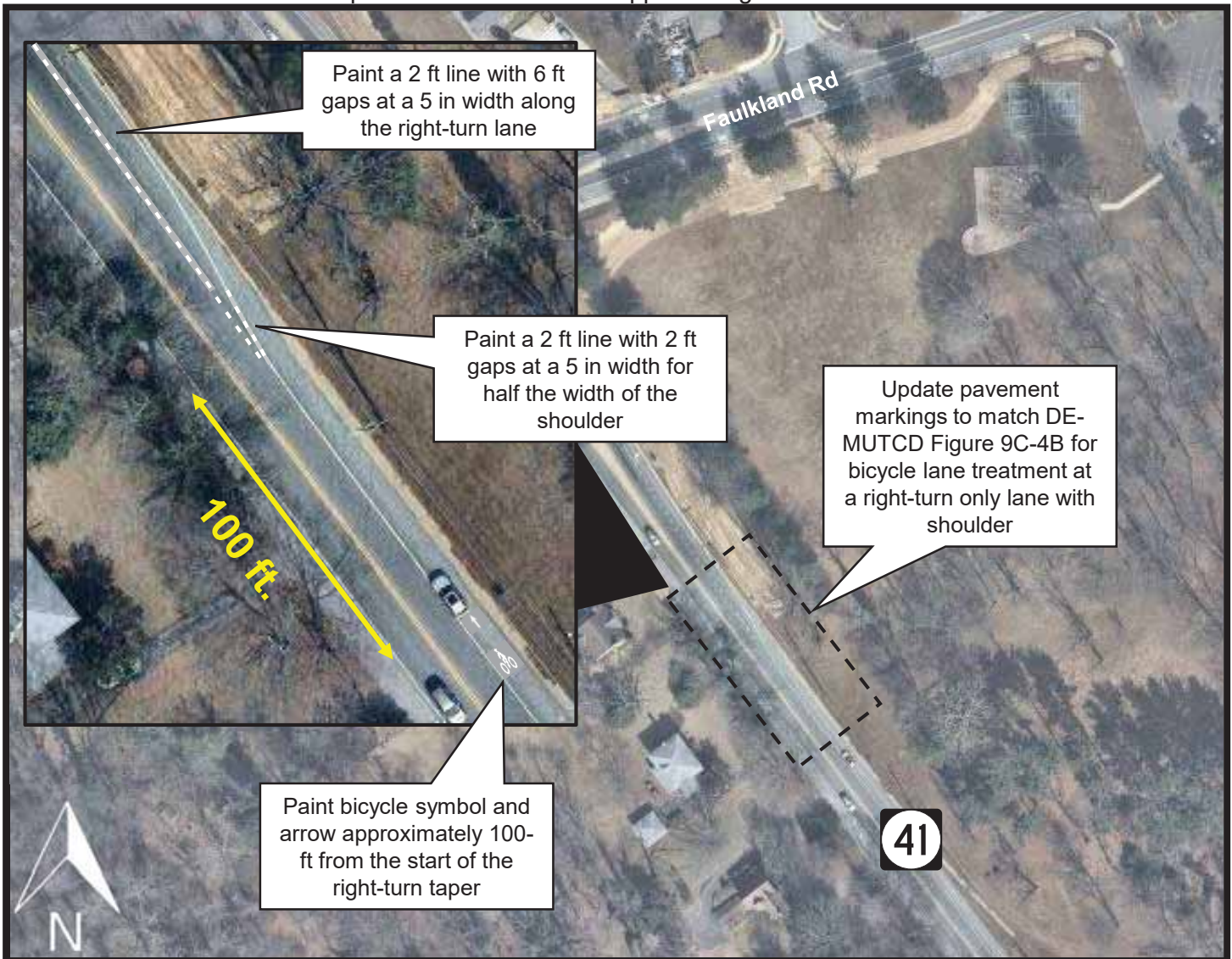
- | | |
|---|---|
| 1. SR 7 near Pike Creek Sports Medicine and Professional Center | 4. SR 48 near Downs Drive |
| 2. SR 41 near Brackenville Road (alternatively, mark crosswalk at intersection) | 5. SR 48 near Hedgerow Place / Harlech Drive |
| 3. SR 41 near St. Mary Assumption Church / Coffee Run Shopping Center | 6. SR 48 near Westgate Drive |
| | 7. SR 48 near Coffee Run Condominiums (shown) |

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Bicycle Pavement Markings for Right-Turn Only Lane on "Suggested Connector" Bicycle Routes

Sample Location: NB SR 41 approaching Faulkland Road



Notes:

- Provides safety for bicyclists along the shoulder of the roadway, giving additional warning to motorists that bicycles may use the right-turn only lane

Locations:

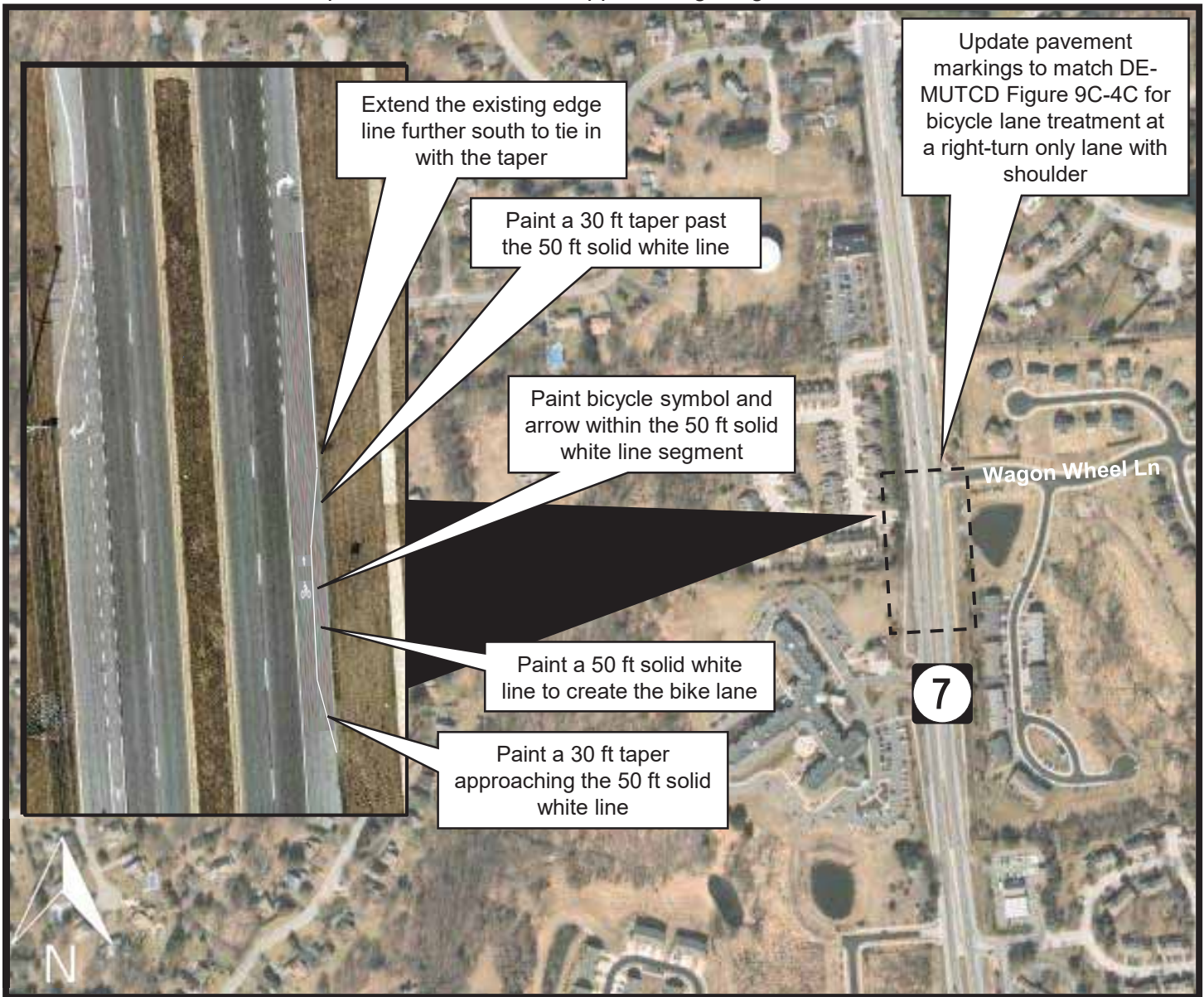
- | | |
|--|--|
| 1. NB SR 41 approaching Wilmington & Western Railroad Parking Lot Access | 12. SB SR 41 approaching SR 2 |
| 2. NB SR 41 approaching Greenbank Road | 13. WB SR 48 approaching Courtney Road |
| 3. NB SR 41 approaching Washington Avenue | 14. WB SR 48 approaching Hedgerow Place |
| 4. NB SR 41 approaching Faulkland Road (shown) | 15. WB SR 48 approaching Centerville Road |
| 5. NB SR 41 approaching Winterbury Circle | 16. WB SR 48 approaching Hampton Way |
| 6. NB SR 41 approaching Loveville Road | 17. EB SR 48 approaching Coffee Run |
| 7. NB SR 41 approaching entrance to Hockessin KinderCare | 18. EB SR 48 approaching Hercules Road |
| 8. NB SSR 41 approaching Winthers Way / Old Lancaster Pike | 19. EB SR 48 approaching Centerville Road |
| 9. NB SR 41 approaching Brackenville Road | 20. EB SRS 48 approaching Little Falls Drive |
| 10. SB SR 41 approaching Breckenridge Drive | 21. EB SR 48 approaching Harlech Drive |
| 11. SB SR 41 approaching Greenbank Road | 22. EB SR 48 approaching Weston Senior Living Center |
| | 23. EB SR 48 approaching Downs Drive |
| | 24. EB SR 48 approaching SR 141 |

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Bicycle Pavement Markings for Right-Turn Only Lane on Regional Bicycle Routes

Sample Location: NB SR 7 approaching Wagon Wheel Lane



Notes:

- Provides safety for bicyclists along the shoulder of the roadway, giving additional warning to motorists that bicycles may use the right-turn only lane

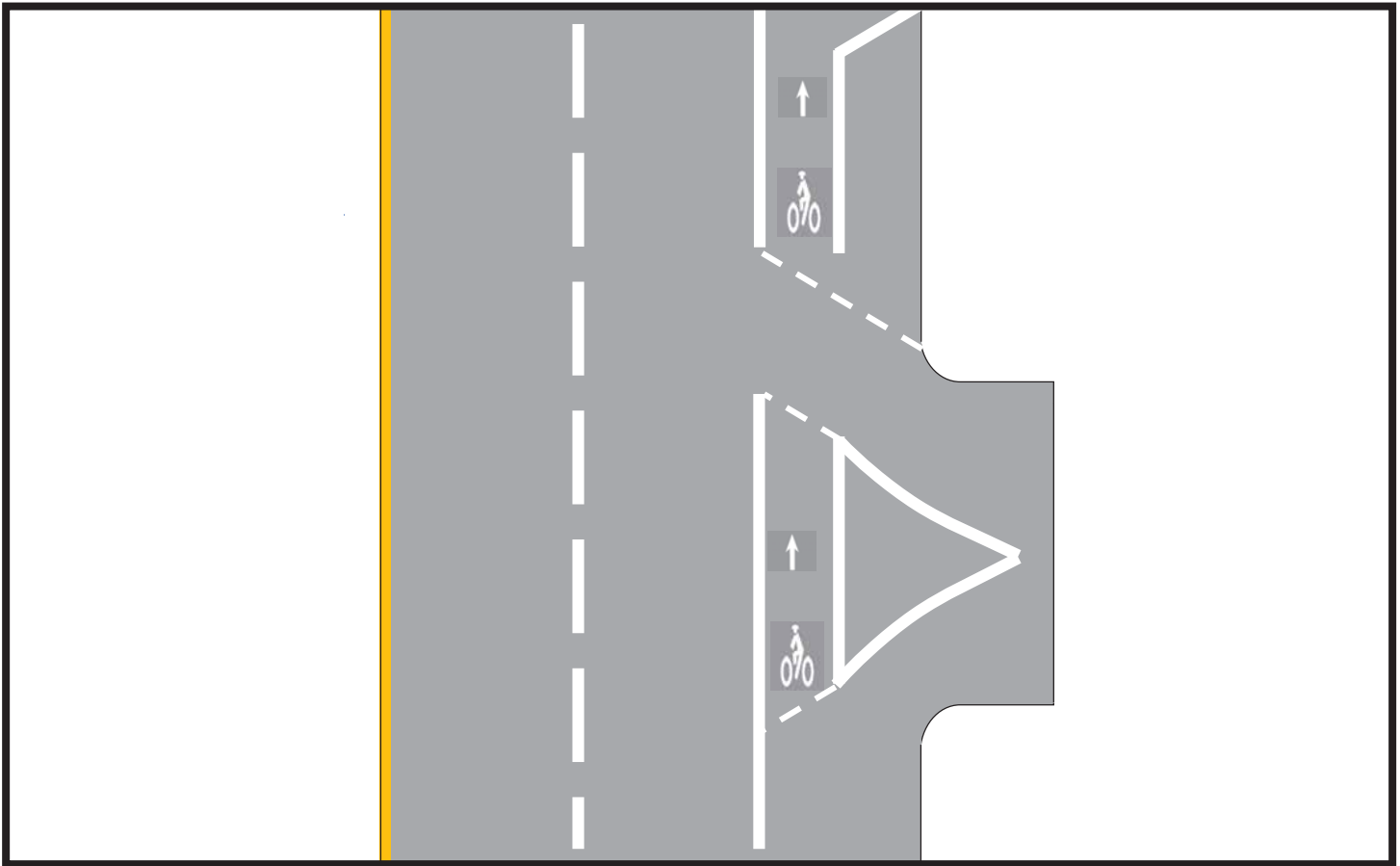
Locations:

- | | |
|--|---|
| 1. NB SR 7 approaching Weatherhill Drive | 14. NB SR 7 approaching Mendenhall Mill Road |
| 2. NB SR 7 approaching Ocheltree Lane | 15. NB SR 7 approaching Hockessin Drive |
| 3. SB SR 7 approaching Steven Lane | 16. NB SR 7 approaching Brackenville Road |
| 4. SB SR 7 approaching Ferris Drive | 17. NB SR 7 approaching Sheringham Drive |
| 5. SB SR 7 approaching Skyline Drive | 18. NB SR approaching Lantana Drive |
| 6. SB SR 7 approaching Greenwood Drive | 19. NB SR 7 approaching Valley Road (upstream of shopping entrance) |
| 7. SB SR 7 approaching Old Linden Hill Road | 20. SB SR 7 approaching Tims Lane |
| 8. SB SR 7 approaching Limestone Road | 21. SB SR 7 approaching Valley Road |
| 9. SB SR 7 approaching Hopkins Drive | 22. SB SR 7 approaching Little Baltimore Road |
| 10. SB SR 7 approaching Arundel Drive | 23. SB SR 7 approaching Haileys Trail |
| 11. NB SR 7 approaching Vincent Lane | 24. SB SR 7 approaching Ennis Drive |
| 12. NB SR 7 approaching Wagon Wheel Lane (shown) | 25. SB SR 7 approaching Carrie Drive |
| 13. NB SR 7 approaching Village Drive | |

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Helmeted Bicyclist Symbols and Directional Arrows across Painted Channelizing Islands



Notes:

- Provide bicycle lane markings with helmeted bicyclist symbols and directional arrows across painted channelizing islands, as well as downstream “target” helmeted bicyclist symbols and directional arrows in wide shoulders on departure sides of intersections along all three corridors

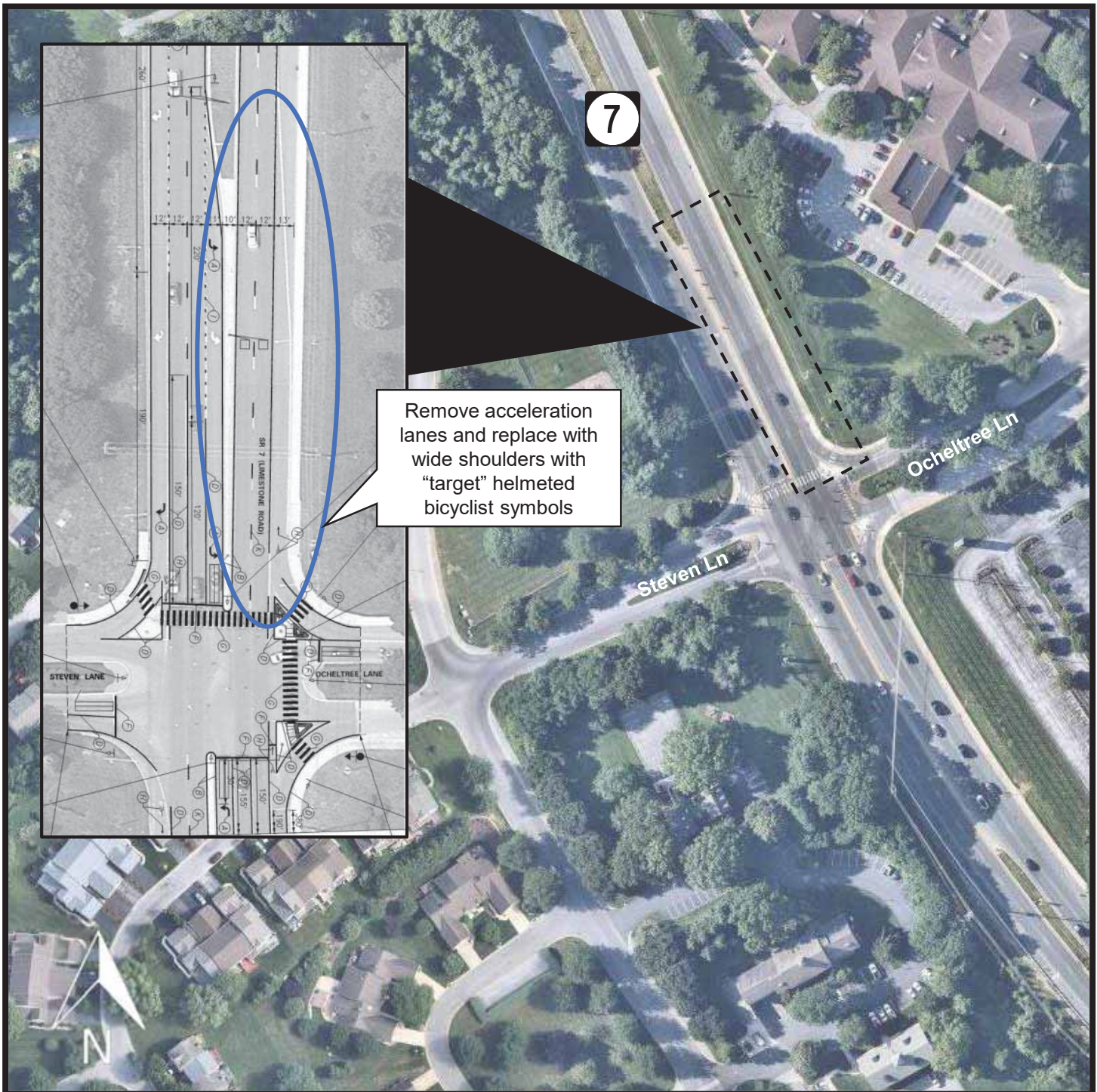
Locations:

