

Road Safety Audit

US 129 / SR 15 ALT / JEFFERSON ROAD

FROM LAVENDER ROAD TO SOUTH HOMEWOOD DRIVE

ATHENS-CLARKE COUNTY | GEORGIA



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In Cooperation with the U.S. Department of
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EXECUTIVE SUMMARY

In May 2016, the Georgia Department of Transportation (GDOT) in coordination with the Federal Highway Administration (FHWA), along with local agencies' transportation officials, conducted a Road Safety Audit (RSA) for a 2.2-mile segment of US 129/SR 15 Alt/Jefferson Road from Lavender Road to South Homewood Drive in Athens-Clarke County.

The audit process consisted of research into current local conditions, analysis of crash data provided by GDOT, and an extensive field inspection, followed by review and discussion of findings, observations, and potential solutions to identified safety issues. This report is the final result of this formal safety evaluation of US 129/SR 15 Alt/Jefferson Road; it summarizes the audit team's findings, documents observations, and offers a range of recommendations to address safety issues.

The US 129/SR 15 Alt/Jefferson Road corridor serves local, regional, and statewide traffic and experiences a high volume of commercial and personal traffic due to the proximity to I-85 and nearby confluence of several major US and state routes. In addition to vehicular traffic, pedestrian and bicyclists use the corridor as well. Safety concerns along the corridor revolve around high vehicles speeds and an insufficient number of turn lanes for the numerous roads that intersect the corridor. Poor signage and inconsistent roadway and sidewalk alignments between Lavender Road and South Homewood Drive also present safety issues.

To address these and other safety concerns, the report includes recommendations that range from new signs to improved sidewalk and bicycle facilities and access management considerations. Some traffic calming strategies, such as the addition of a raised concrete median and reducing the width of the roadway, may also help slow speeding vehicles and improve safety. It is also recommended to look at opportunities to close intersections in order to reduce the number of potential conflict points and streamline access via signalized intersections. Top recommendations detailed in the following report are summarized in Table 1. Additional details on these and other recommendations are described in the body of the report.

LEGEND

<u>LEVEL OF EFFORT</u>	<u>TIME FRAME</u>	<u>COST</u>
Low <i>GDOT or Local Government</i>	Short Term <i>1 to 6 months</i>	Low <i>\$0 to \$100,000</i>
Moderate <i>Full GDOT Plan Development Process (PDP) – Low Impacts</i>	Intermediate <i>6 to 24 months</i>	Moderate <i>\$100,000 to \$300,000</i>
High <i>Full GDOT PDP – High Impacts</i>	Long Term <i>Greater than 24 months</i>	High <i>Greater than \$300,000</i>

TABLE 1. TOP RECOMMENDATIONS

RECOMMENDATIONS	RESPONSIBLE AGENCY	LEVEL OF EFFORT	TIME FRAME	COST
Install ADA-compliant pedestrian facilities at intersections, including crosswalks across side streets, curb ramps, truncated domes, and pedestrian push button signals.	GDOT	Moderate	Short Term	Moderate
Replace pavement markings and raised pavement markers throughout the study corridor.	GDOT	Low	Short Term	Low
Install horizontal double-headed arrow signs (W1-7) at T-intersections where they are missing throughout the corridor.	GDOT	Low	Short Term	Low
Install additional street lighting mid-block along the corridor, particularly north of Jefferson River Road and south of Kathwood Drive.	GDOT	Moderate	Intermediate	Moderate
Study opportunities to install left-turn lanes at key intersections and implement as appropriate. Use existing hatched taper areas where possible.	GDOT	Moderate	Intermediate	Moderate
At intersections with railroad crossings, ensure maximum space between the stop bars at US 129/SR 15 Alt/Jefferson Road and the railroad tracks, to prevent cars from stopping on tracks while waiting to turn. Stop bars must be at least 4' from edge lines.	GDOT	Low	Short Term	Low
Study the feasibility of narrowing existing lanes to 11 feet in width to "calm traffic" and reduce vehicle speeds. This may provide an opportunity to create a wider multi-use path where the sidewalk is currently located. Restripe lanes if determined to be feasible.	GDOT	Low	Short Term	Low
Study the feasibility of installing a raised concrete median (with accommodations for driveways and U-turns) to slow traffic and streamline turning movements within the corridor. Design and construct median if determined to be feasible.	GDOT	High	Long Term	High
Study the feasibility of closing off select intersections such as Camak Drive, Moss Side Drive, and Kathwood Drive, and rerouting traffic in order to reduce the number of potential conflict points and to streamline turning movements along the corridor. Implement as feasible.	GDOT	High	Long Term	High

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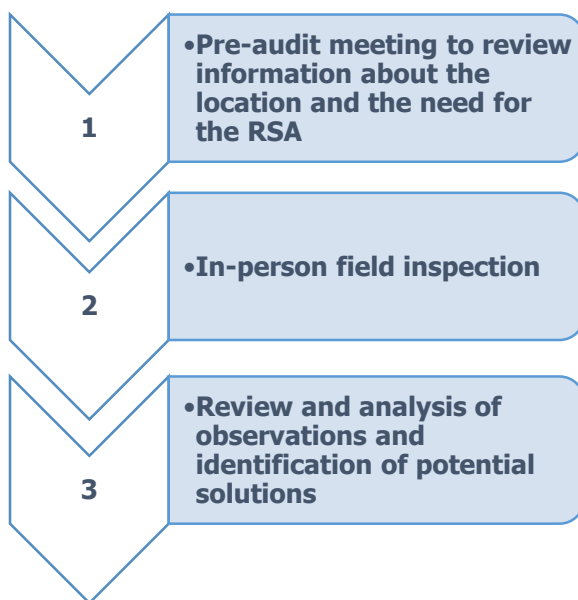
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1 ROAD SAFETY AUDIT

1.1 OVERVIEW

A Road Safety Audit (RSA) is a **formal safety performance evaluation of an existing or future road or intersection by a multidisciplinary team** of auditors, typically including the State Department of Transportation (GDOT), local agencies, law enforcement, and other transportation professionals as applicable. RSAs have been used successfully for a wide variety of locations to identify potential solutions leading to both short-term improvements and longer term efforts, including construction projects. The RSA process does not rely solely on crash data, but rather takes a proactive approach to identify safety issues through firsthand observation and offer recommendations to be considered in improvement projects.



The actual audit is a **three-step process** that includes an **initial meeting** to discuss the location, context, and key facts about the area; a **field inspection**; and a **debriefing to review findings and identify potential solutions**. During these three key steps, the audit team takes an objective, unbiased approach to identifying safety issues and needs, taking into consideration local conditions. The team then develops suggestions for short-, intermediate-, and long-term improvements to address those needs and issues. A diagram of the RSA process is provided in Appendix A.

In addition to the audit meeting, field inspection, and debriefing, the audit team generally documents existing conditions, researches pending roadway projects, developments, and prior studies or planning projects in the area that may affect the intersection or corridor, and

analyzes crash data for the study area. This information is all captured and summarized in a report documenting the RSA process, findings, and recommendations. Once finalized, the report is submitted to GDOT's Office of Traffic Operations, which is responsible for coordinating with GDOT District offices and local officials to prioritize recommendations and program projects as needed.

1.2 AUDIT MEETING SUMMARY

The RSA for US 129/SR 15 Alt/Jefferson Road was held on **May 3, 2016**, at the **Athens-Clarke County Transportation and Public Works Department**, located at 120 W. Dougherty Street, Athens, Georgia 30601. The audit team consisted of representatives from the GDOT Office of Traffic Operations, GDOT District 1 Office of Traffic Operations, and the Federal Highway Administration (FHWA). A list of attendees can be found in Appendix D.

The audit began at **1:30 PM with a briefing meeting**, during which the participants reviewed the purpose of an RSA, existing conditions along US 129/SR 15 Alt/Jefferson Road, known issues, and crash data. Following the briefing meeting, the group conducted a **field inspection** beginning just north of Lavender North and moving southward to South Homewood Drive. After the field inspection, the team

reassembled at the Transportation and Public Works Department to discuss observations and identified safety deficiencies, and developed potential solutions to those safety issues. Observations and potential solutions were recorded for the benefit of the group and are summarized in this report. The initial portion of the audit meeting concluded at approximately 5:00 PM and a **nighttime inspection** was conducted at approximately 8:30 PM **to observe conditions after dark**.

2 STUDY AREA

2.1 OVERVIEW

The RSA corridor is roughly a **two-mile stretch** of US Highway 129 in Athens-Clarke County, Georgia. In this area, US 129 is also Georgia State Route 15 Alternate and is locally known as Jefferson Road. Athens is located in northeast Georgia and is home to the University of Georgia (UGA), the state's largest public university. Athens is served by several major US and state highways, including US 29, US 78, US 78 Business, US 129, US 441, and State Routes (SR) 10, 15 and 72 among others. Athens has a consolidated city-county government, comprised of the City of Athens and Clarke County. Athens-Clarke County has a population of 123,912 according to 2015 population estimates from the US Census Bureau. The map below shows the RSA study area in relation to Athens-Clarke County and the surrounding region.

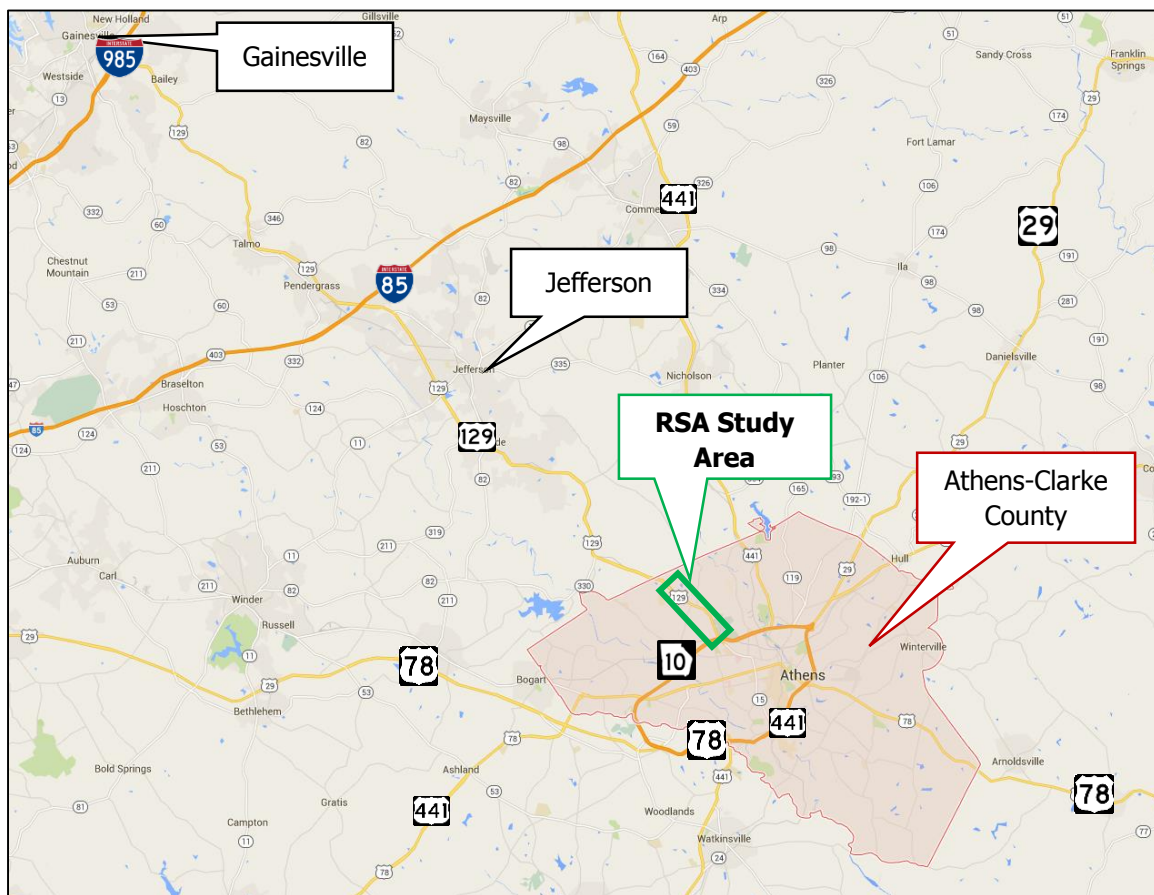


FIGURE 1. LOCATION OF RSA CORRIDOR WITHIN ATHENS AND SURROUNDING AREA.

The land uses surrounding the RSA study corridor are a mix of residential, commercial, industrial, and institutional uses and include the Athens Country Club, churches, small retail and service establishments, restaurants, and single-family home communities. These varying land uses are connected to the study corridor by several signalized and non-signalized intersections. Whitehead Road Elementary School is located approximately one mile southeast of the study area, off of Whitehead Road.

The RSA corridor is located in the northwest portion of Athens-Clarke County, just outside of US 78/US 441/SR 10/Athens Perimeter. The RSA study limits, shown in Figure 2, begin at a point 1,000 feet north of **Lavender Road** (milepost 4.75), where the corridor is divided by a median, and end at **South Homewood Drive** (milepost 6.92), just north of the Athens Perimeter.