- | | |
|---|---|
| 1. NB SR 7 at Milltown Road | 23. SB SR 7 at 100 Valley Center Drive Plaza |
| 2. NB SR 7 at Milltown Shopping Center | 24. SB SR 7 at Milltown Road |
| 3. NB SR 7 at Concord Drive | 25. NB SR 41 at Greenbank Road |
| 4. NB SR 7 at Stoney Batter Road | 26. NB SR 41 at Faulkland Road |
| 5. NB SR 7 at Ocheltree Lane | 27. NB SR 41 at entrance to Hockessin KinderCare |
| 6. NB SR 7 at Vincent Lane | 28. NB SR 41 at Mitchell Road |
| 7. NB SR 7 at Mendenhall Mill Road | 29. NB SR 41 at shopping entrance south of Yorklyn Road |
| 8. NB SR 7 at Hockessin Drive | 30. SB SR 41 at shopping entrance south of Yorklyn Road |
| 9. NB SR 7 at Brackenville Road | 31. SB SR 41 at Breckenridge Drive |
| 10. NB SR 7 at Sheringham Drive | 32. SB SR 41 at Greenbank Road |
| 11. NB SR 7 at Lantana Drive | 33. WB SR 48 at Courtney Road |
| 12. NB SR 7 at shopping entrance south of Valley Road | 34. WB SR 48 at Hedgerow Place |
| 13. NB SR 7 at Valley Road | 35. WB SR 48 at Centerville Road |
| 14. SB SR 7 at Valley Road | 36. WB SR 48 at Hampton Way |
| 15. SB SR 7 at Farm Meadows Lane | 37. EB SR 48 at entrance to Hockessin KinderCare |
| 16. SB SR 7 at Little Baltimore Road | 38. EB SR 48 at Coffee Run Condominiums |
| 17. SB SR 7 at Ennis Drive | 39. EB SR 48 at Hercules Road |
| 18. SB SR 7 at Paper Mill Road | 40. EB SR 48 at Centerville Road |
| 19. SB SR 7 at Steven Lane | 41. EB SR 48 at Little Falls Drive |
| 20. SB SR 7 at St. Philips Lutheran Church | 42. EB SR 48 at Harlech Drive |
| 21. SB SR 7 at Skyline Drive | 43. EB SR 48 at Weston Senior Living Center |
| 22. SB SR 7 at New Linden Hill Road | 44. EB SR 48 at Downs Drive |

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Helmeted Bicyclist Symbols and Wide Shoulders to Replace Acceleration Lanes



Notes:

- Provides a path for bicyclists to continue through the intersection and position themselves safely on the far-side of the intersection without conflicting with accelerating turning vehicles

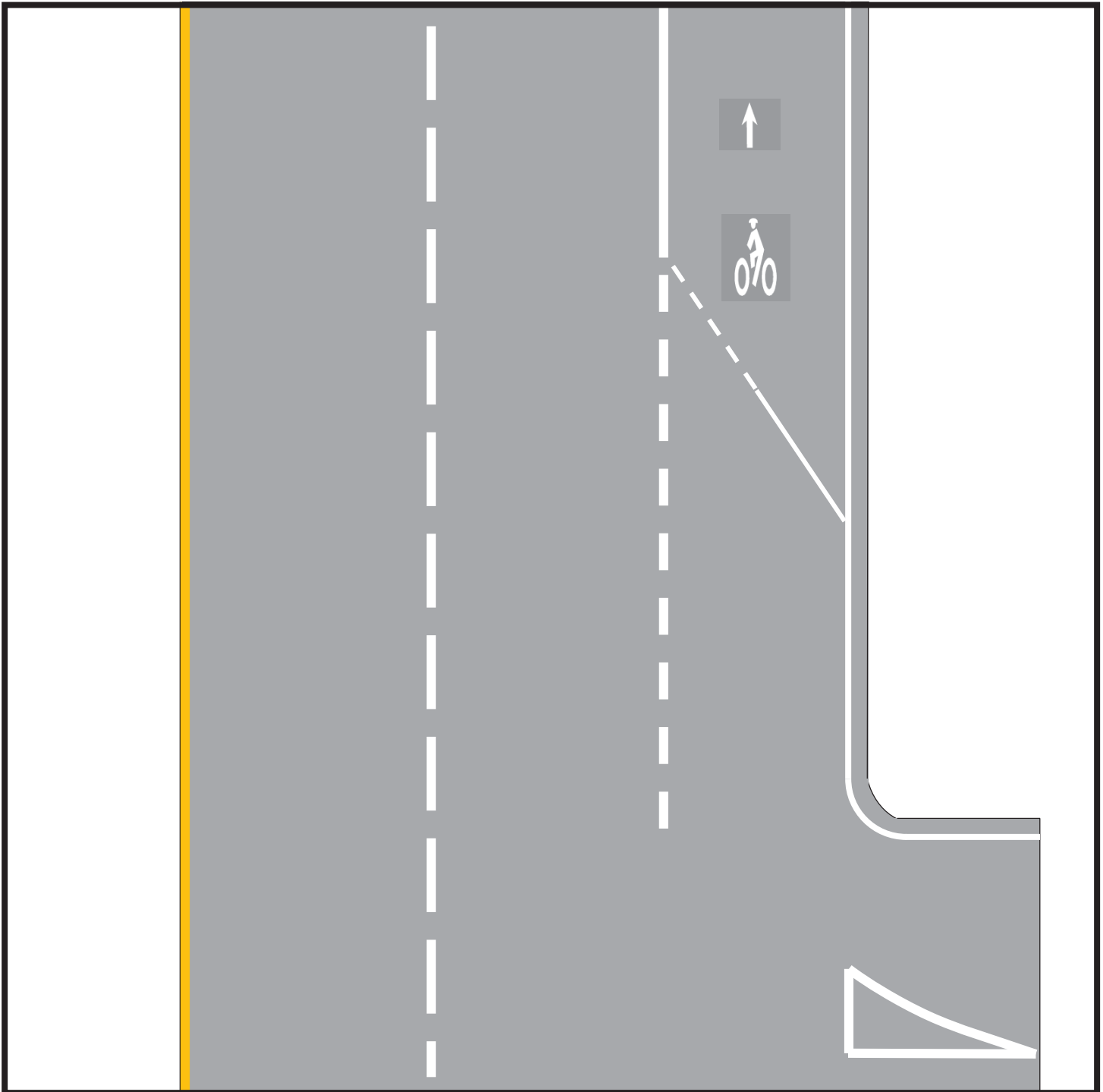
Locations:

1. NB SR 7 at Ocheltree Lane (shown)
2. SB SR 7 at New Linden Hill Road
3. SB SR 7 at Old Linden Hill Road
4. SB SR 7 at Limestone Road

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Helmeted Bicyclist Symbols and Directional Arrows at End of Acceleration Lane Tapers



Notes:

- Provide pavement markings similar to the reverse of DE-MUTCD Figure 9C-4B with dashed lines along the end of acceleration lane tapers on SR 41 and SR 48

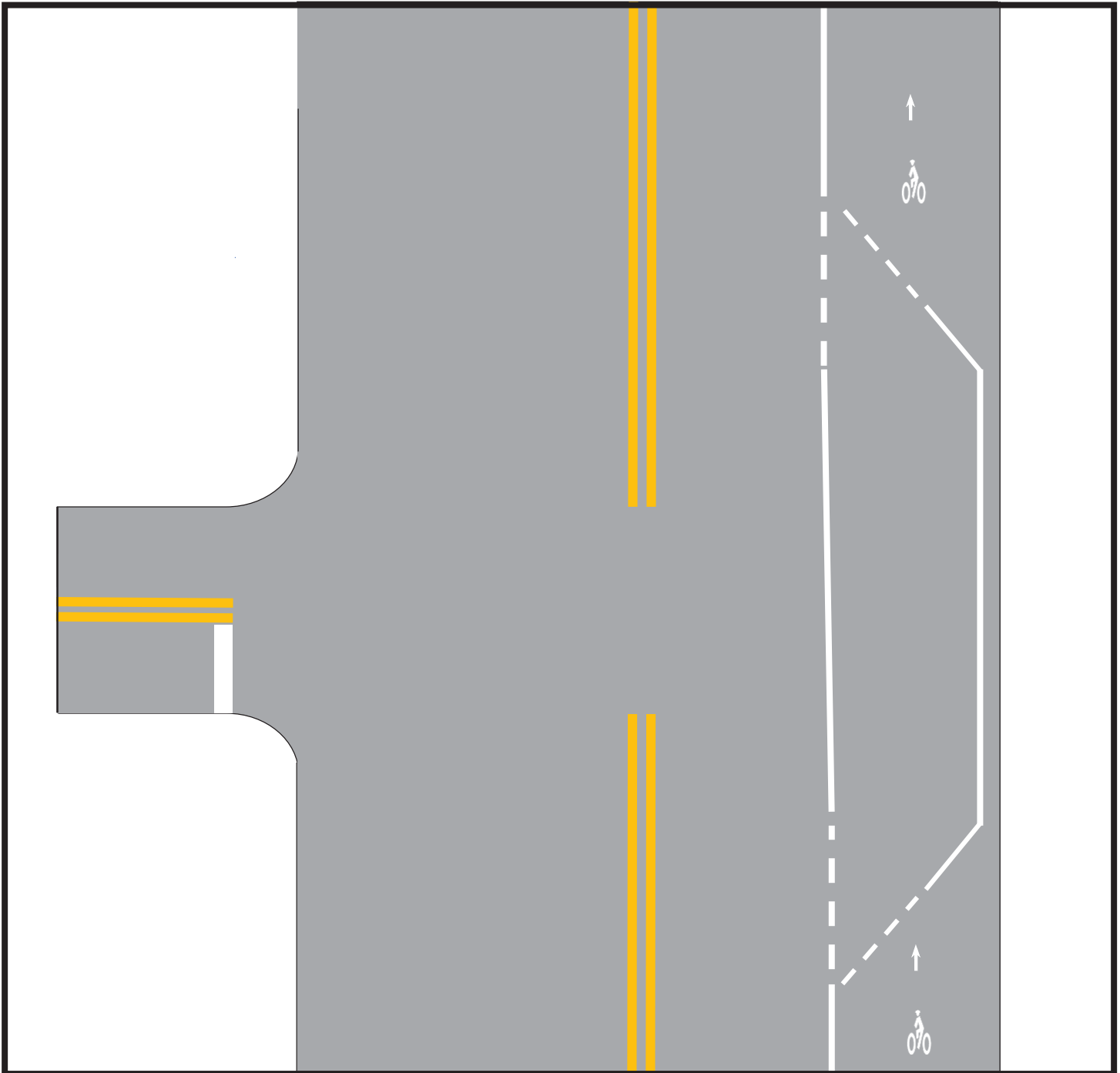
Locations:

1. NB SR 41 at SR 2
2. NB SR 41 at Graves Road
3. SB SR 41 at Graves Road
4. WB SR 48 at SR 141
5. WB SR 48 at Centerville Road
6. EB SR 48 at Centerville Road

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Helmeted Bicyclist Symbols and Directional Arrows at Bypass Lanes and Climbing Lanes With a Narrow Shoulder



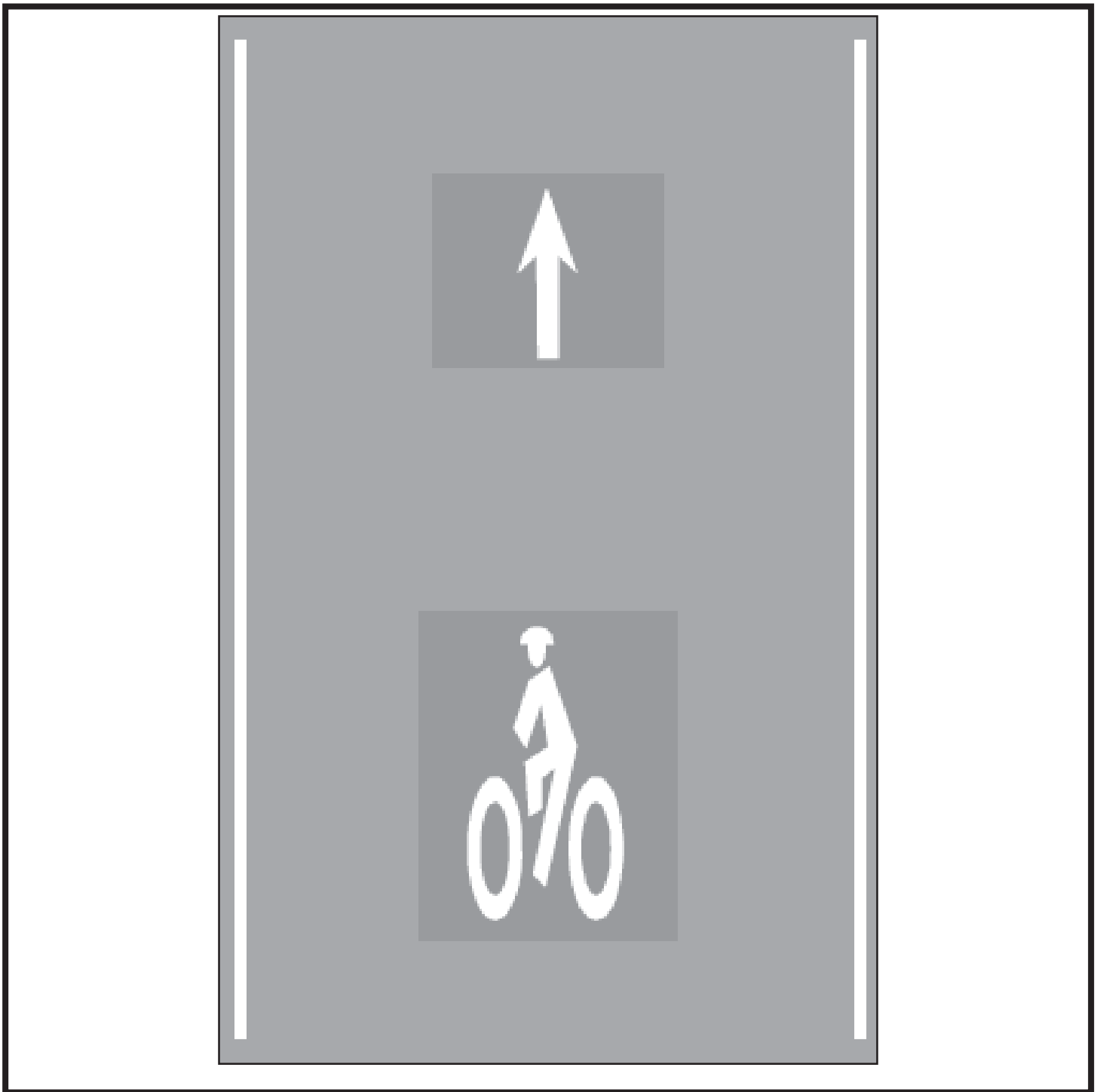
Notes:

- Provide pavement markings similar to DE-MUTCD Figure 9C-4B where bypass lanes and climbing lanes begin and the shoulder typically used for bicycle travel narrows (i.e., where bicycles would travel in the lane) on all three corridors

Locations:

1. NB SR 7 near Stenning Drive
2. SB SR 7 near Stenning Drive
3. NB SR 41 near Lora Lane
4. WB SR 48 near Hickory Spring Road (Old Hobson Farm)
5. EB SR 48 near Hickory Spring Road (Old Hobson Farm)

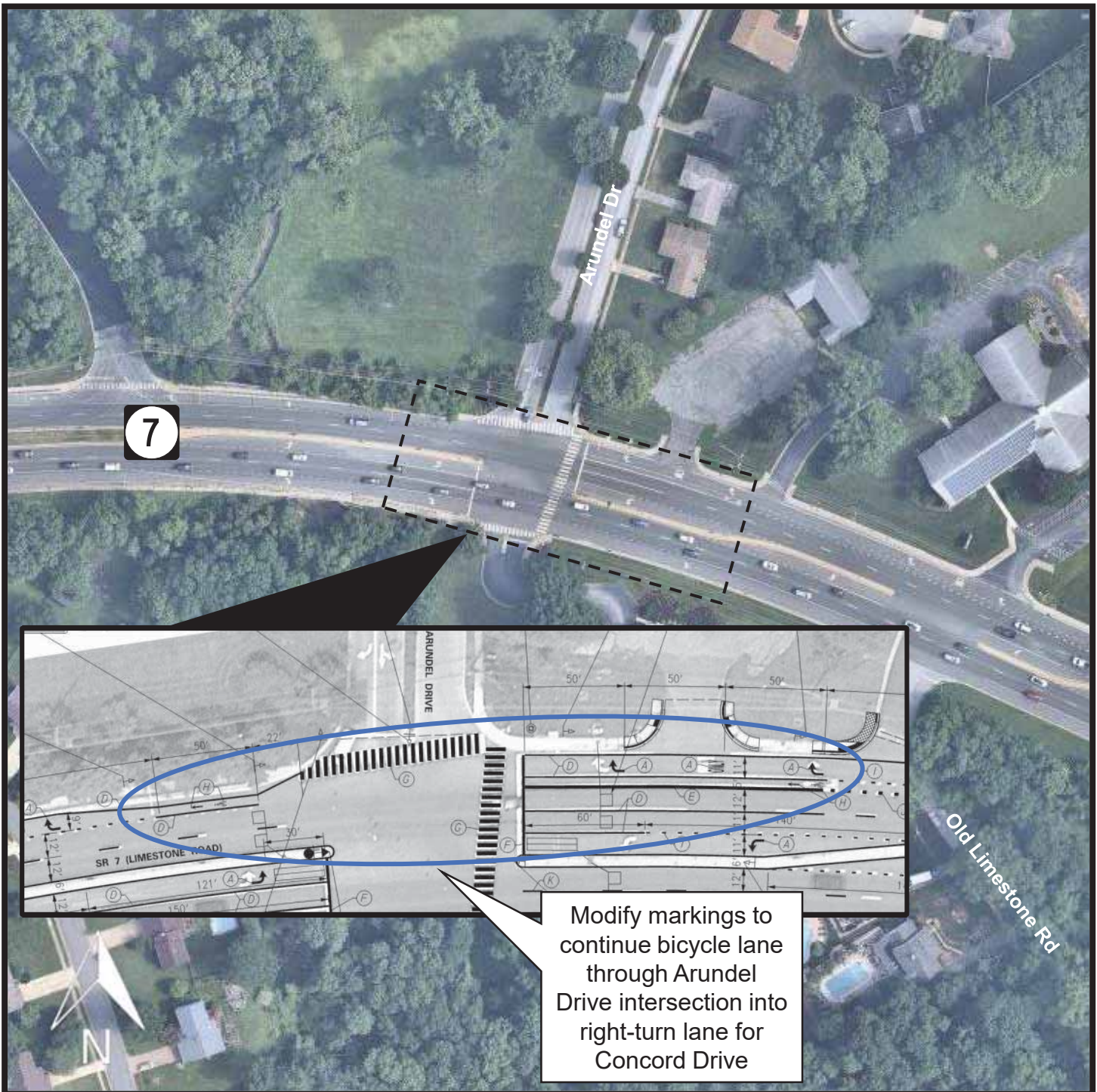
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
Helmeted Bicyclist Symbols and Directional Arrows



Notes:

- Provide additional confirming helmeted bicyclist symbols and directional arrows within wide shoulders along all three corridors
- See Figure 9C-3 Option B (Helmeted Bicyclist Symbol) in the DE-MUTCD (shown above)

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
Bicycle Marking Improvements along NB SR 7 at Arundel Drive



Notes:

- Provides safety for bicyclists along the roadway, giving additional warning to motorists that bicycles may continue through intersection into right-turn only lane

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Bicycle Marking Improvements along SB SR 7 between Lantana Drive and Farm Meadows Lane