FIGURE 2. RSA STUDY AREA LIMITS.

In Georgia, US 129 begins at the Florida state line south of the City of Statenville and travels northward to Macon, then northeastward to Athens. North of Athens, US 129 turns to the northwest, connecting Athens to Gainesville and eventually to the North Carolina State line through the Chattahoochee National Forest.

Parallel to US 129 are railroad tracks owned and used by CSX for freight rail. Within the RSA study area, the tracks sit between US 129/SR 15 Alt/Jefferson Road and Old Jefferson Road. The two roads are connected by several side streets that cross the tracks. This segment of the railroad does not experience heavy volumes of train traffic. It is a spur of an east-west line between Atlanta and Augusta that runs parallel to US 129 from the north side of Athens to Gainesville, as shown in the map

below. According to Federal Railroad Administration data, only one to two trains pass through each of the crossings within a given 24-hour period.

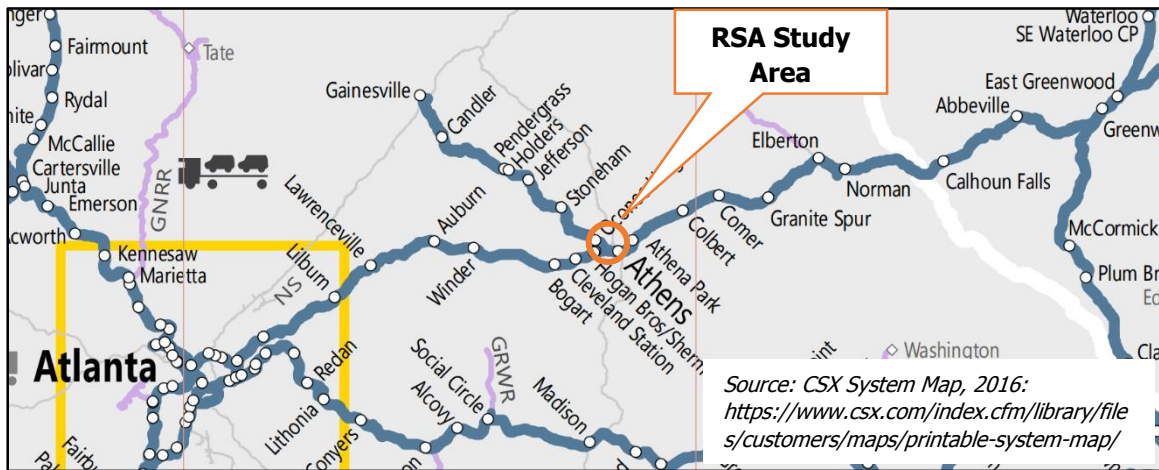


FIGURE 3. CSX RAILROAD SYSTEM MAP EAST OF ATLANTA.

Trains do occasionally pass through the area during daytime hours, as seen in the Google Earth™ aerial image at right.

2.2 THE CORRIDOR

The RSA corridor is an approximately **two-mile stretch** of US 129/SR 15 Alt/Jefferson Road from north of **Lavender Road to South Homewood Drive**. It is designated as an “urban principal arterial” and generally has four 13-foot lanes with occasional left-, right-, or two-way center turn lanes. North of the study area, US 129 becomes a divided road with a grassed median, and south of the study area, the corridor becomes Prince Avenue through Athens. Within the RSA limits, the posted speed limit ranges from **40 to 55 miles per hour (mph)**. The speed limit is **55 mph** from **Lavender Road to Whitehead Road**, **50 mph** from **Whitehead Road to Trinity Place**, and **40 mph** from **Trinity Place to South Homewood Drive**.

As part of a US Highway, the RSA corridor serves both commercial traffic and personal vehicle travel on a regional and statewide basis. It is the primary route between the Cities of Athens, Jefferson, and Gainesville, and it is one of two routes that connects Athens to I-85. As such, US 129/SR 15 Alt/Jefferson Road carries a substantial volume of vehicular traffic. Approximately **one-half mile north of Lavender Road**, the estimated **annual average daily traffic (AADT)** in 2014 was **16,300 vehicles per day (vpd)**. **Between Putters Drive and Crescent Road**, 2014 AADT was **22,500 vpd**.








FIGURE 4. AERIAL IMAGE OF US 129/SR 15 ALT/JEFFERSON ROAD NORTH OF S. HOMEWOOD DRIVE WITH TRAIN PRESENT ON CSX TRACKS (CAPTURE DATE 10/19/2015).

US 129/SR 15 Alt/Jefferson Road is part of GDOT's **designated truck route network** for heavy freight vehicles. Within the study area, there are several former and current industrial facilities, including a Kinder Morgan oil terminal, which has a driveway with access to and from the RSA corridor. As a result, oil tankers and other tractor trailers travel the corridor regularly and trucks make up a decent proportion of traffic. North of Lavender Road, trucks are **roughly 10% of total traffic**. Between Putters Drive and Crescent Road, the truck percentage is almost 6%.

There are **13 intersections** within the RSA study area, five of which are signalized and five of which cross the railroad tracks. There is **continuous sidewalk along the entire west side of the corridor**, between Lavender Road and South Homewood Drive. No sidewalk is present along the east side of the corridor and as a result, there are no crosswalks across US 129/SR 15 Alt/Jefferson Road within the study area. Table 2 shows the configuration of intersections including the presence of pedestrian facilities and railroad crossings.

TABLE 2. INTERSECTION CONFIGURATION WITHIN THE CORRIDOR.

Intersecting Road (north to south)	Traffic Control	Crosses RR Tracks	Pedestrian Signal	Crosswalk Legs			
				North	East	South	West
Lavender Road	Unsignalized	N	N	N	N	N	N
Whitehead Road		Y	Y	N	N	N	Y
Firefighter Court	Unsignalized	N	N	N	N	N	N
Jefferson River Road		Y	N	N	N	N	N
Camak Drive	Unsignalized	Y	N	N	N	N	N
Putters Drive	Unsignalized	N	N	N	N	N	Y
Crescent Road	Unsignalized	N	N	N	N	N	N
Entrance to Kinder Morgan / Athens Oil facility	Unsignalized	Y	N	N	N	N	N
Crescent Lane	Unsignalized	N	N	N	N	N	N
Moss Side Drive	Unsignalized	N	N	N	N	N	N
Kathwood Drive		Y	N	N	N	N	N
Trinity Place / Country Club Drive		Y	Y	N	N	N	Y
S. Homewood Drive		N	Y	N	N	N	N

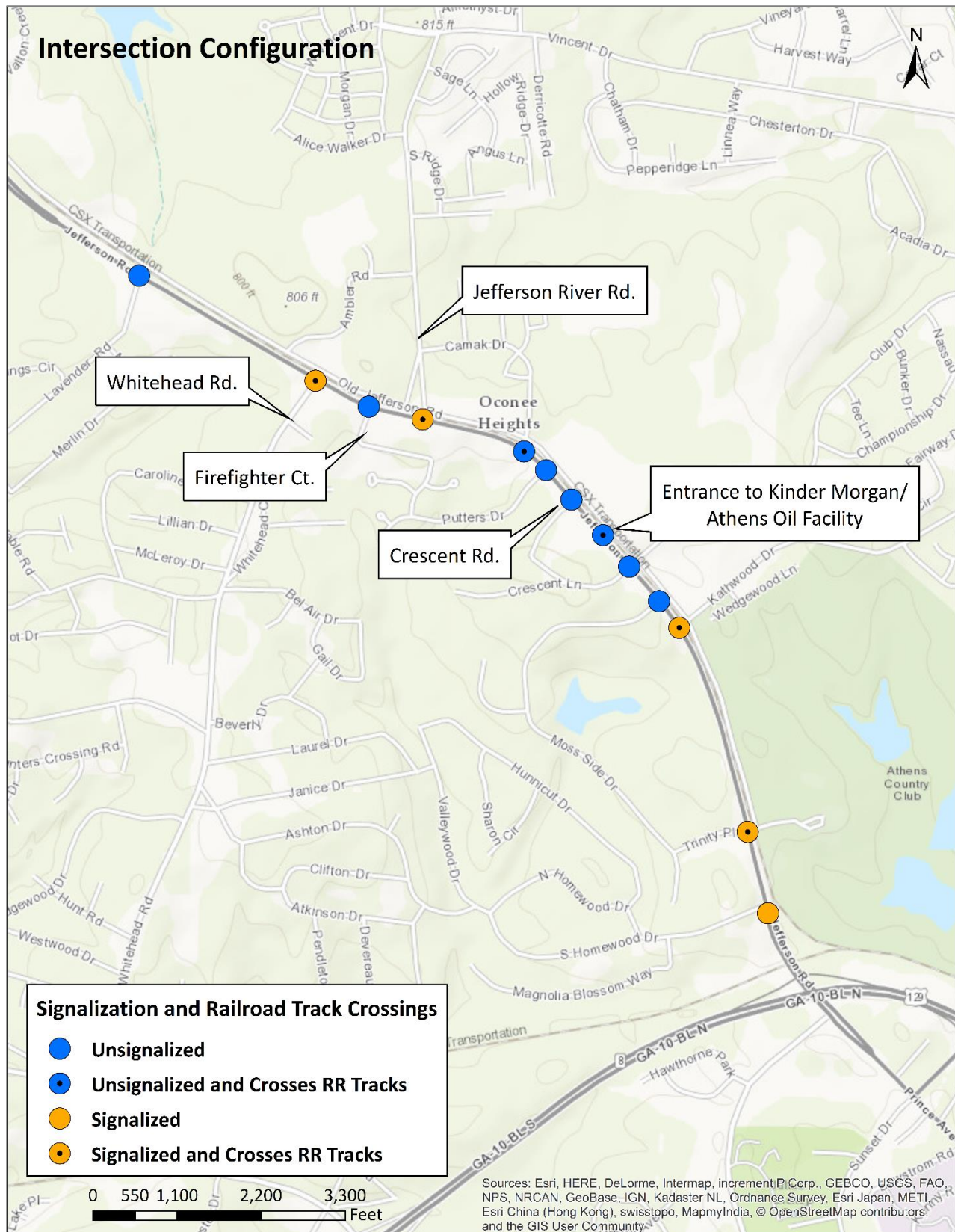


FIGURE 5. INTERSECTION CONFIGURATION ALONG THE STUDY CORRIDOR.

At each of the four signalized intersections that cross the railroad tracks, the railroad crossing active warning system is interconnected with the traffic signal. **When a train approaches** the intersection, the traffic signal at the intersection **prohibits vehicle movement across the railroad track**.

While signs posted along the RSA corridor indicate it is a **shared bicycle route** and bicycles are legally permitted on public roadways in Georgia, US 129/SR 15 Alt/Jefferson Road is **not an official bicycle route**. A map produced by the group "Bike Athens" designates the study corridor as a **"High Traffic Caution Area,"** meaning that it is **not recommended for cycling** due to high traffic volume, high speeds, and difficult intersections.

Athens Transit operates several routes in the metropolitan Athens area. **Route 8, "Barber & Chase,"** travels very close to a portion of the study corridor. This route travels along Old Jefferson Road (to the east of the study corridor, across the railroad tracks) between Kathwood Drive and Jefferson River Road, with a bus stop at the intersection of Kathwood Drive and Old Jefferson Road. Just to the south of the study corridor, **Route 7, "Prince Avenue,"** travels along US 129 between the Homewood Shopping Center (where there is a bus stop) and just south of Hawthorne Avenue.

2.3 PENDING PROJECTS

There are no known pending or planned roadway projects along this portion of US 129/SR 15 Alt/Jefferson Road.

There is one project planned for an area just south of the RSA corridor. **PI #0013954** is a **safety project** along a portion of **SR 15 Alt/CR 1228/Prince Avenue** from Sunset Drive to south of Pulaski Street. The project is being administered through GDOT's Office of Traffic Operations and preliminary engineering is anticipated for 2016. At the time of this report, more details were not available on the GDOT Transportation Project Information website.

2.4 EXISTING PLANS AND STUDIES

There are no existing plans or studies directly along the RSA corridor. There some plans and studies for areas adjacent to the RSA corridor – these are detailed below.

Prince Avenue Corridor Study

The Prince Avenue Corridor Study, completed in February 2012, evaluated local conditions that affect the function and appeal of Prince Avenue from State Route 10/Athens Perimeter (just south of the RSA corridor) to the intersection of West Dougherty Street with North Hull Street. Among the areas of focus in the study were transportation modes and connectivity, parking, lighting, and signage. The study identified a number of general strategies pertaining to these focused areas, including:

1. Conduct traffic circulation analysis for the corridor. Such analysis may result in lane configuration changes, signalization changes, operational intersection improvements, and enhanced pedestrian facilities including mid-block crosswalks.