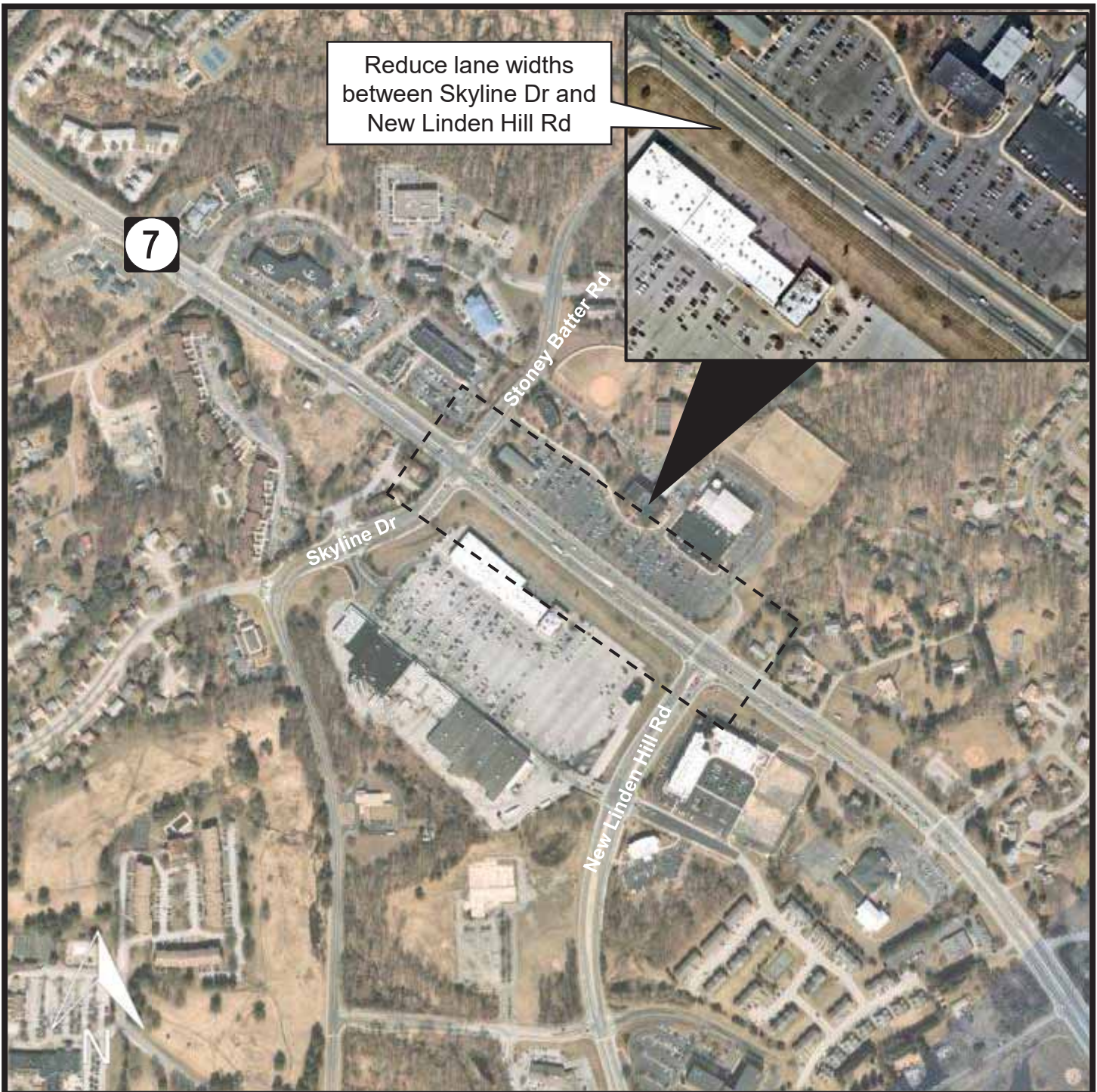
Notes:

- Determine if a 4-ft wide shoulder could be created by restriping alone, or if minor widening (which would likely require slope stabilization and moving the guardrail) is needed

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

Bicycle Marking Improvements along SB SR 7 between Skyline Drive and New Linden Hill Road



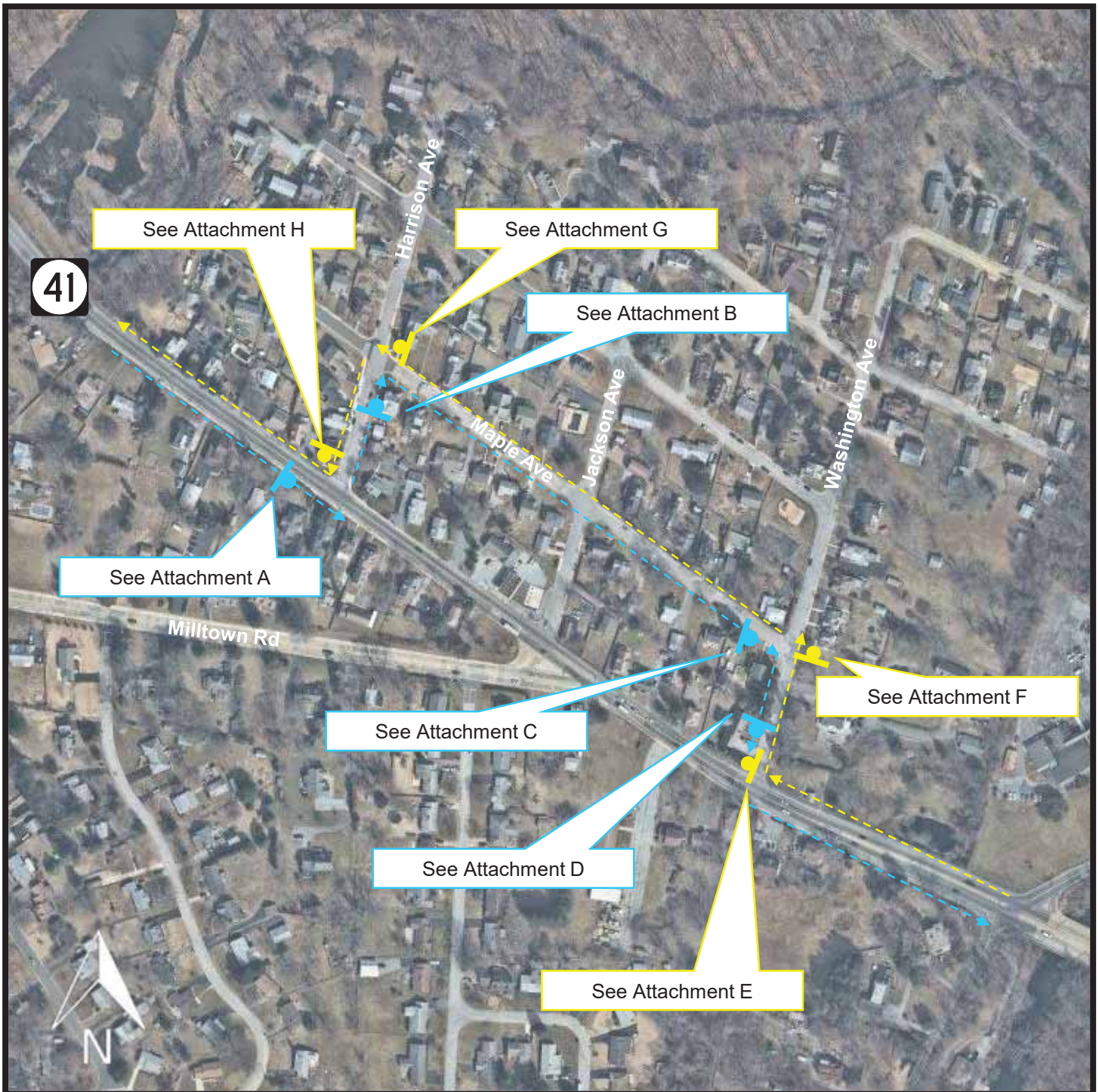
Notes:

- Restripe all lanes (currently approximately 12-ft wide) to narrower widths (11-ft wide) to create a 4-ft to 5-ft wide shoulder with bicycle lane markings

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

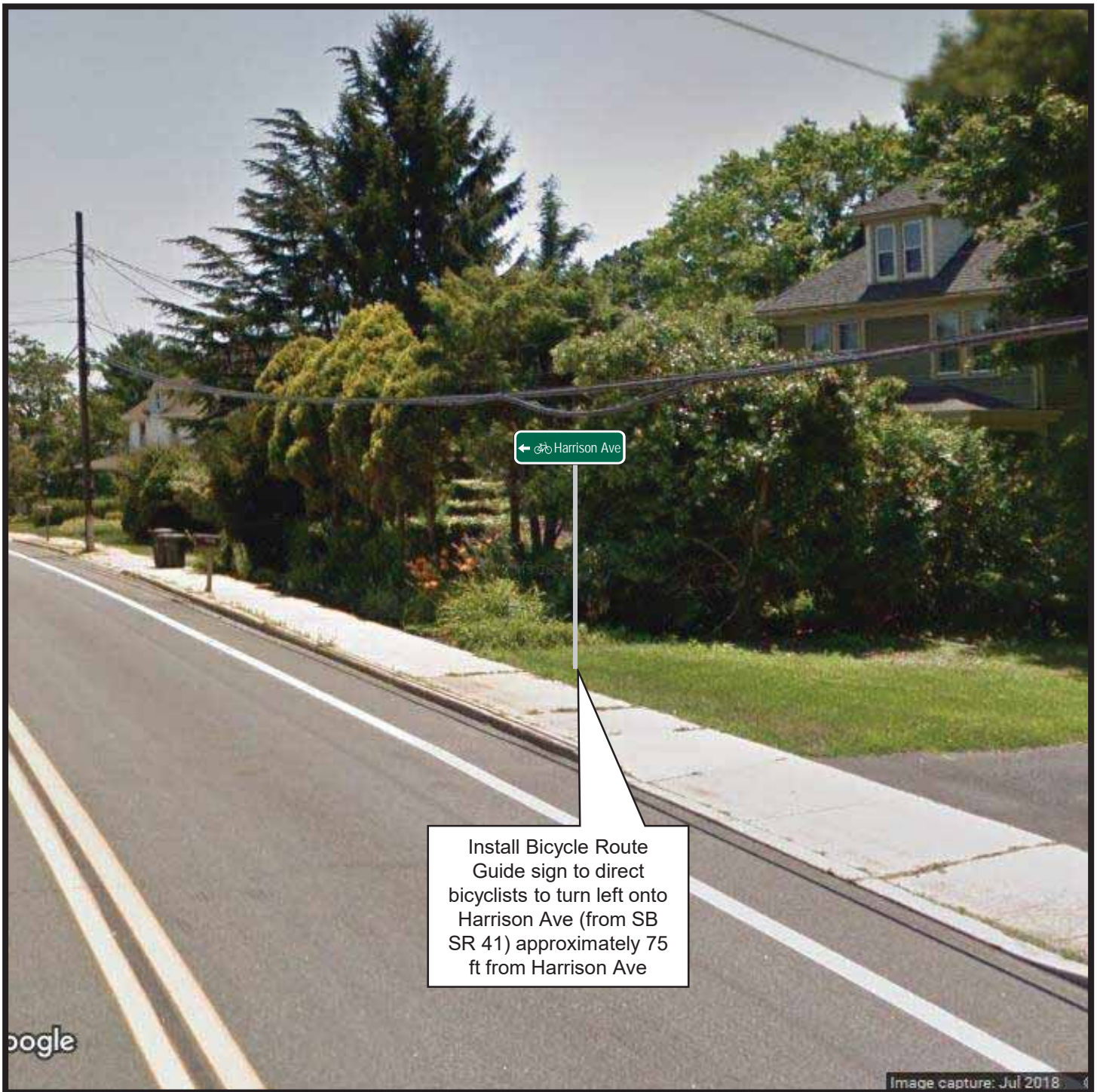
Bicycle Route Parallel to SR 41 between Washington Avenue and Harrison Avenue



Notes:

- Due to the narrow shoulder along SR 41, an alternate safer route is being provided for bicyclists

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 41 approaching Harrison Ave

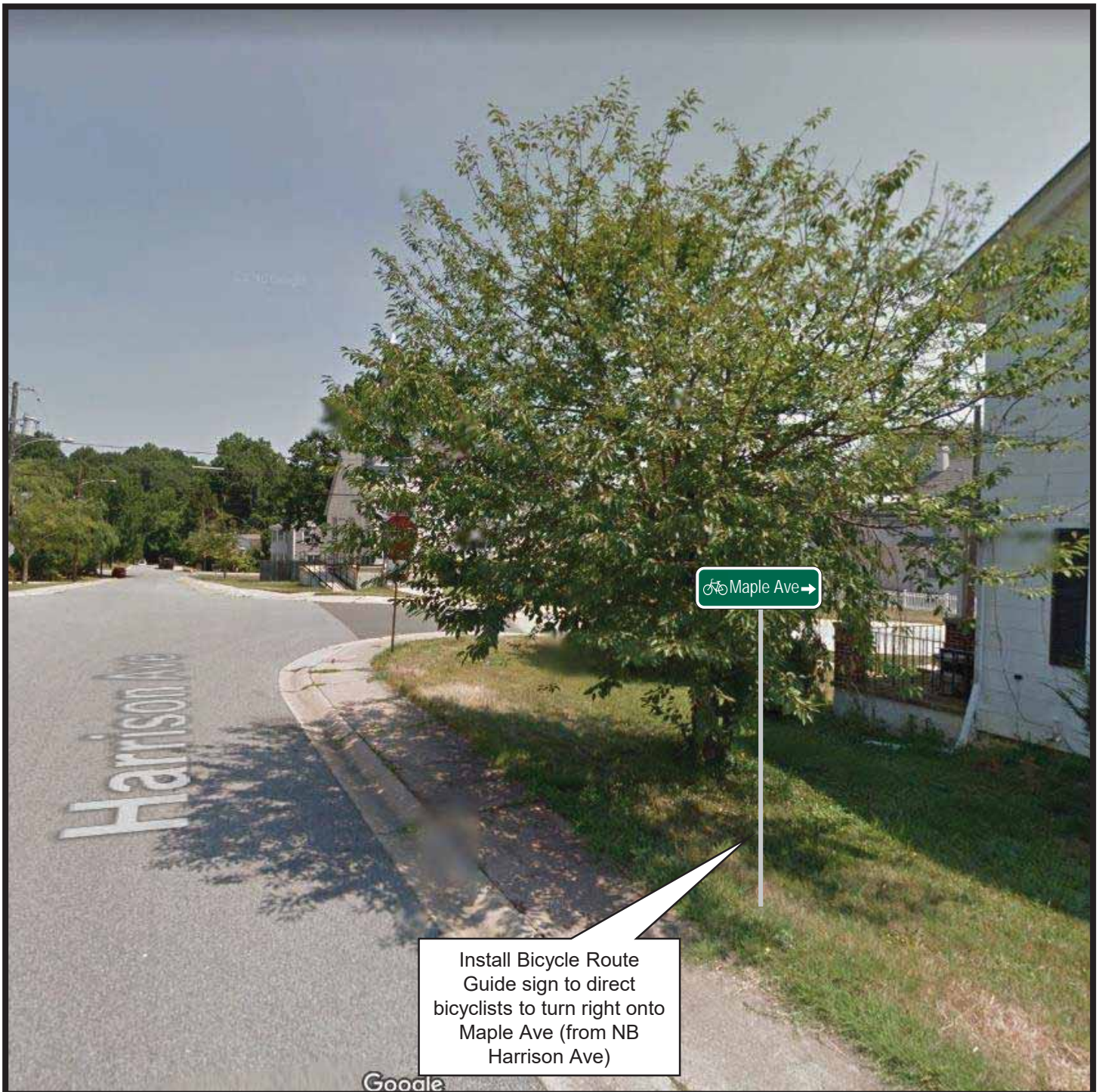


Notes:

- Due to the narrow shoulder along SB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT A

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB Harrison Avenue at Maple Avenue



Notes:

- Due to the narrow shoulder along SB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT B

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
EB Maple Avenue at Washington Avenue

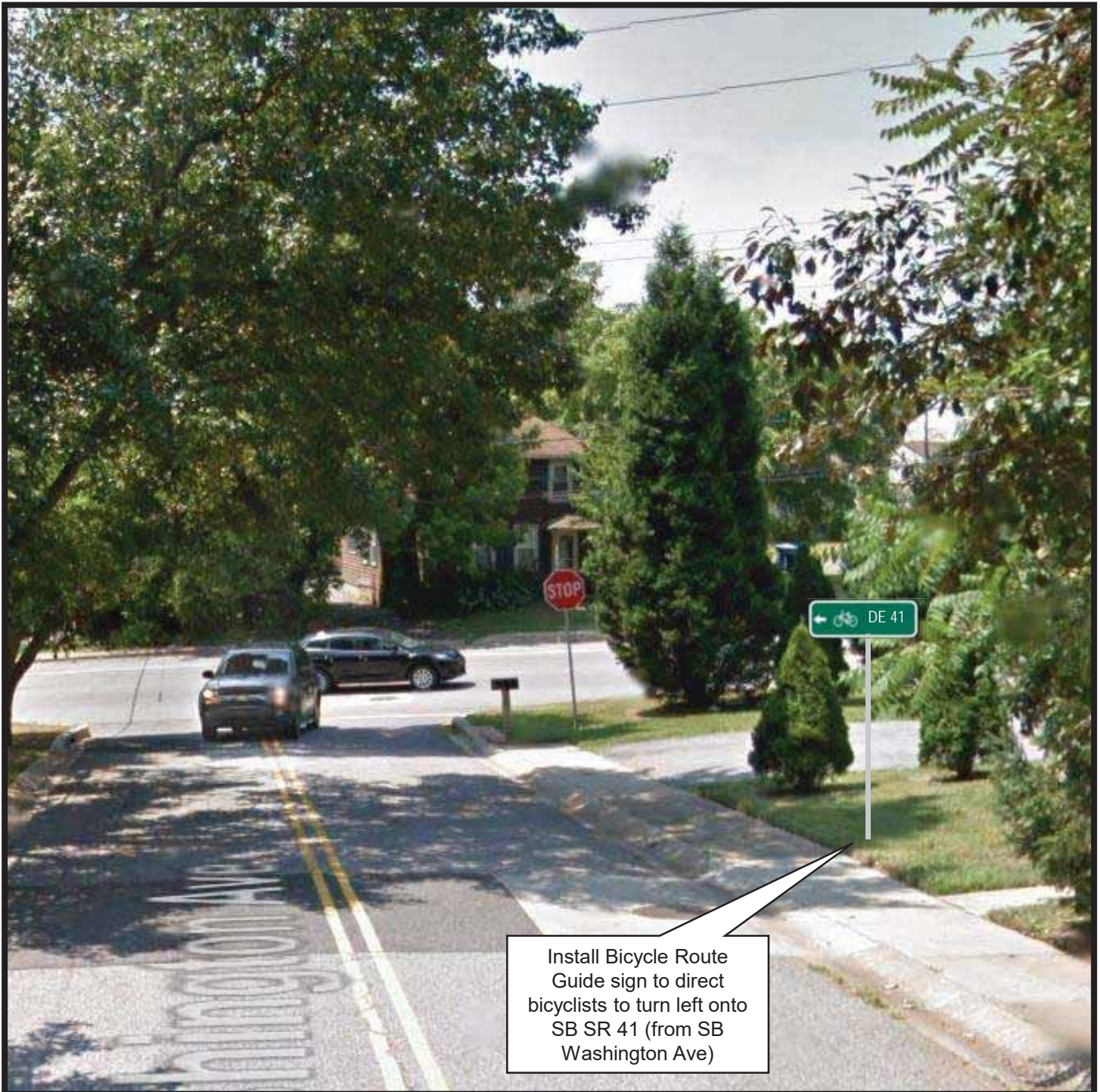


Notes:

- Due to the narrow shoulder along SB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT C

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB Washington Avenue at SR 41



Notes:

- Due to the narrow shoulder along SB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT D

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 41 at Washington Avenue



Notes:

- Due to the narrow shoulder along NB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT E

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB Washington Avenue at Maple Avenue



Notes:

- Due to the narrow shoulder along NB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT F

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
WB Maple Avenue at Harrison Avenue



Notes:

- Due to the narrow shoulder along NB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT G

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB Harrison Avenue at SR 41



Notes:

- Due to the narrow shoulder along NB SR 41, an alternate safer route is being provided for bicyclists