2. Develop a detailed, master streetscape plan along all segments of Prince Avenue that coordinates utility placement under wide sidewalks, street tree plantings and planters, retaining walls, improved crosswalk design, and other pedestrian amenities such as appropriately scaled lighting and signage.
3. Consider relaxing required minimum parking standards in order to encourage flexible commercial use of small tenant spaces, as these units tend to serve neighborhood-oriented local business that generate a higher ratio of pedestrian, cyclist and transit trips.
4. Accommodate bike routes along, across, and/or through the Study Area.¹

Prince Avenue Road Safety Audit

In September and October 2014, GDOT performed a Road Safety Audit and produced accompanying findings and recommendations for SR 15/Prince Avenue from Sunset Drive to Pulaski Street in Athens. This study corridor lies directly south of US 129/SR 15 Alt/Jefferson Road. The Prince Avenue corridor has a greater intensity of land uses and more pedestrian and cyclist activity compared to US 129/SR 15 Alt/Jefferson Road, and is served by Athens-Clarke County Transit and University of Georgia bus service. The audit team observed a variety of safety deficiencies along the corridor, including high vehicle speeds, gaps in sidewalk coverage, inconsistent pavement widths, numerous driveways and curb cuts, and poor lighting. The Prince Avenue RSA includes a number of recommendations to address these safety issues, including the following:

- Upgrade pedestrian facilities, including ramps, reflective truncated domes and equipment.
- Install bulb-outs and sidewalks with buffers.
- Install bike lanes.
- Close excessive driveways and promote inter-parcel connectivity.
- Implement a road diet and consider adding raised islands and medians to calm traffic.
- Add pedestrian-scale lighting.
- Remove redundant signs and install correct signage.
- Update mid-block crossings.
- Evaluate turning radii at intersections.
- Relocate utility poles that are in the sidewalk.

¹ *Athens-Clarke County Corridor Study: Prince Avenue*. February 12, 2012.
<https://athensclarkecounty.com/DocumentCenter/Home/View/3994>

3 CRASH DATA

3.1 SUMMARY

Crash data was provided by GDOT for **US 129/SR 15 Alt/Jefferson Road** for the years **2011 through 2015**. The data were reviewed according to latitude and longitude, address, and intersecting streets, and were analyzed by date, time of day, manner of collision, location of impact, severity, lighting, roadway surface conditions, vehicle movements, and other information provided by responding officers recorded in the database, such as contributing factors. Crashes that included latitude and longitude were mapped to help illustrate geographic patterns in the data.

According to the data provided, between 2011 and 2015, a total of **281 crashes** occurred on US 129/SR 15 Alt/Jefferson Road within the study limits. **Over half** of all crashes (51%) were **rear-ends**, while **slightly more than one-fifth** (22%) were **angle crashes**. Sideswipe crashes represent about 14% of all crashes. While sideswipe crashes took place throughout the corridor, several were concentrated at or near the intersections with Jefferson River Road (6), Whitehead Road (6), and Kathwood Drive (5). The map below illustrates the location of crashes by type.² The table below provides a breakdown of crashes by type and by year.

The **majority of crashes (92%)** occurred **on roadways** (as opposed to on shoulders, curbs, medians, or other areas) between motor vehicles. Collisions with objects other than motor vehicles, which comprised about 13% of all crashes, mainly included crashes with deer or other animals (15 crashes) and ditches (10 crashes). Two crashes involved bicycles, two involved traffic sign posts, one involved a utility pole, one involved a fence, and there was one pedestrian crash.

During this timeframe, a total of seven crashes were head-on, accounting for 3% of total crashes. Four of these were collisions with an animal. The remaining three crashes occurred at the intersections of Jefferson River Road, Kathwood Drive, and Lavender Road.

TABLE 3. CRASHES BY MANNER OF COLLISION.

Year	Angle	Head On	Rear End	Sideswipe-Same Direction	Sideswipe-Opposite Direction	Not A Collision With Motor Vehicle	Total
2011	6	1	14	8	0	4	33
2012	6	1	19	9	0	6	41
2013	16	1	30	2	1	7	57
2014	14	1	30	7	0	6	58
2015	19	3	50	12	0	8	92
Total	61	7	143	38	1	31	281
Percentage	21.7%	2.5%	50.9%	13.5%	0.4%	11.0%	100.0%

² Crashes are mapped according to the latitude and longitude data provided by responding officers; locations have not been verified for accuracy.

The **crash rate**, calculated as the number of crashes per 100 million vehicle miles traveled (VMT), indicates that overall, there are **fewer crashes along this stretch of road than other roads of the same classification in the state of Georgia**; however, there is a **higher rate of fatalities** on the RSA corridor than in other areas. The total crash rate for US 129/SR 15 Alt/Jefferson Road is 341 crashes per 100 million vehicle miles traveled, which is lower than the statewide average for urban principal arterials, 575 crashes per 100 million VMT. The rate of injury crashes is the same on the RSA corridor as the statewide average for these types of roads – 122 injury crashes per 100 million VMT. The fatal crash rate, however, is nearly five times higher on US 129/SR 15 Alt/Jefferson Road: **6.09 fatal crashes per 100 million VMT** compared to a statewide average of 1.14. Total, injury, and fatal crash rates are shown per year in Table 4 below.

TABLE 4. COMPARISON OF CRASH RATES ALONG RSA CORRIDOR TO STATEWIDE AVERAGES.

Summary of Traffic Crash History along US 129/SR 15 Alt./Jefferson Road from Lavender Road to S. Homewood Drive Milelogs: 4.75 to 6.92						
Year	Crashes			Crashes Per 100 Million Vehicle Miles ¹		
	Total	Injury	Fatal	Total	Injury	Fatal
2011	33	9	0	201 (517)	55 (115)	0.00 (1.23)
2012	41	15	0	250 (579)	91 (126)	0.00 (1.18)
2013	57	20	0	347 (686)	122 (142)	0.00 (1.28)
2014	58	25	1	353 (516)	152 (104)	6.09 (0.87)
2015	92	32	2	560 (-)	195 (-)	12.18 (-)
Total	281	101	3			
Average	56	20	1	341 (575)	122 (122)	6.09 (1.14)
Note: (1) The number in parentheses represents the statewide average crash rates for Urban Principal Arterials Note: (2) - Statewide averages for 2015 are not available at this time.						
Length in Miles			2.17			
AADT (average)			20,725			

The vast **majority** of crashes occurred on **dry (77%) roadway surfaces** and **during daylight hours (74%)**. **Fifteen percent of crashes occurred at night** (66 crashes) and **23% occurred on wet roadways**. The chart below shows the breakdown of all crashes by lighting condition.

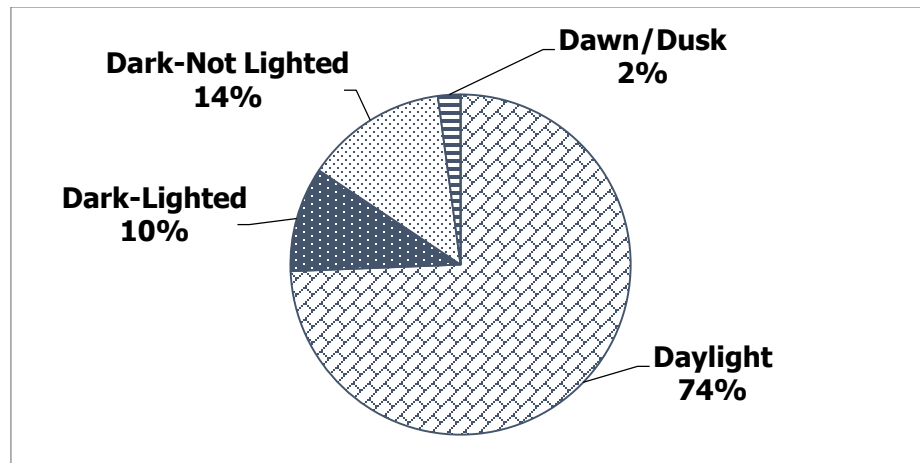


FIGURE 6. PERCENTAGE OF CRASHES BY LIGHTING CONDITIONS.

While over half of all crashes (64%) resulted only in property damage, **186 people were injured in 101 crashes (36%)**. **Three crashes were fatal, resulting in four fatalities**. One was a head-on collision with two fatalities. One crash was an angle collision with one fatality, and one was a rear end crash with one fatality. Details are provided below. The table below shows the number of property damage only (PDO), injury, and fatal crashes by year.

TABLE 5. CRASH SEVERITY.

Year	PDO	Injury	Fatal
2011	24	9	0
2012	26	15	0
2013	37	20	0
2014	32	25	1
2015	60	32	2
Total	179	101	3

The location of impact for 22 crashes were categorized as “off roadway” or “on shoulder” (rather than on the roadway itself). These crashes were generally associated with parking lots and driveways for shopping centers, commercial developments, and residential complexes. In addition to collisions with other vehicles, some of these crashes were collisions with fixed objects, such as ditches, culverts, and sign posts. One such crash involved a pedestrian being hit in a parking lot.

Analysis of contributing factors in all crashes reveals that **following too close** was the **most common** factor in all crashes. This, sometimes in conjunction with other factors, was a **partial cause of 92 crashes** (10% of total crashes). Other common factors include **failure to yield** (27 crashes or 9%), and **changing lanes improperly** (21 crashes or 7%). Driving while under the influence (D.U.I.) or driver condition were factors in 11 crashes. Distracted driving was listed as a factor in seven crashes.

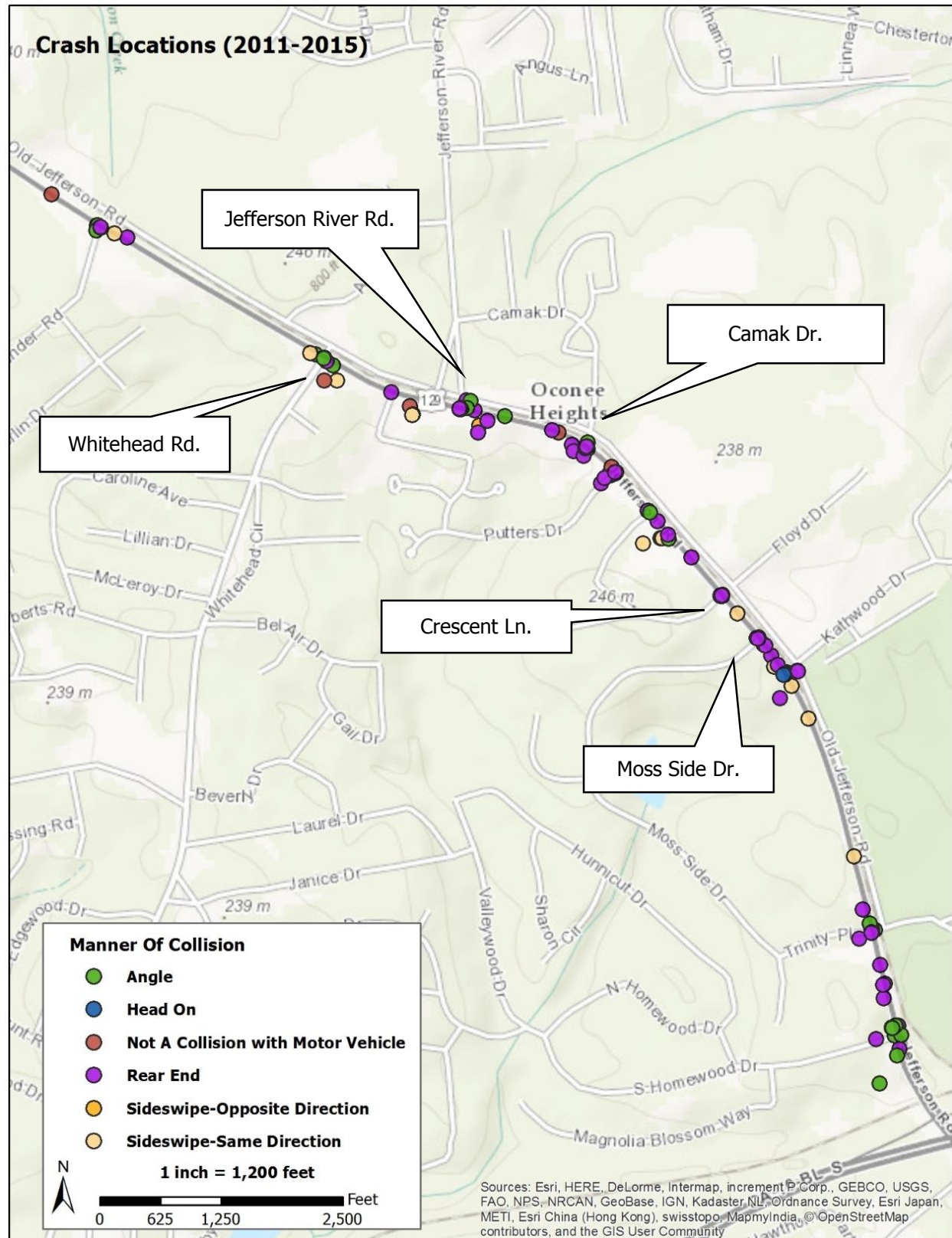


FIGURE 7. LOCATIONS OF CRASHES BY TYPE.