ATTACHMENT H

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

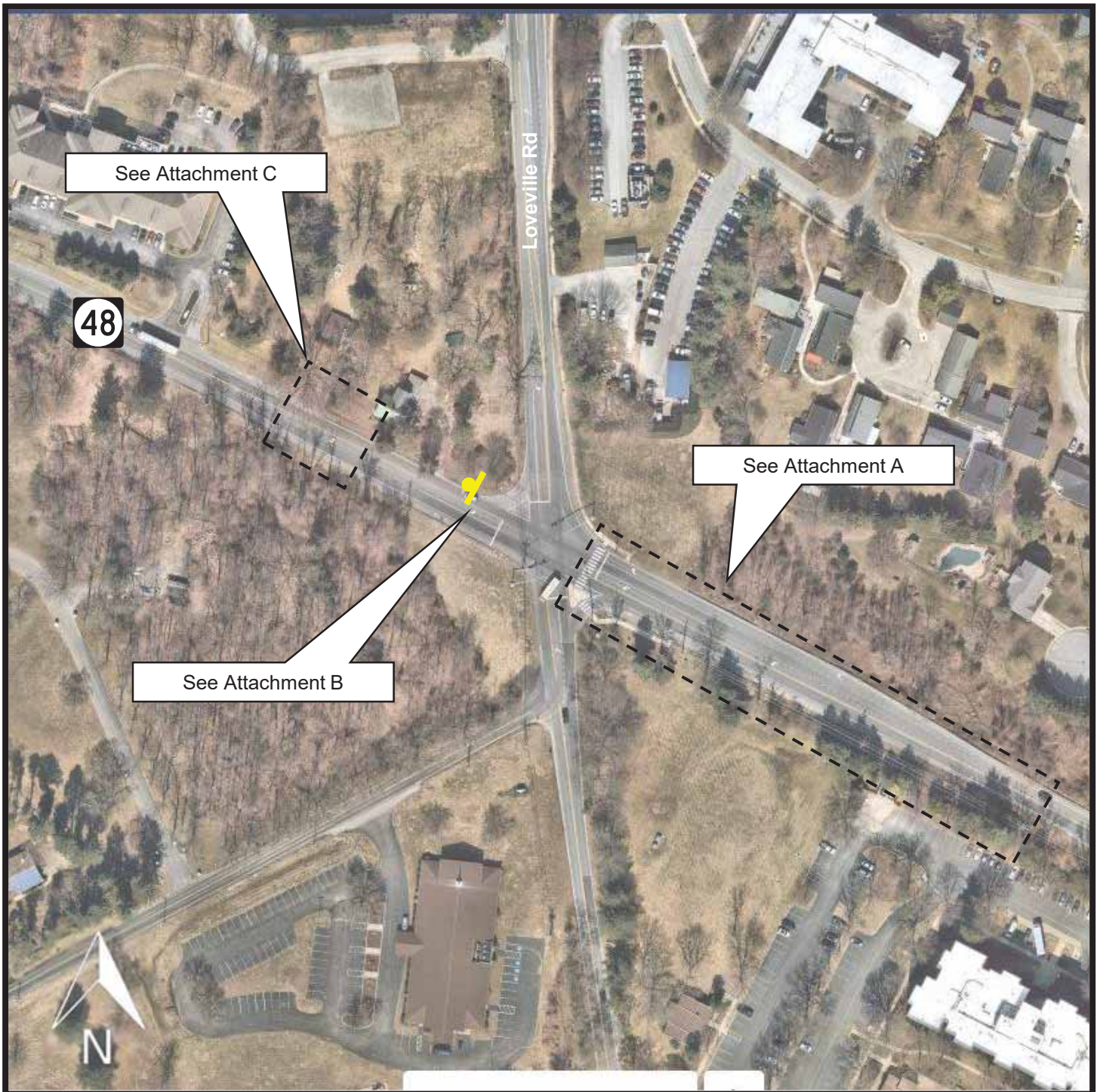
Bicycle Marking Improvement along SB SR 41 between Withers Way and Sanford School entrance



Notes:

- Improves safety for bicyclists along SR 41 by eliminating the pinch point where it is too narrow to safely ride within the shoulder

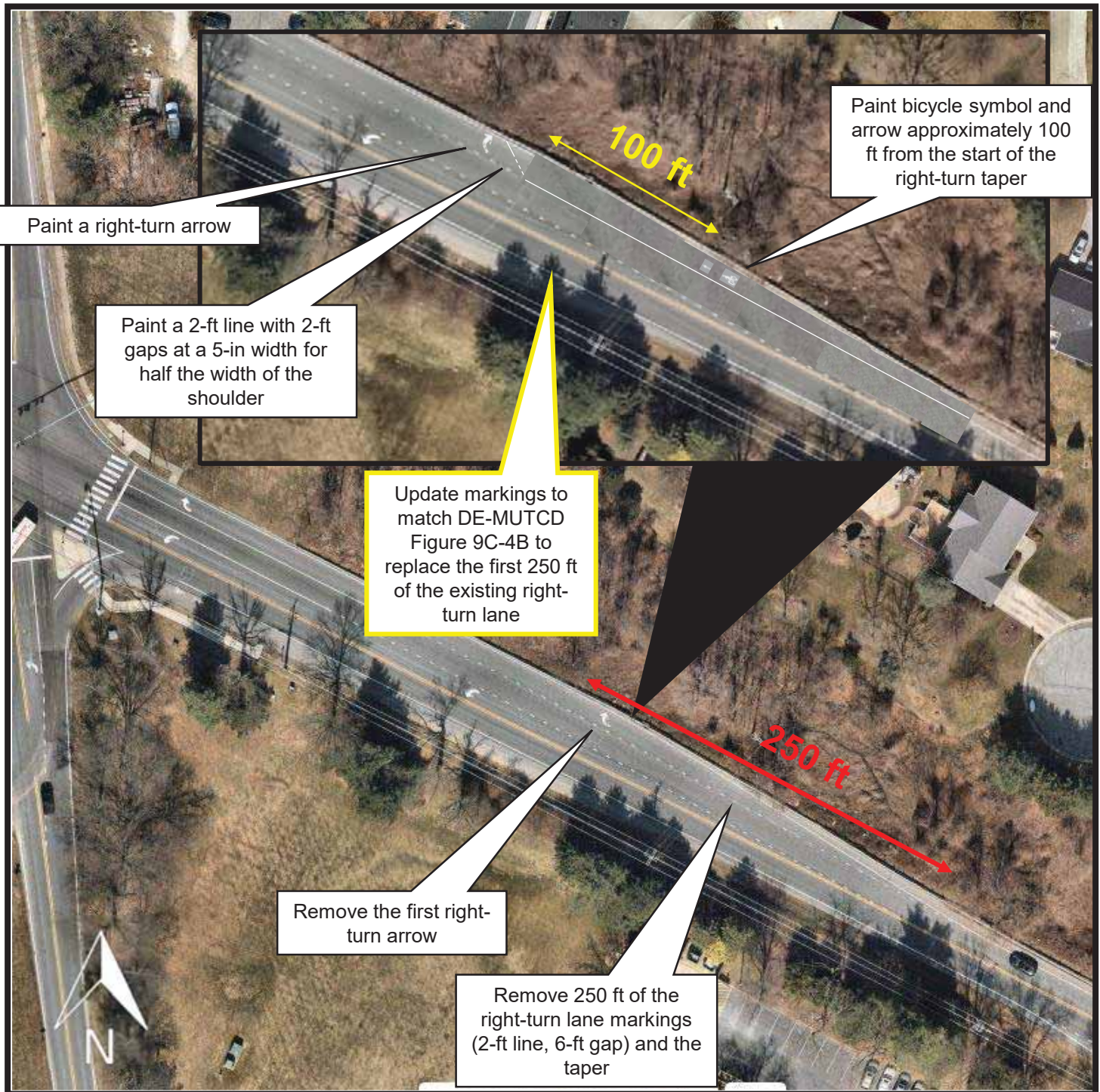
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 48 at Loveville Road



Notes:

- Provides safety for bicyclists along the shoulder of the roadway, giving additional warning to motorists
- Perform a geometric review of the cross-section of SR 48 adjacent to the property on the northwest corner of SR 48 at Loveville Road to determine the feasibility of providing a 4-ft to 5-ft wide paved shoulder/bicycle lane.
 - This will likely require coordination with the adjacent property owner.

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 48 at Loveville Road



Notes:

- Provides safety for bicyclists along the shoulder of the roadway, giving additional warning to motorists

ATTACHMENT A

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 48 at Loveville Road

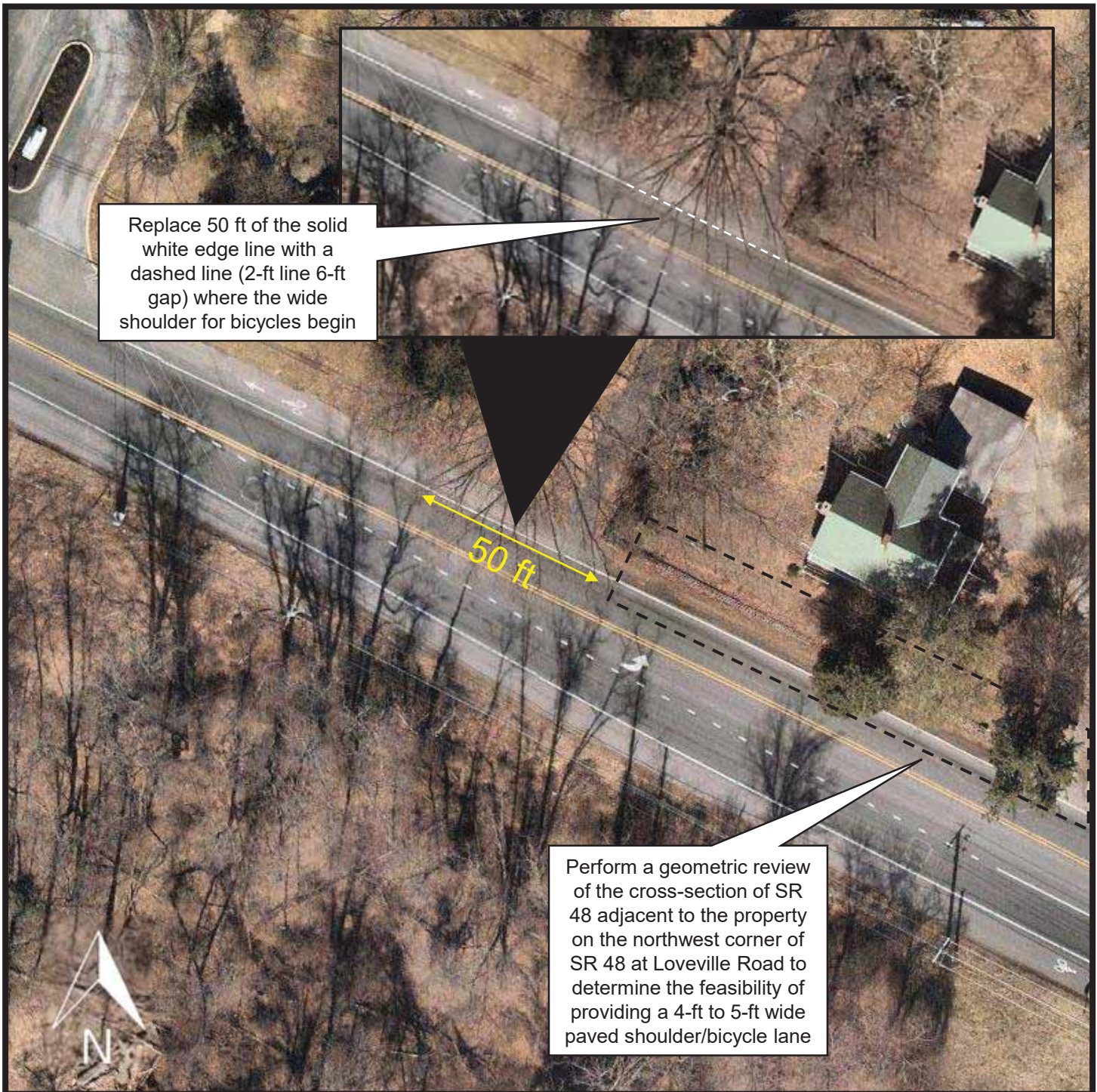


Notes:

- Provides warning to motorists that bicycles may be in lane where there is no shoulder
- Perform a geometric review of the cross-section of SR 48 adjacent to the property on the northwest corner of SR 48 at Loveville Road to determine the feasibility of providing a 4-ft to 5-ft wide paved shoulder/bicycle lane
 - Note: This will likely require coordination with the adjacent property owner
 - See Sheet 4

ATTACHMENT B

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 48 at Loveville Road



Notes:

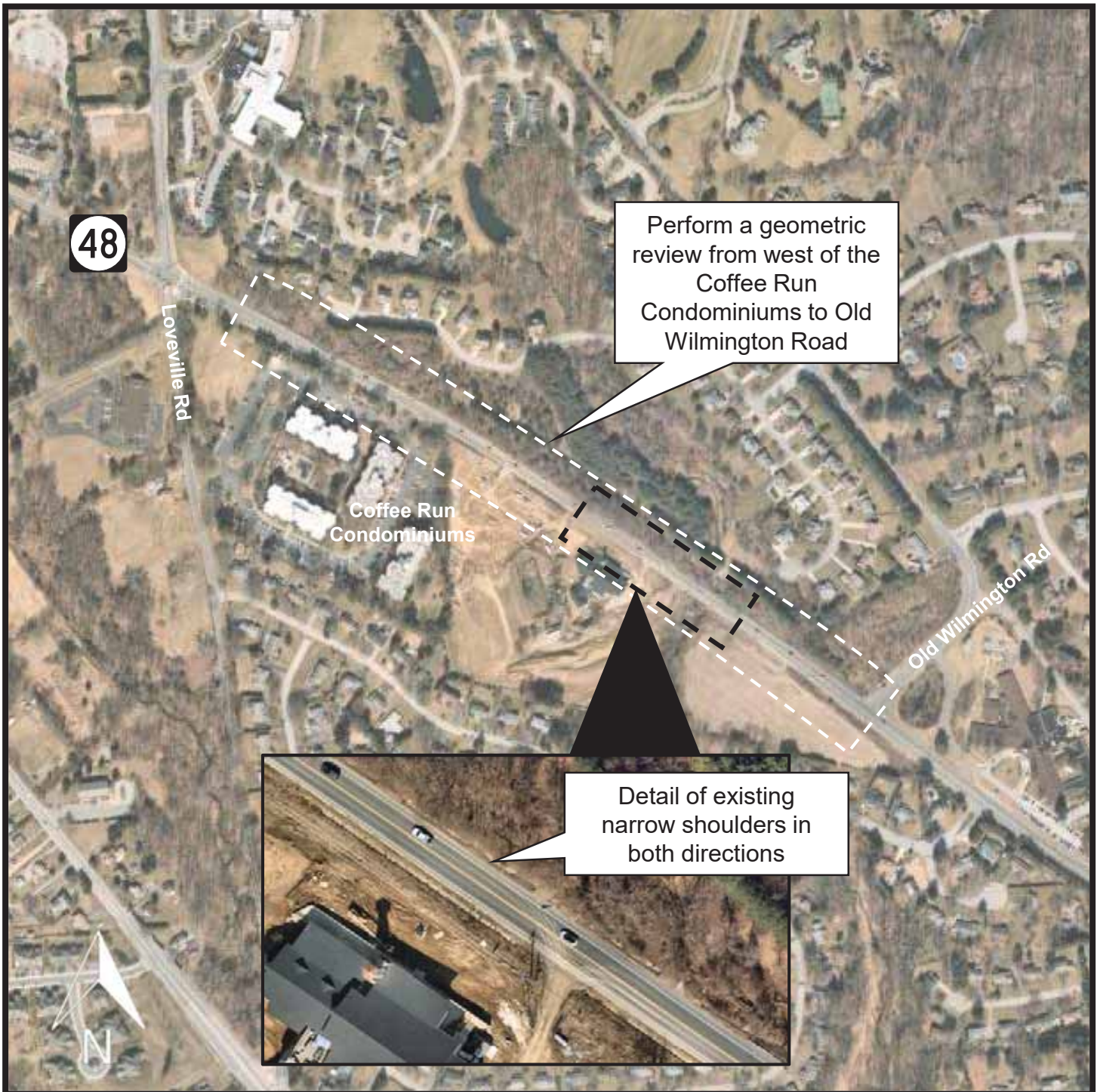
- Provides safety for bicyclists along the shoulder of the roadway, giving additional warning to motorists
- Geometric review may require coordination with the adjacent property owner

ATTACHMENT C

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

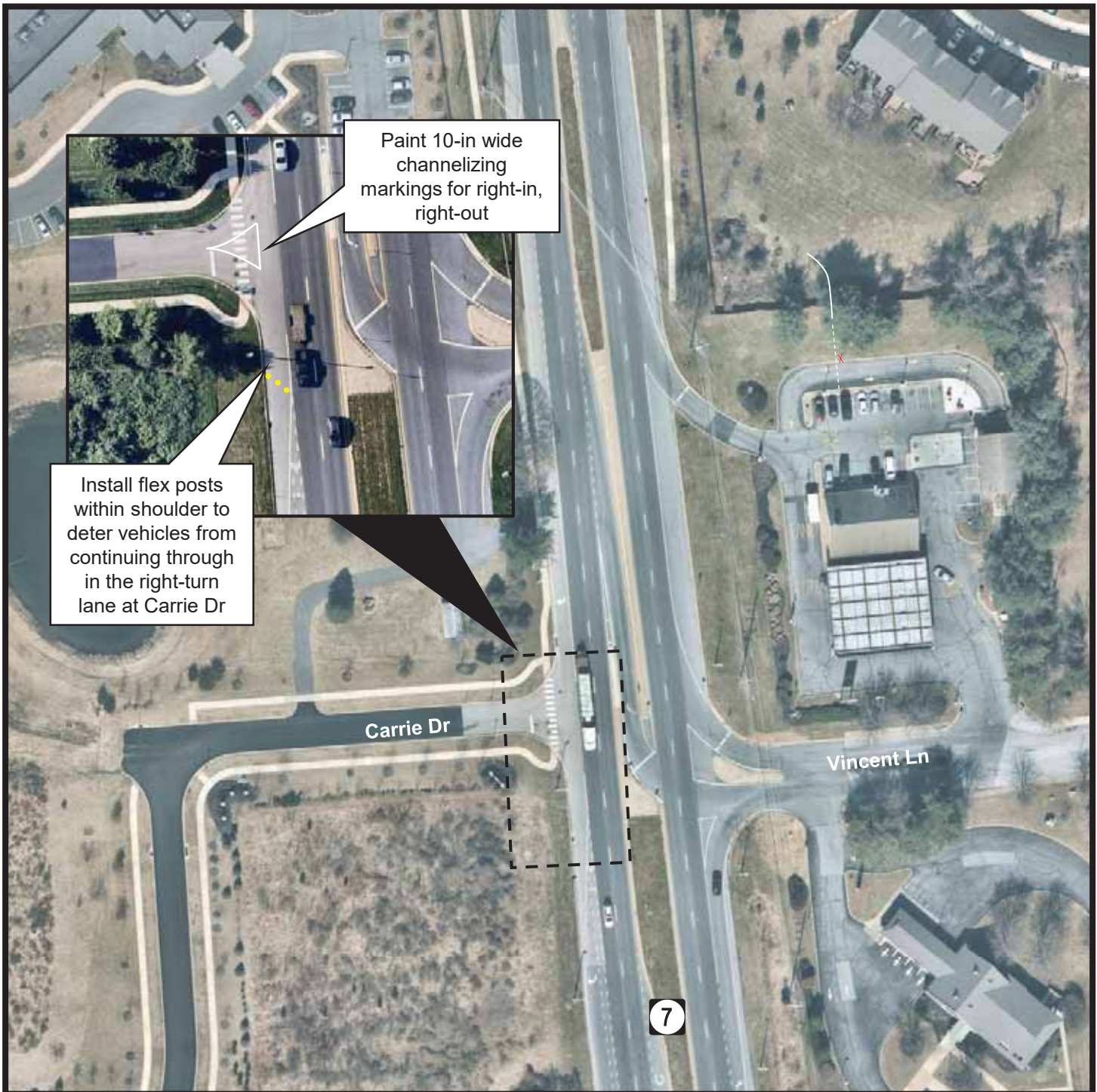
Bicycle Marking Improvements along SB SR 48 from west of Coffee Run to Old Wilmington Road