3.2 INJURY AND FATALITY CRASHES

A total of **101 crashes resulted in injuries and three resulted in fatalities**. These numbers are not mutually exclusive: two of the fatal crashes also resulted in injuries (however, one crash was counted as only causing a fatality, but no injuries). Consistent with the overall data, the **most common type** of crash **causing injuries** was **rear-end**. These accounted for **59 injury crashes**, or about 58% of all injury crashes. More than three-quarters (76%) of the injury rear-end crashes took place at or near intersections along US 129/SR 15 Alt/Jefferson Road. Common locations for rear end crashes that resulted in injuries include Jefferson River Road (12), Camak Drive (7), Crescent Drive (6), Crescent Lane (5), Kathwood Drive (4), and Putters Drive (4). Consistent with high volumes of commuter traffic, three-fourths of these occurred during peak rush hours: 19 occurred between 6:30 AM and 10:30 AM and 16 took place between 4:00 PM and 7:00 PM. Figure 8 shows the locations of injury and fatal crashes.³

Of all injury and fatal crashes, **27** were **angle crashes**. These account for roughly **26% of injury crashes** and about 10% of total crashes. The majority of these were during daylight hours and involved left-turn movements. **Most of these occurred at intersections** along US 129/SR 15 Alt/Jefferson Road. Almost 70% of the angle-injury crashes involved at least one vehicle turning left, usually with the other vehicle traveling straight. There is no clear detectable pattern in terms of direction of travel – vehicles in these crashes were turning east, west, north, and south.

Eight injury crashes involved a collision with objects other than motor vehicles. Two of these crashes involved overturned vehicles. **One crash involved a pedestrian**. The other objects struck in these crashes included a culvert, ditch, fence, bicycle, and utility pole.

Five injury crashes were sideswipes, which occurred at various locations along US 129/SR 15 Alt/Jefferson Road. There were **three head-on collisions**, one of which resulted in two fatalities, and two of which injured six people.

Following too closely was the **most common** contributing factor **in all injury and fatality crashes**, cited in 38 injury crashes and one fatal crash. In addition, failure to yield was a factor in 14 injury crashes and one fatal crash. Drivers under the influence (D.U.I.) and driver conditions were factors in seven injury and/or fatality crashes, five of which occurred in during daylight hours.

According to the data provided, there were **three fatal crashes** along the corridor between 2011 and 2015. All of these incidents occurred during daylight hours in dry roadway conditions. Two were attributed, in part, to exceeding the speed limit. As mentioned above, of the three fatal crashes, one was an angle crash, one was head-on, and one was a rear-end crash.

The first fatal crash was a **collision involving a speeding vehicle that hit a tanker truck and overturned** in March 2014. The passenger vehicle was traveling southbound on US 129/SR 15 Alt/Jefferson Road at a high rate of speed, according to witnesses and video captured from a nearby store. The tanker truck was waiting in the left-hand lane to turn onto **Camak Drive**. As the passenger vehicle approached the tanker truck, which was beginning to turn, the vehicle struck the right rear of the tanker. The **driver of the speeding vehicle was killed upon impact**, and there were no other

³ Crashes are mapped according to the latitude and longitude data provided by responding officers; locations have not been verified for accuracy.

injuries in the collision. This crash was attributed to the driver exceeding the speed limit, following too closely, and losing control of the vehicle.

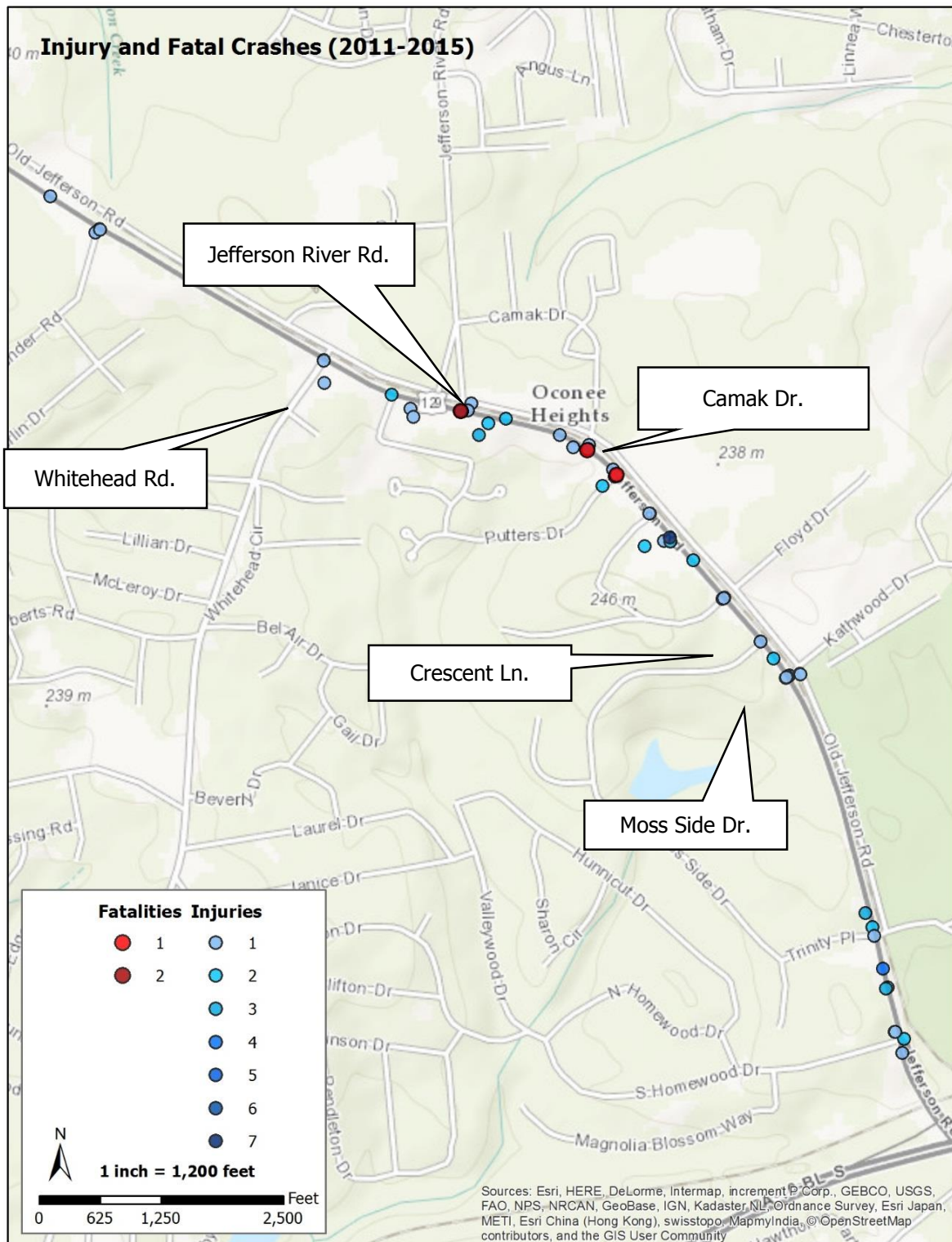


FIGURE 8. INJURY AND FATALITY CRASHES.