Notes:

- Perform a geometric review to determine if a 4-ft to 5-ft wide shoulder could be created in both directions by restriping alone, or if minor widening (which would likely require modifications to the adjacent drainage channel and moving a short segment of guardrail) is needed

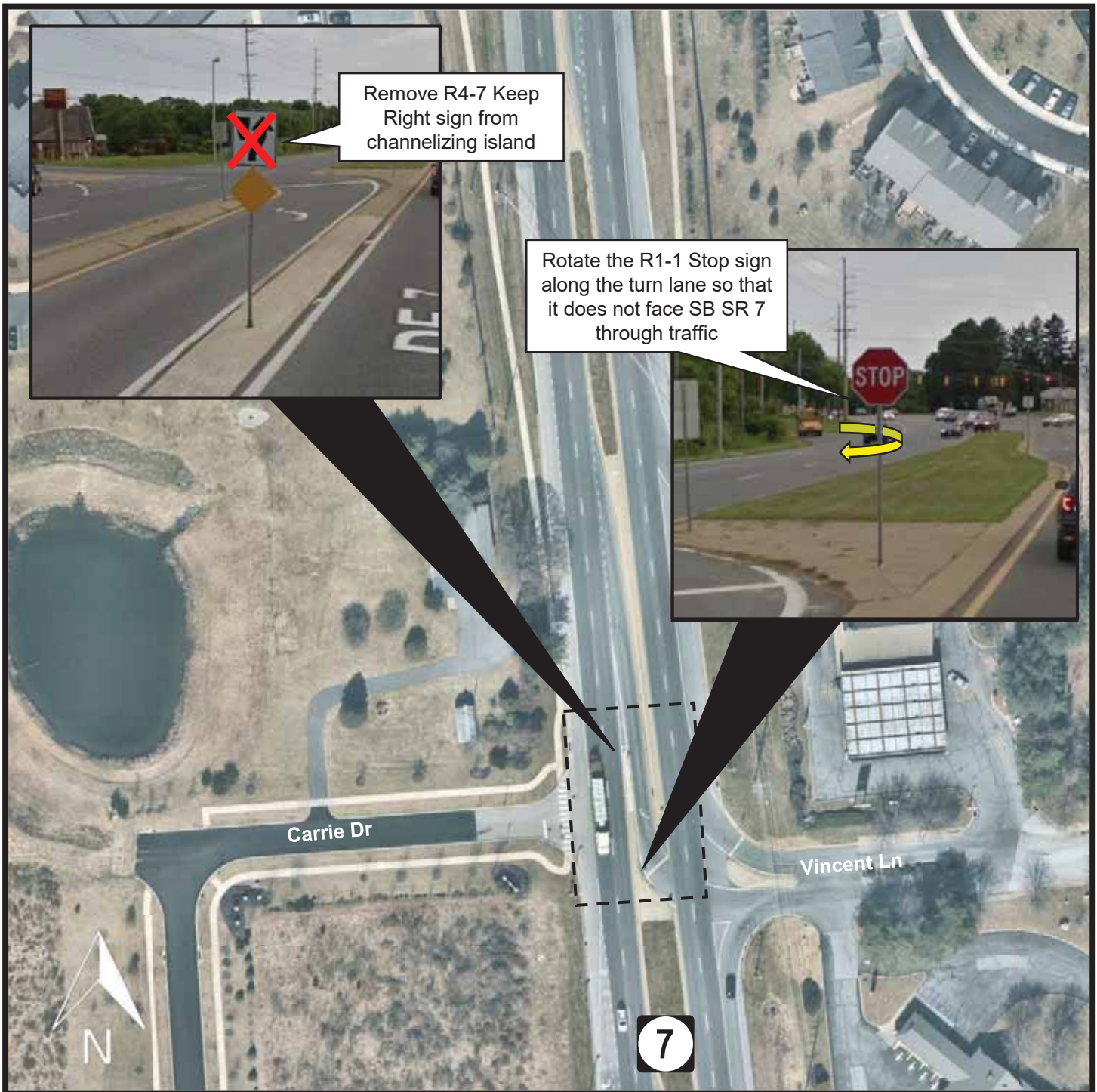
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 7 at Carrie Drive



Notes:

- Provides additional guidance to vehicles entering/exiting at Carrie Drive
- Addresses concerns regarding drivers mistaking the turn lane for Carrie Drive as the turn lane for Paper Mill Road (farther south)
- Provides guidance and improves safety for bicyclists

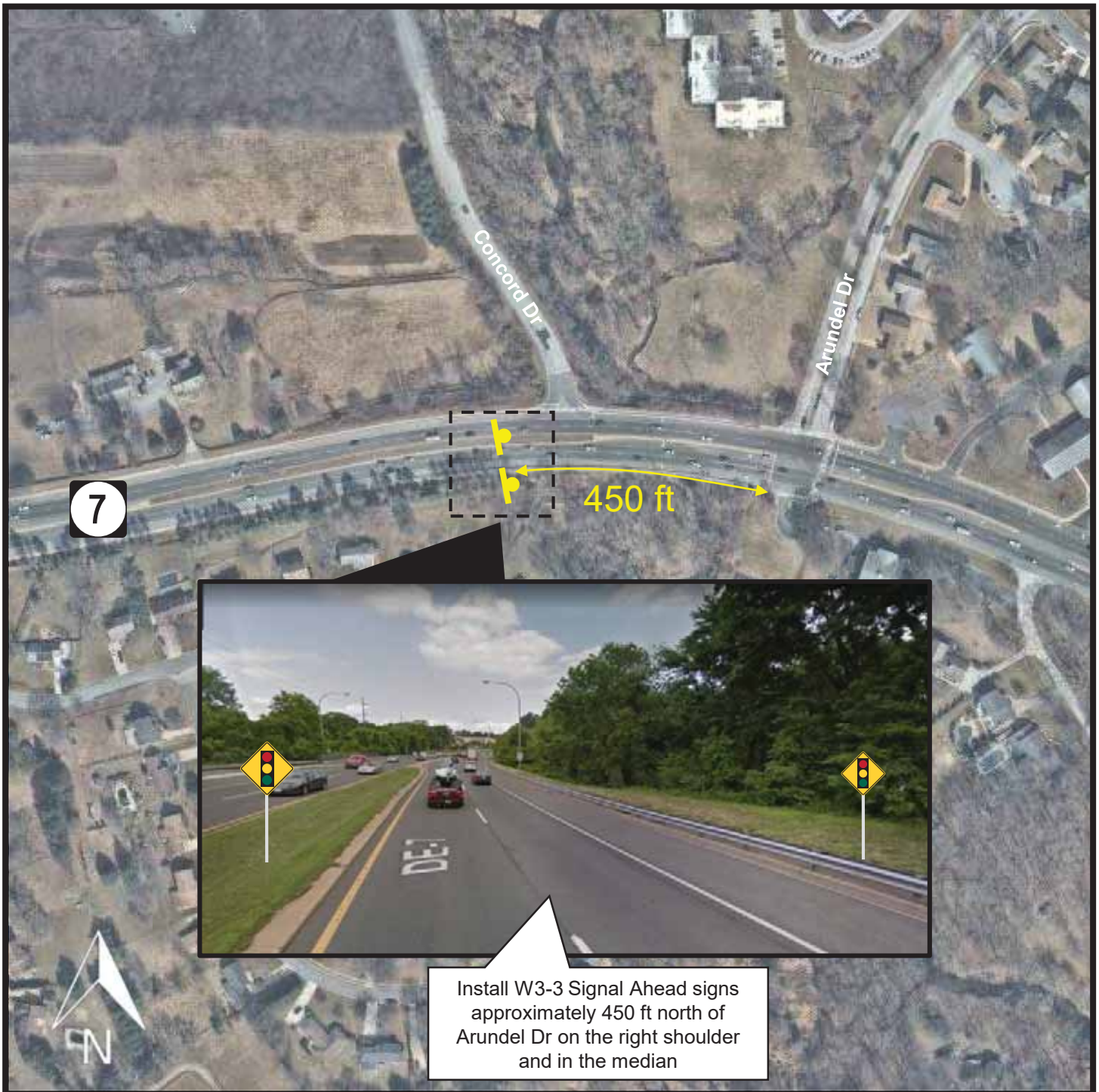
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 7 at Vincent Lane



Notes:

- Removing the Keep Right sign reduces confusion for southbound left-turning traffic entering into the turn lane
- Rotating the Stop sign to face away from southbound through traffic reduces confusion along the mainline

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 7 approaching Arundel Drive



Notes:

- Provide warning of the upcoming signal, alerting motorists they may need to decelerate around the curve

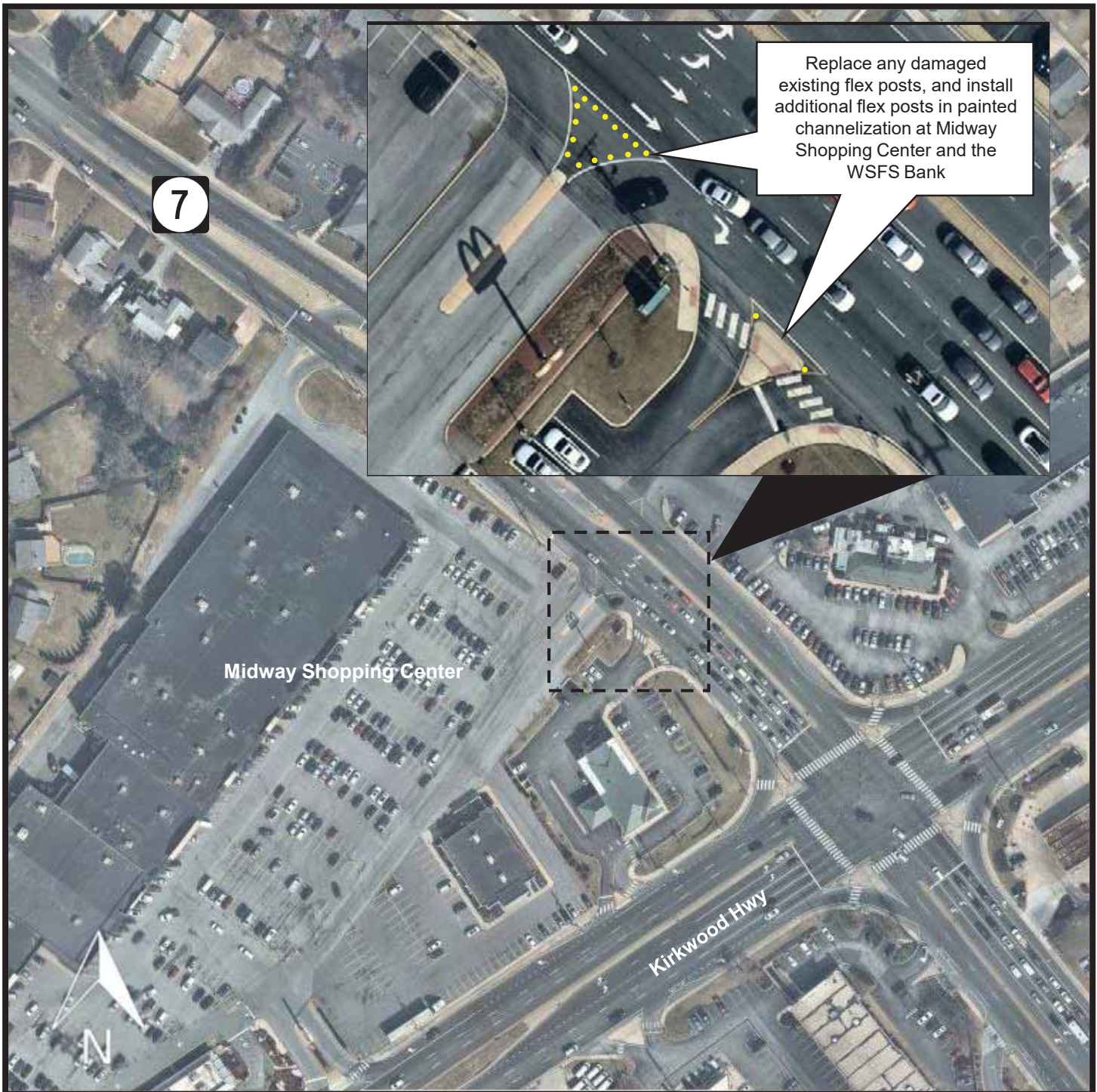
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 7 at Pike Creek Sports Medicine and Professional Center



Notes:

- Reduce confusion for turning movements into and out of Professional Center

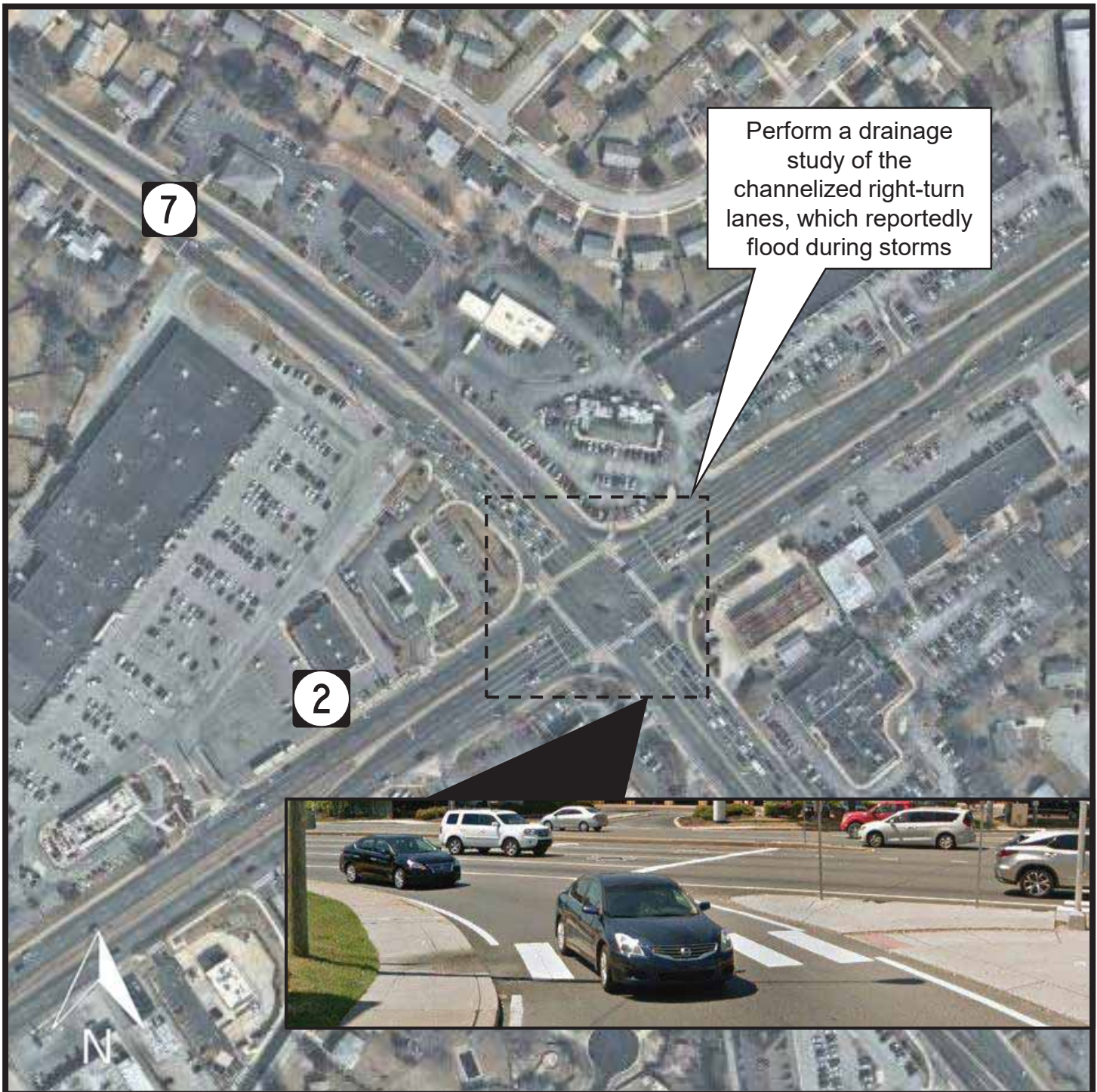
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 7 at Midway Shopping Center



Notes:

- Improve safety by guiding motorists to properly follow traffic flow entering/exiting the shopping centers

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 7 at SR 2



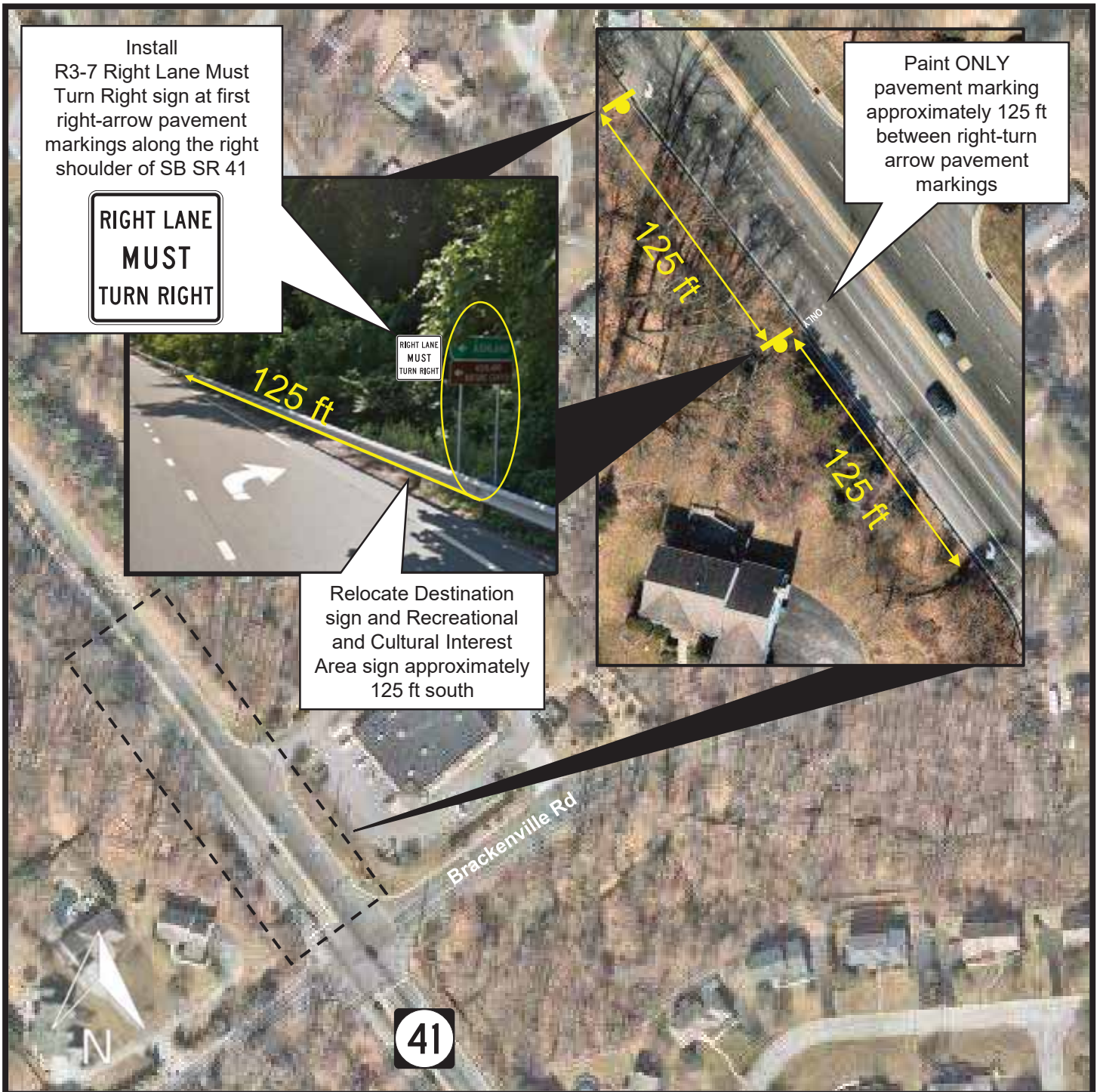
Notes:

- Perform a drainage study for the channelized right-turn lanes

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

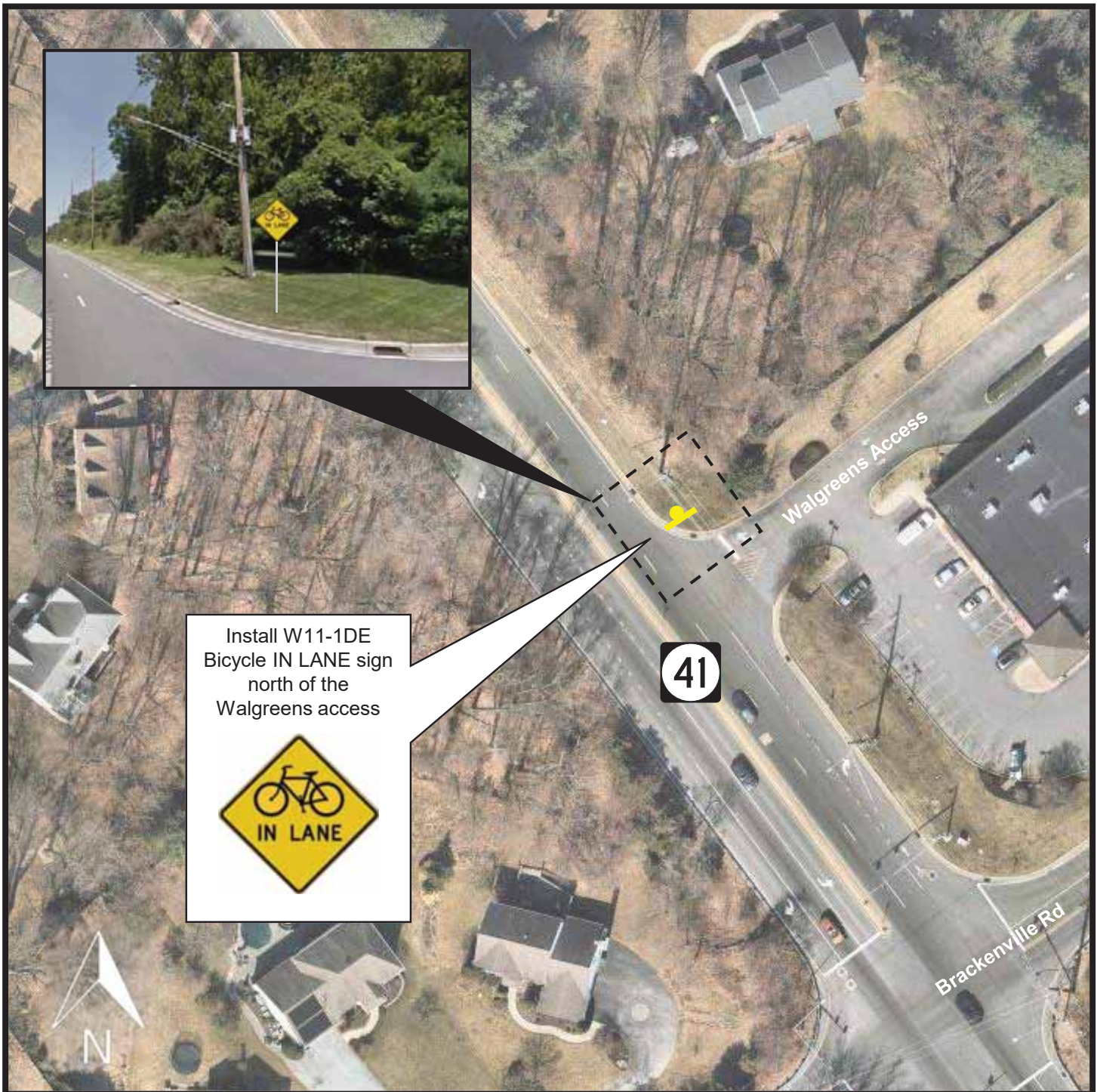
SB SR 41 approaching Brackenville Road



Notes:

- Increase instruction for motorists in the rightmost lane along southbound SR 41
- Addresses concerns regarding drivers continuing through on SR 41 in the right-turn only lane

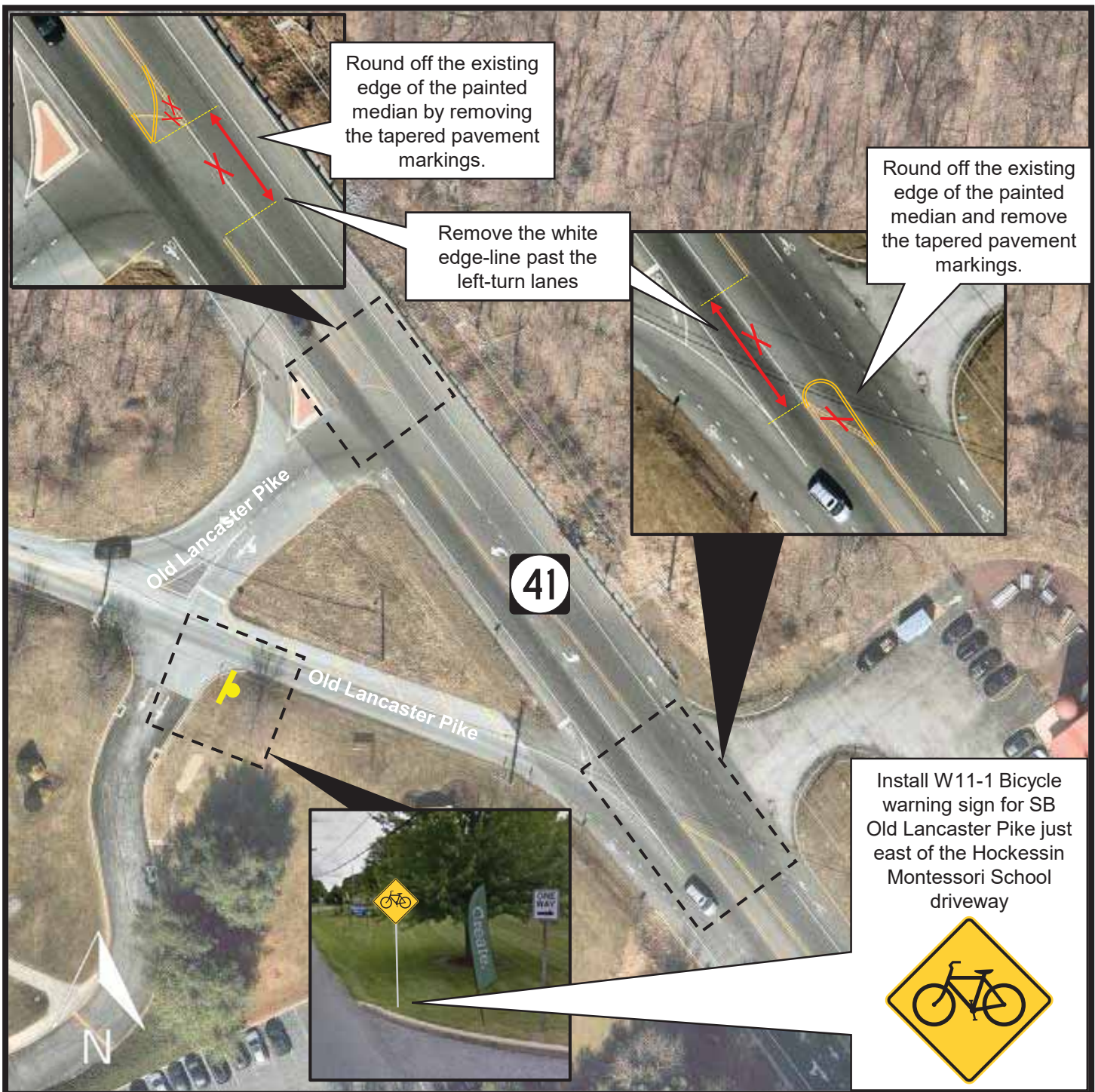
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
NB SR 41 north of Brackenville Road



Notes:

- Improve safety for bicyclists along northbound SR 41 by informing motorists that bicyclists may be in lane where there is no shoulder

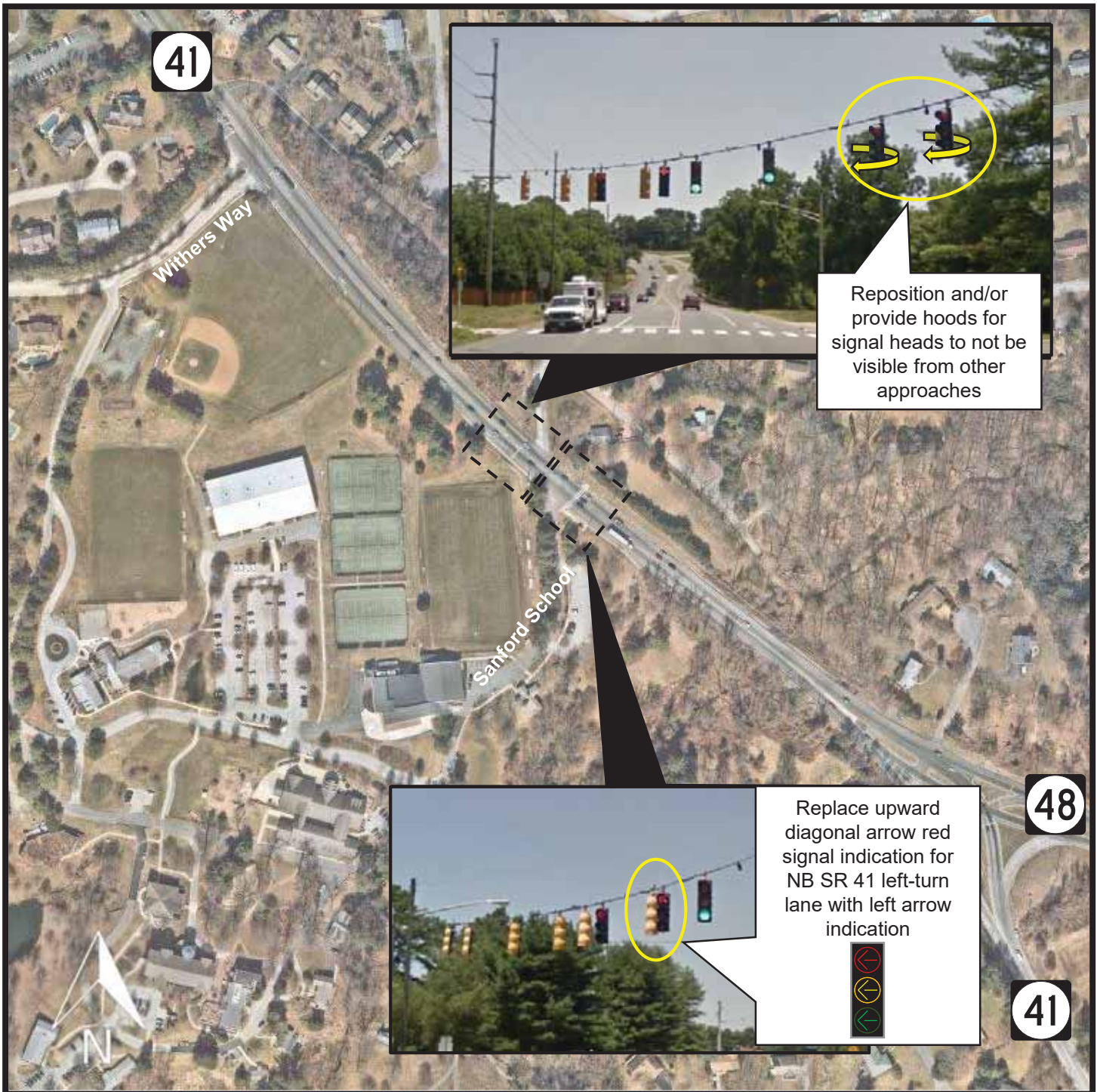
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 41 at Old Lancaster Pike



Notes:

- Rounding off the end of the painted median eliminates the appearance of a taper for a southbound left-turn lane into the coffeehouse, or a northbound left-turn to Old Lancaster Pike
- Addresses concerns regarding vehicles traveling in the opposing left-turn lane
- The Bicycle warning sign alerts motorists along Old Lancaster Pike approaching the merge with SR 41 about the dedicated bike lane ahead

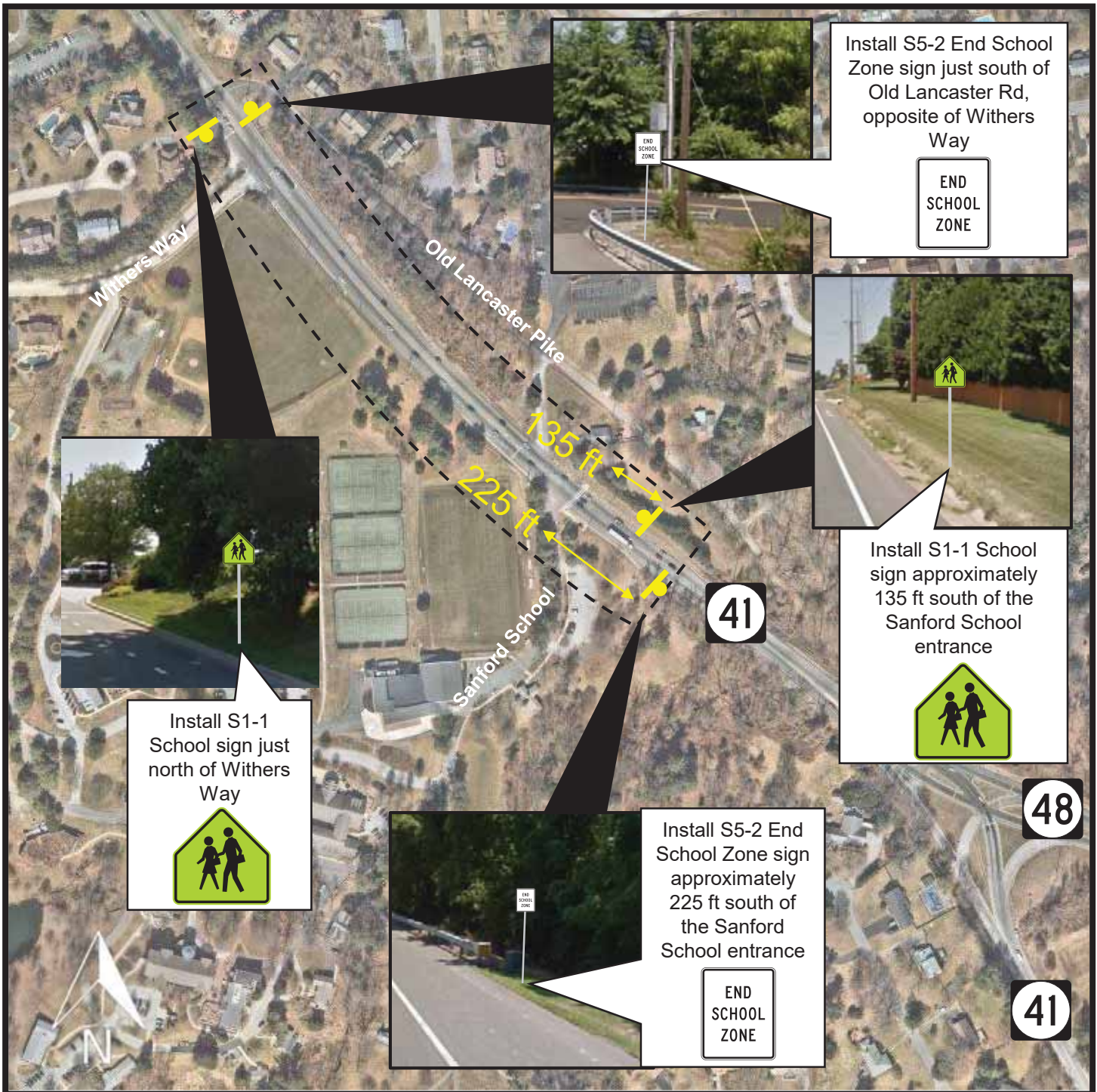
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 41 at Sanford School



Notes:

- Reduce confusion for the side street by repositioning the signal heads to face only the approach it serves
- Reduce confusion for the northbound left-turn by modifying the arrow signal indication

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 41 at Sanford School



Notes:

- Designate SR 41 as a School Zone, warning motorists to stay alert and proceed with caution

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations SB SR 41 approaching Loveville Road

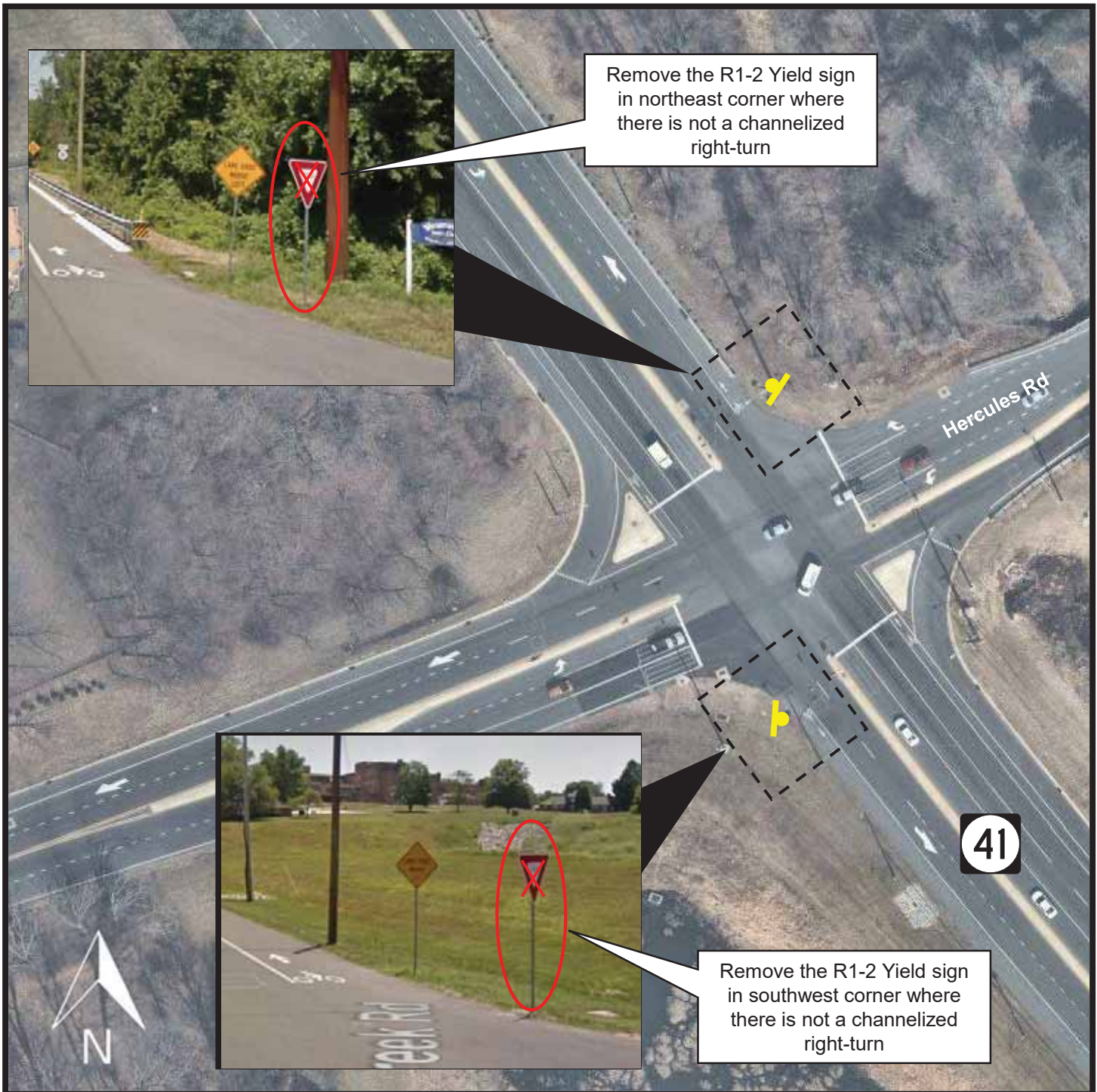


Notes:

- Provide warning of the upcoming signal, alerting motorists they may need to decelerate down the hill

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations SB SR 41 at Hercules Road



Notes:

- Right-turns from a signalized intersection without free movement should not be YIELD-controlled, as motorists must stop before making a right-turn

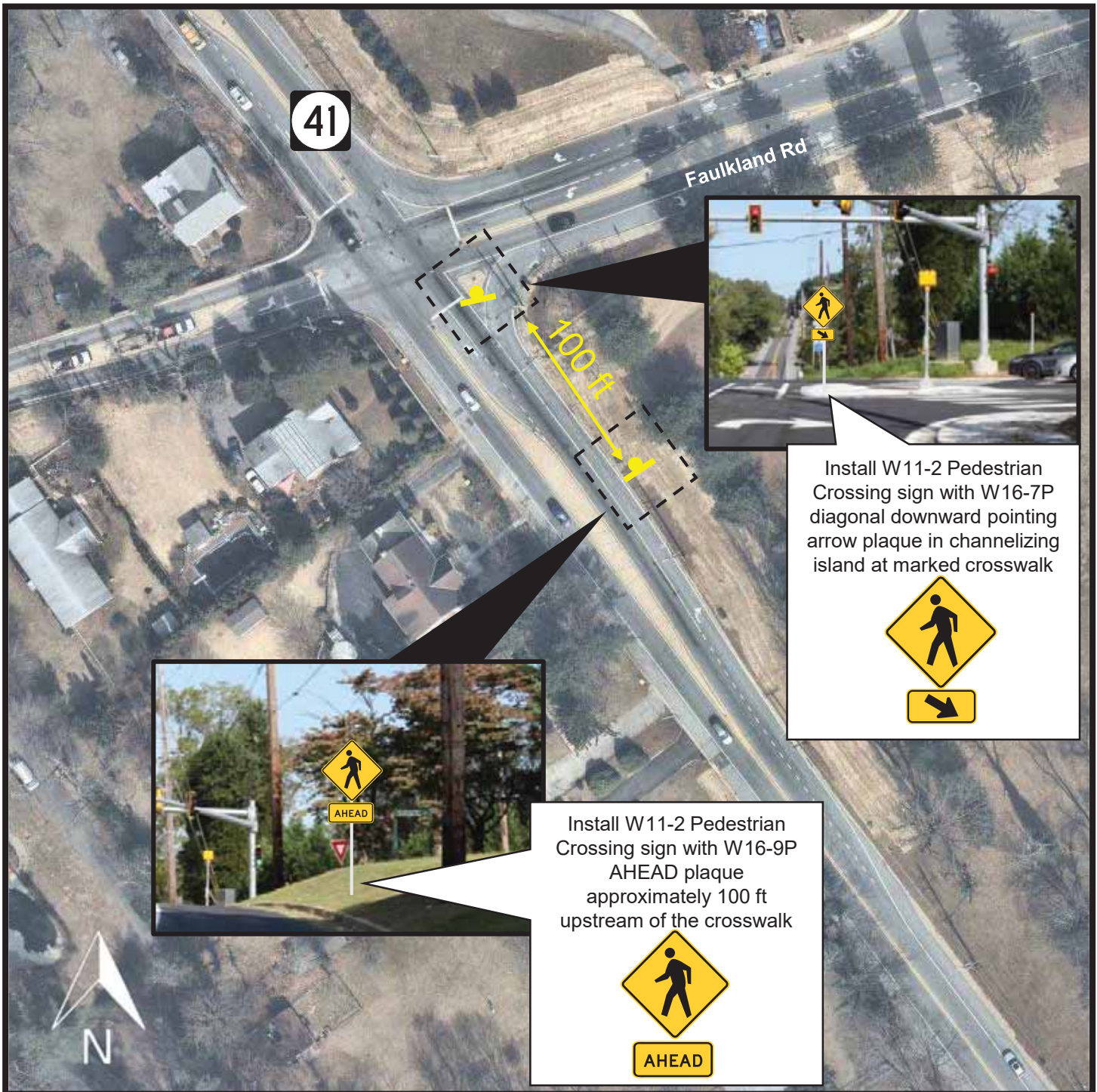
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SB SR 41 between Millcreek Road and Faulkland Road



Notes:

- Inform motorists along SB SR 41 of the numerous driveways, alerting them to continue cautiously
- Warn motorists along SB SR 41 of the 10 mph speed reduction south of Faulkland Road

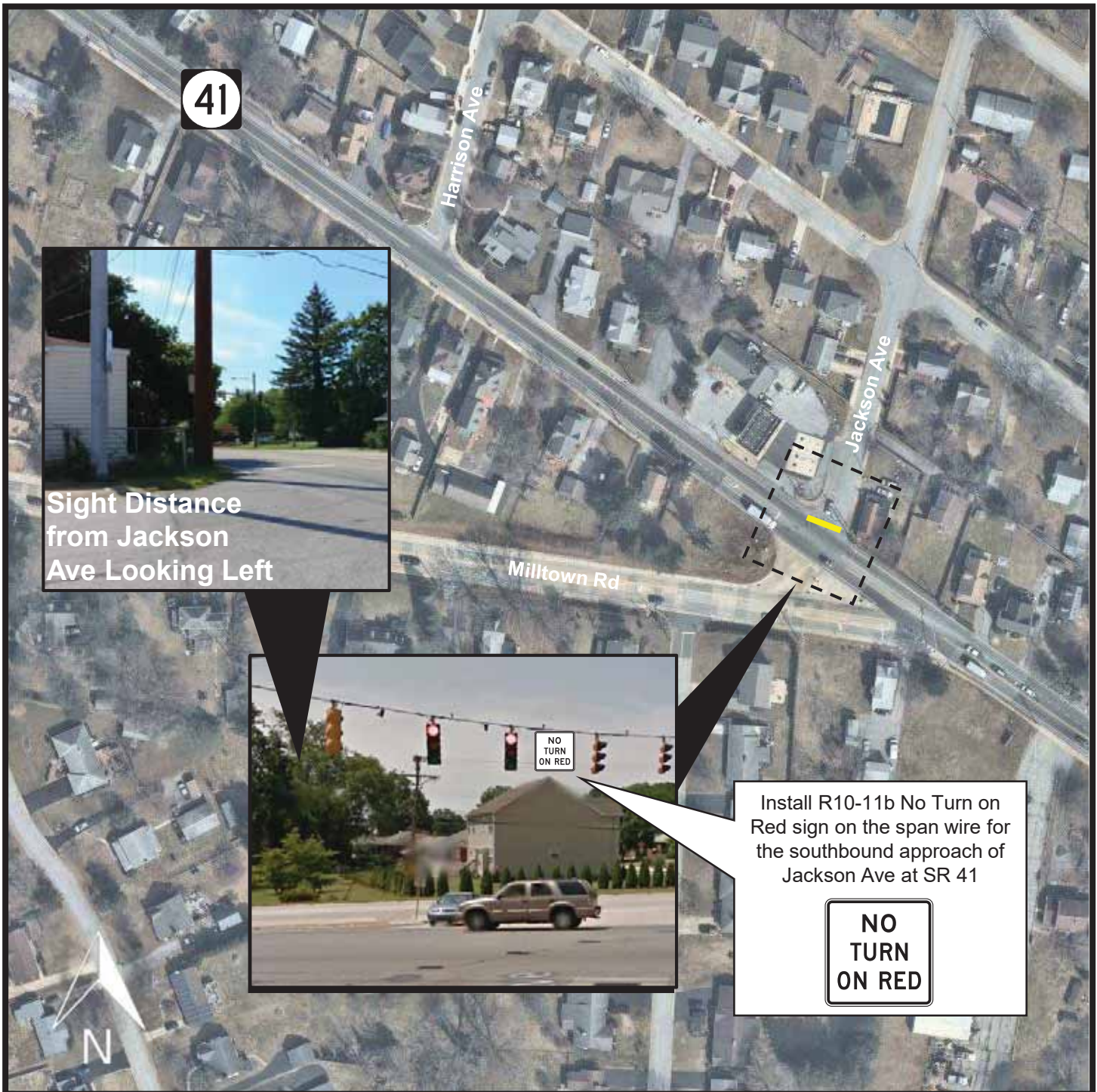
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 at Faulkland Road



Notes:

- Warn motorists of the hidden crosswalk in the southeast corner of the intersection

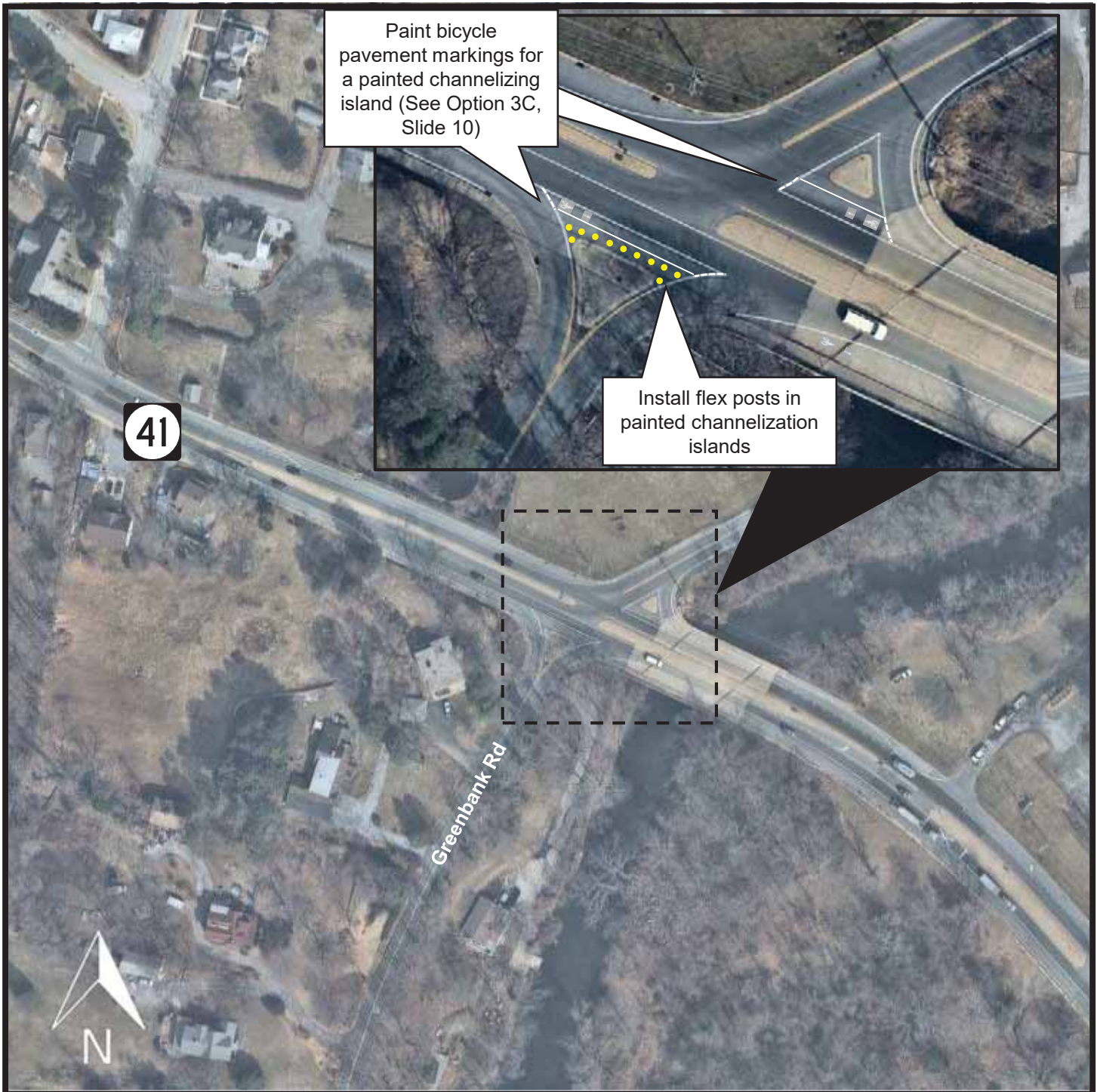
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 at Milltown Road



Notes:

- Improve safety by prohibiting right-turns from Jackson Avenue onto NB SR 41 due to limited sight distance
 - Measured sight distance is approximately 150 feet, while the AASHTO Recommended distance is 335 feet for a speed limit of 35 mph

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 at Greenbank Road



Notes:

- Improve safety by enforcing the right-out only movements from Greenbank Road

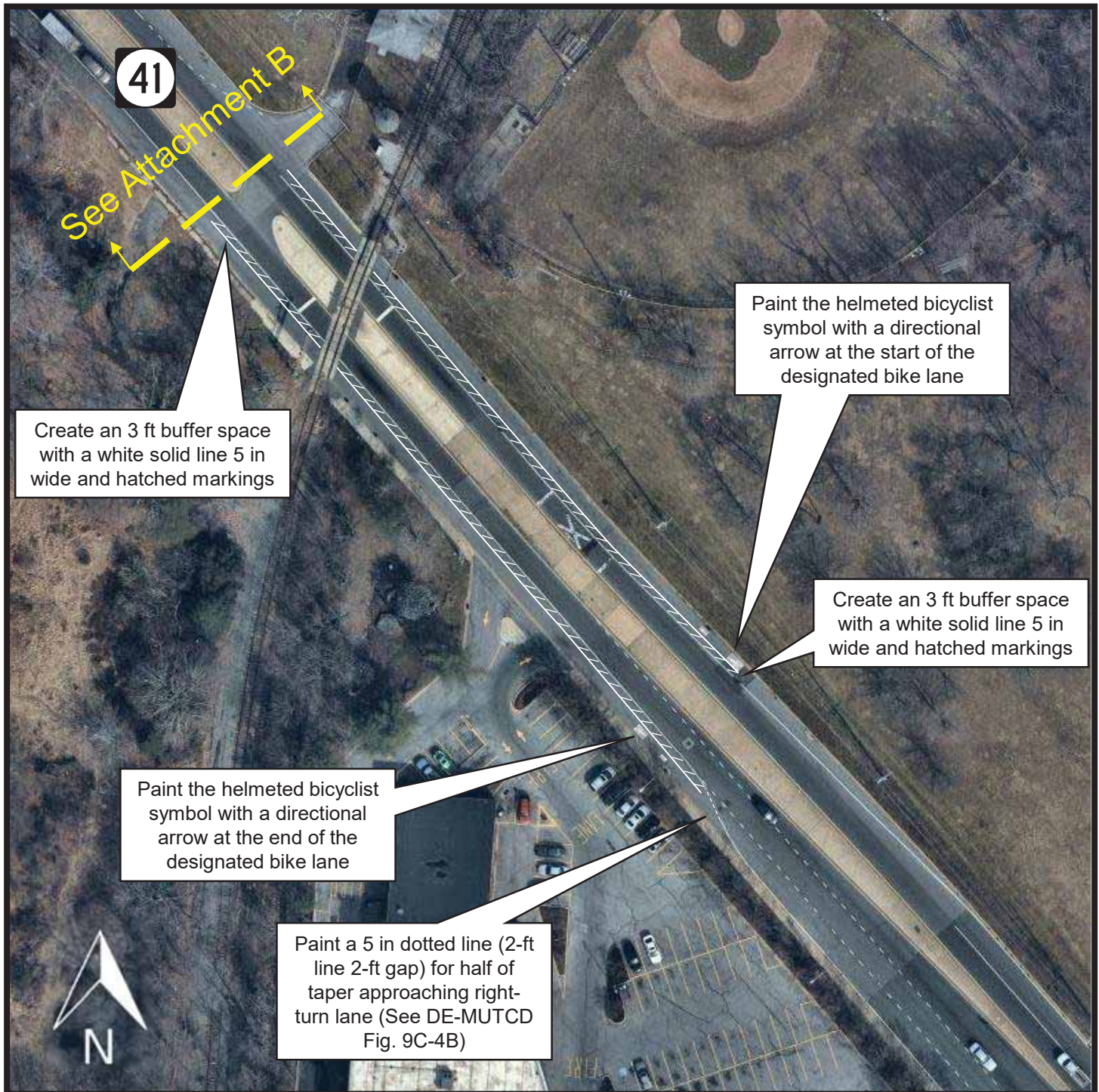
SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 between Greenbank Road and Kirkwood Highway



Notes:

- Increase distance between bicyclists and motorists along SR 41 by creating a buffer space and dedicated bike lane
- Reduces feel of “wide pavement” entering residential area north of Greenbank Road

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 north of Kirkland Highway



Notes:

- Increase distance between bicyclists and motorists along SR 41 by creating a buffer space and dedicated bike lane
- See notes on Sheet 1

ATTACHMENT A

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 south of Greenbank Road

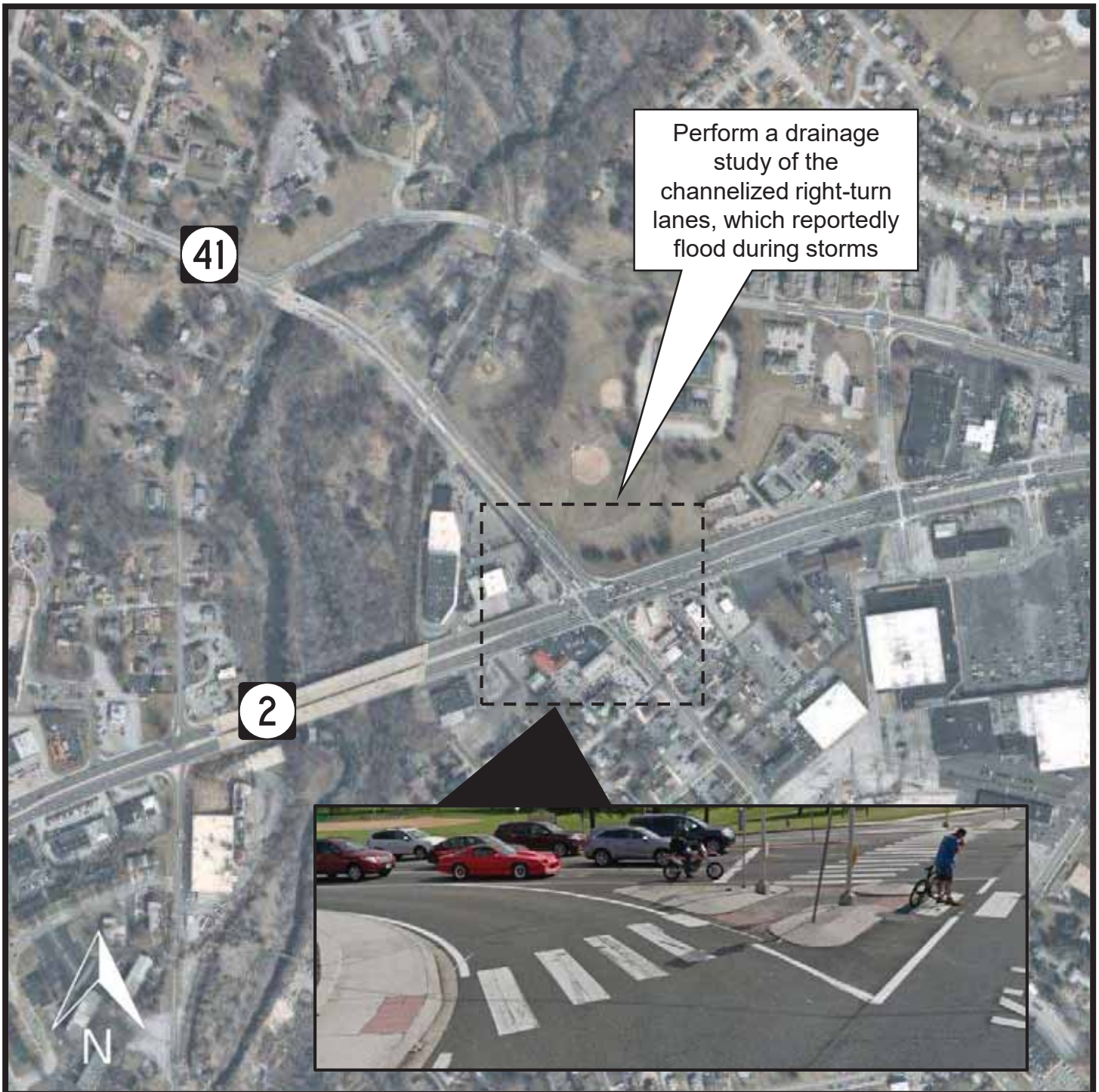


Notes:

- Increase distance between bicyclists and motorists along SR 41 by creating a buffer space and dedicated bike lane
- See notes on Sheet 1

ATTACHMENT B

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 41 at SR 2



Notes:

- Perform a drainage study for the channelized right-turn lanes

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
EB SR 48 east of Centerville Road



Notes:

- Reinforces to eastbound motorists of the one-way traffic operations for westbound U-turn

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
WB SR 48 west of Hampton Way



Notes:

- Reinforces to westbound motorists of the one-way traffic operations for eastbound U-turn

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
EB SR 48 at Hedgerow Place



Notes:

- Modify channelized pavement markings to reduce confusion and guide left-turning motorists entering/exiting Hedgerow Place from WB SR 48

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
EB SR 48 approaching Centerville Road



Install W3-3 Signal Ahead sign and W16-8P Centerville Rd plaque in median of EB SR 48 approximately 850 ft west of Centerville Rd



Notes:

- Reinforce warning of the upcoming signal, alerting motorists they may need to decelerate, by posting on both sides of roadway

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 48 approximately 1,000 ft east of Hercules Road



Notes:

- Provide sufficient contrast with the white pavement markings on concrete

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

SR 48 along Curve West of Hercules Road



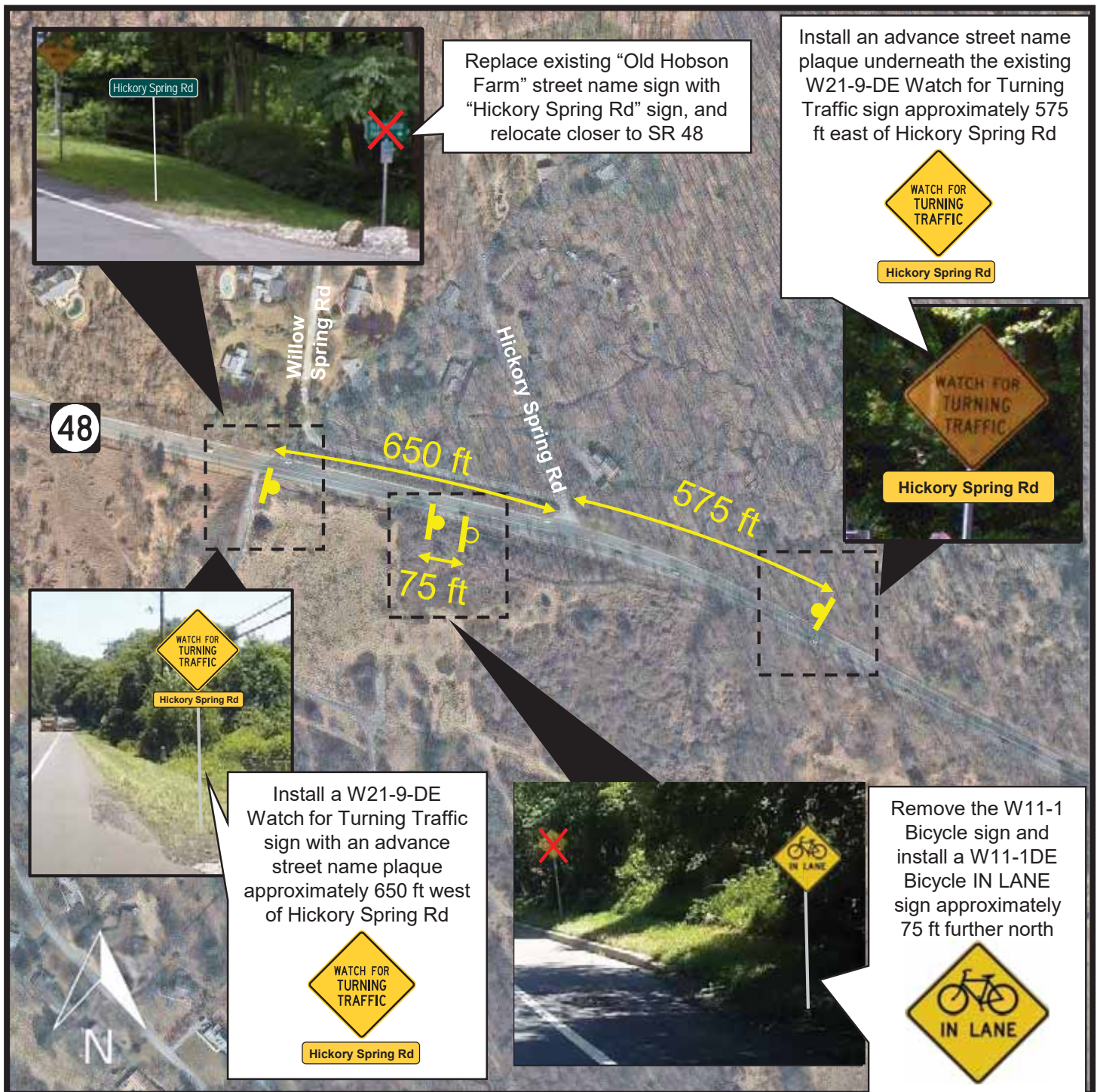
Notes:

- Improve sight distance along the curve by removing foliage
- Provide post-mounted delineators to alert motorists of the edge of the roadway along the curve

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

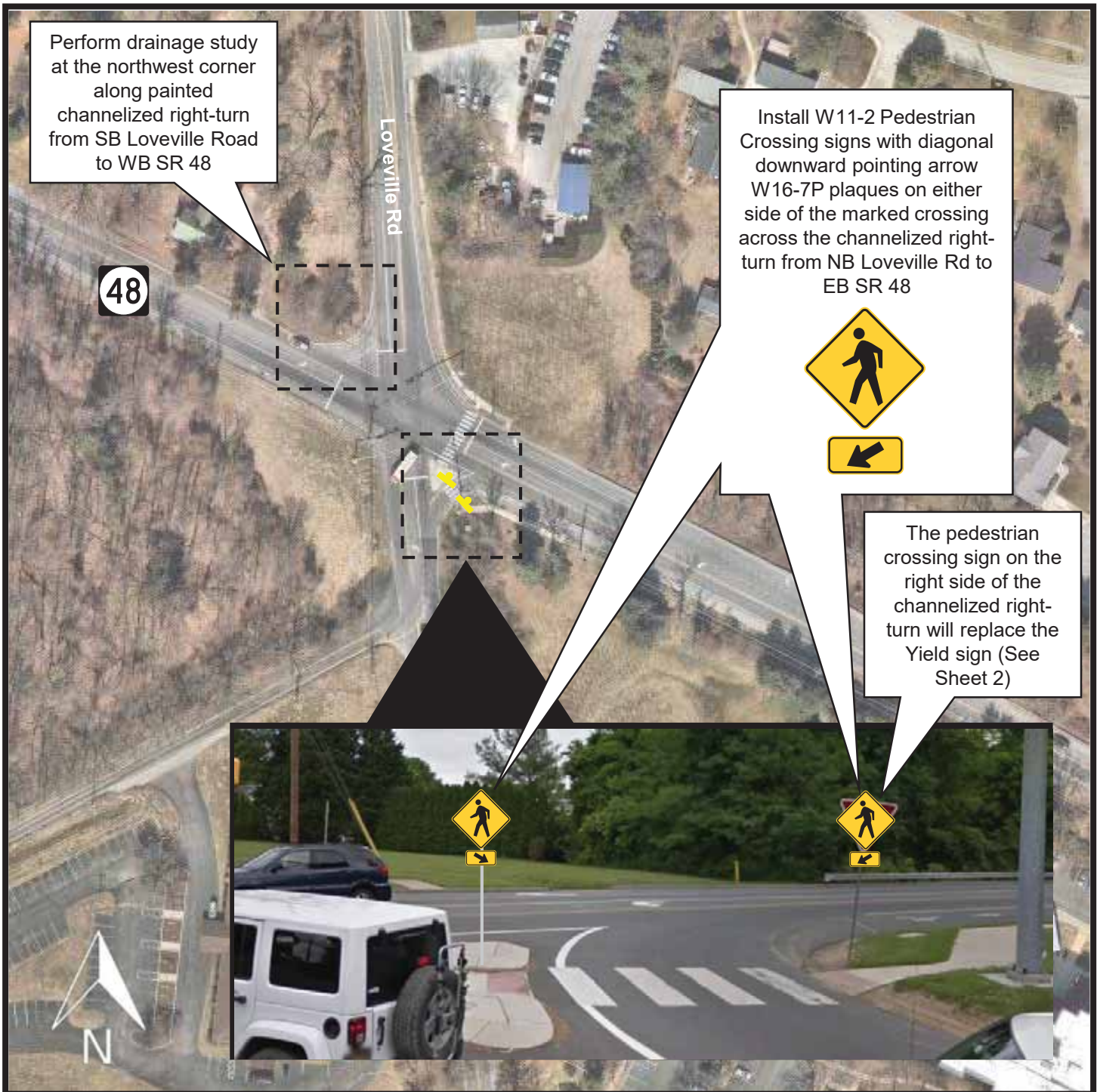
SR 48 at Hickory Spring Road (Old Hobson Farm)



Notes:

- Provide warning of the upcoming hidden intersection, alerting motorists they may need to decelerate
- Inform motorists of the presence of bicyclists traveling within the travel lane

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 48 at Loveville Road



Notes:

- Warn motorists of the pedestrian crossing across the channelized right-turn
- Perform a drainage study for the channelized right-turn from SB Loveville Road to WB SR 48

SR 7, SR 41, SR 48 Road Safety Audit
Short-Term Improvement Recommendations
SR 48 at Loveville Road



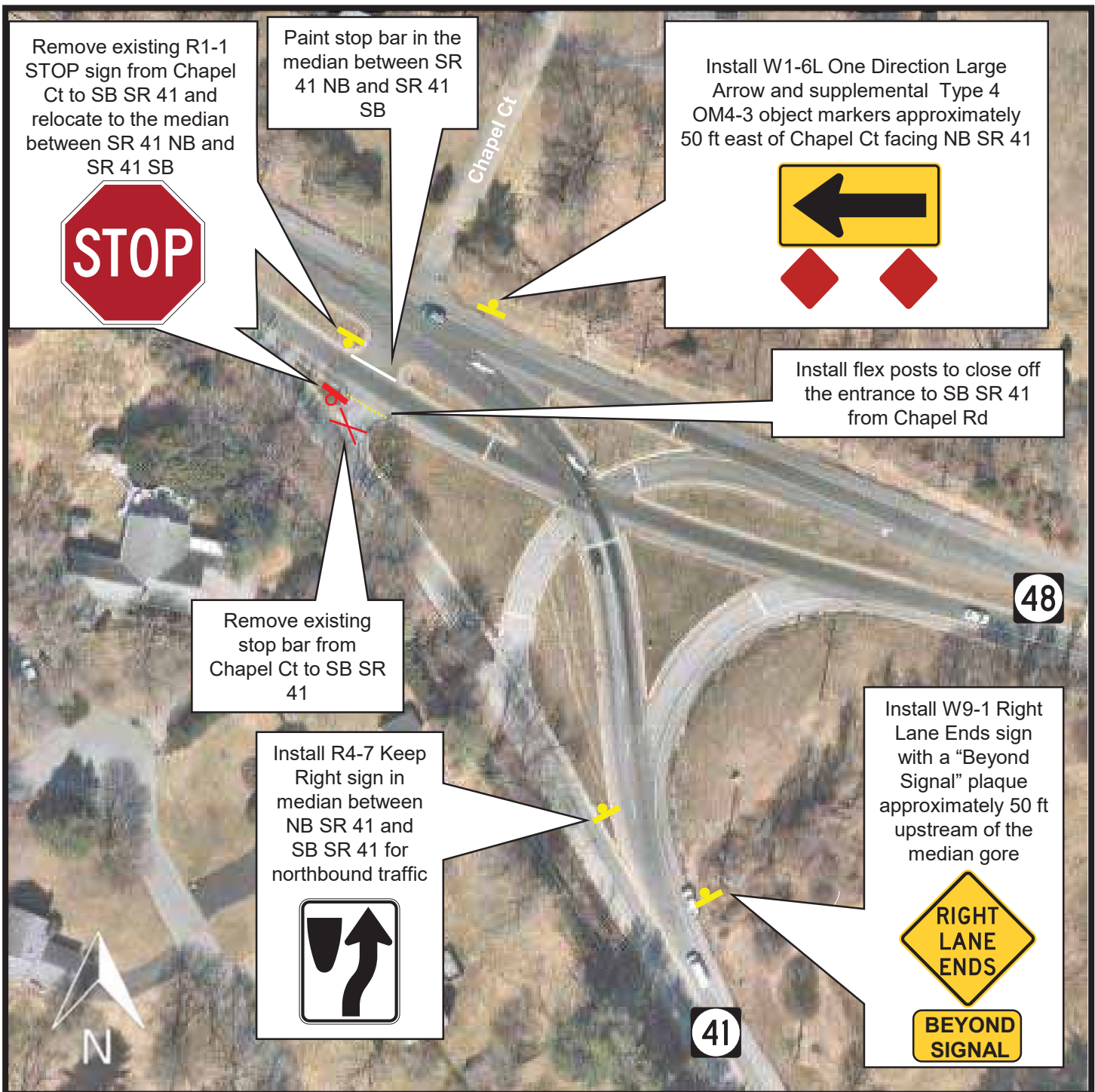
Notes:

- Relocate the Yield sign to place a W11-2 Pedestrian Crossing in its current location
- Perform a drainage study along the SB channelized right-turn

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

SR 41 at SR 48



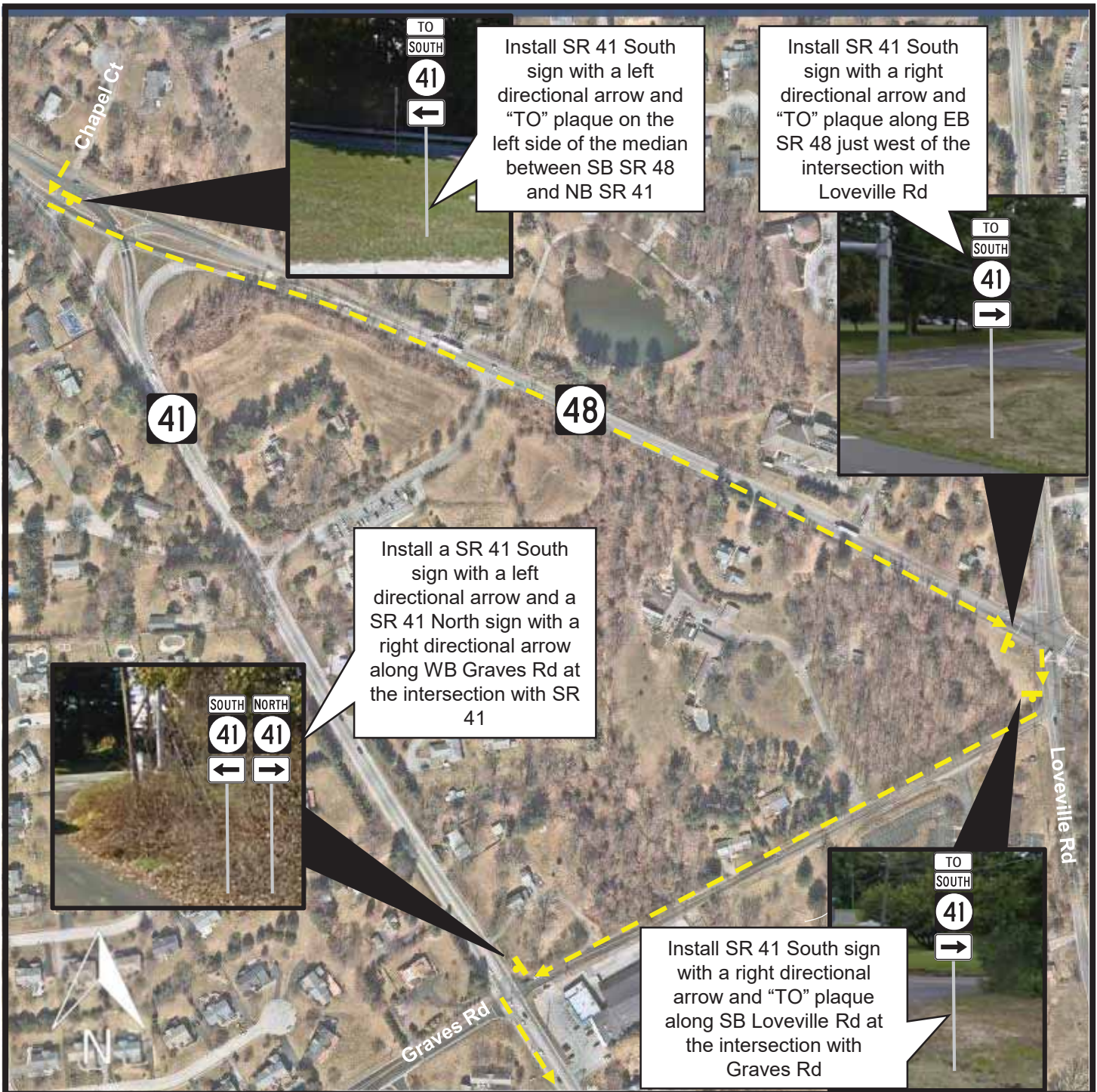
Notes:

- Reduces the number of conflict points from Chapel Court
- Informs motorists to stay to the right of the median in their travel lane
- Warns motorists of the short right-turn lane around the curve
- Addresses concerns regarding aggressive merge behavior on curve through signalized intersection
- DelDOT will need to coordinate with homeowners on Chapel Court

SR 7, SR 41, SR 48 Road Safety Audit

Short-Term Improvement Recommendations

SR 41 at SR 48



Notes:

- Guide motorists to take the safest route to southbound SR 41 from Chapel Court

Appendix D

Mid- and Long-Term Improvement Recommendations



LEGEND

- ★ Guardrail Improvements (Mid-Term Option 1)
- Intersection Lighting (Mid-Term Option 2)
- ◆ ADA-Compliant Bus Pads and Sidewalk Connections (Mid-Term Option 3)



LEGEND

- ★ Guardrail Improvements (Mid-Term Option 1)
- Intersection Lighting (Mid-Term Option 2)
- ◆ ADA-Compliant Bus Pads and Sidewalk Connections (Mid-Term Option 3)



LEGEND

- ★ Guardrail Improvements (Mid-Term Option 1)
- Intersection Lighting (Mid-Term Option 2)
- ◆ ADA-Compliant Bus Pads and Sidewalk Connections (Mid-Term Option 3)



SR 7, SR 41, SR 48 Road Safety Audit

SR 41 from Pennsylvania State Line to SR 2
Mid- and Long-Term Improvement Recommendations
Sheet 2 of 2
January 2020