The second fatal crash, in April 2015, was a **collision between two passenger vehicles and a tractor trailer** near the intersection of US 129/SR 15 Alt/Jefferson Road and **Putters Drive**. The two passenger vehicles were traveling southbound on US 129/SR 15 Alt/Jefferson Road in the inside lane and the tractor trailer was traveling northbound, also in the inside lane. The first southbound vehicle suddenly **veered left and crossed the center lane**, striking the driver's side of the oncoming tractor-trailer, causing the truck to lose control and jackknife. The hood of the first passenger vehicle flew off upon impact, striking the second passenger vehicle which had been following the first. The driver of the first passenger vehicle died upon impact to the tractor trailer. Two other people were injured in the collision. It was later determined, as part of the investigation on-site, that the passenger of the first vehicle had heroin in their possession, although no direct correlation was mentioned and the driver, who died in the crash, was not tested for drugs or alcohol.

The third fatal crash occurred in September 2015. A southbound vehicle **attempting to turn left onto Jefferson River Road turned into the path of a northbound motorcycle**, and the vehicles hit head-on. **Two occupants of the northbound motorcycle were killed**. The occupant of the other vehicle was injured.

3.3 PEDESTRIAN AND BICYCLE CRASHES

In total, there was **one crash involving a pedestrian** and **two bicycle crashes** within the study limits between 2011 and 2015.

The **pedestrian crash** occurred **in a parking lot** near the intersection of US 129/SR 15 Alt/Jefferson Road and Whitehead Road. A pedestrian was struck by a vehicle when the vehicle was attempting to park. The crash occurred during daylight hours in dry conditions.

The first **bicycle crash** occurred on US 129/SR 15 Alt/Jefferson Road **near South Homewood Drive** on March 30, 2015. The crash report states that a vehicle attempted to pass another vehicle, and in the process, the two vehicles made impact, and a nearby cyclist was knocked to the ground. The cyclist had non-serious injuries. **The second bicycle crash occurred the next day**, on March 31, 2015, at the intersection of US 129/SR 15 Alt/Jefferson Road and Country Club Drive. A cyclist attempting to turn left onto US 129/SR 15 Alt/Jefferson Road was struck by a vehicle traveling northbound on the corridor. The cyclist maintained that the vehicle ran the red light, while the driver said that the cyclist was in the intersection during the red cycle for the cyclist, and that the driver tried to swerve to avoid him but could not. The cyclist was the only party that suffered injuries. Both collisions occurred during dry, daylight conditions.

The map on the following page shows the locations of bicycle and pedestrian crashes within the study limits.

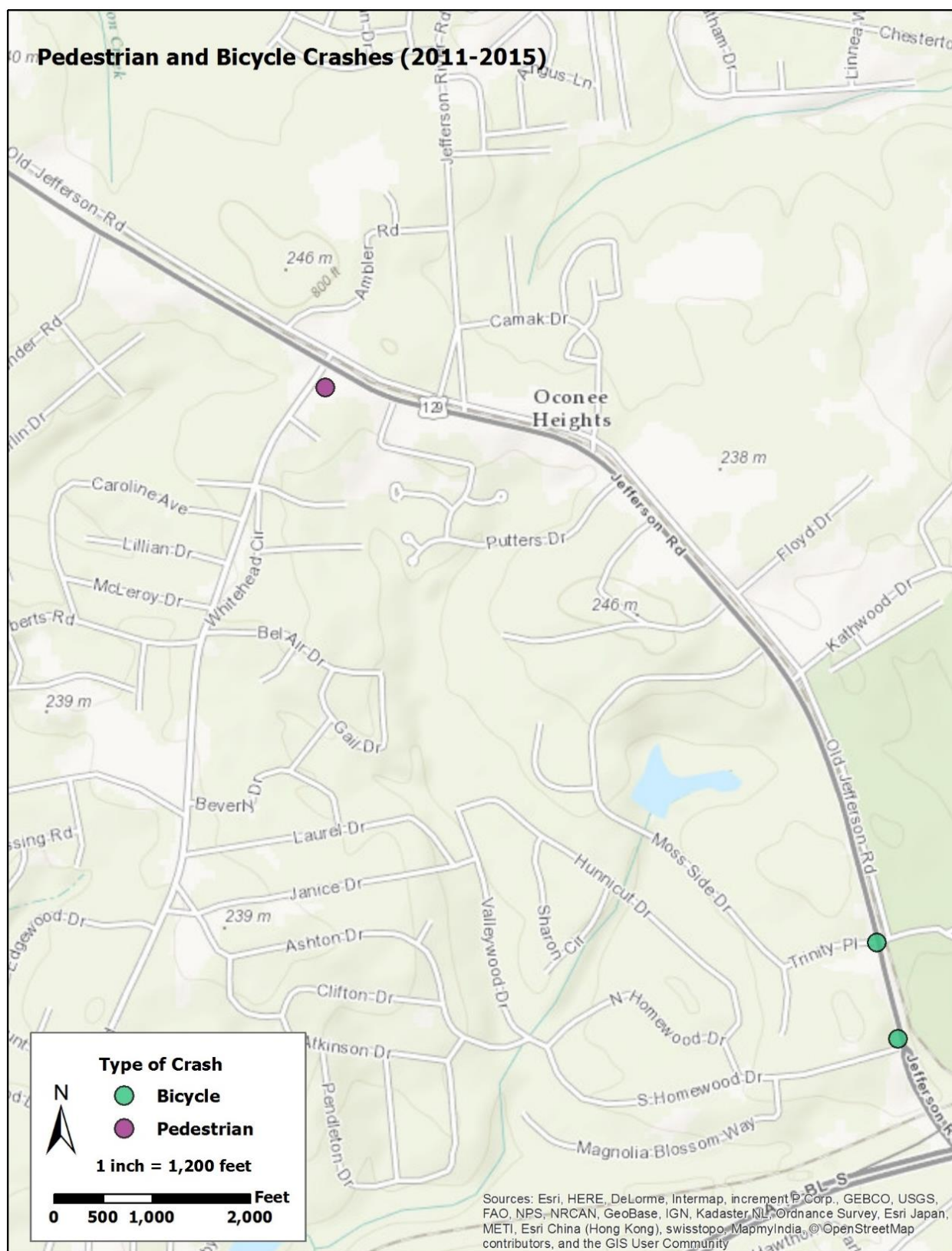


FIGURE 9. PEDESTRIAN AND BICYCLE CRASHES.

3.4 COMMON CRASH LOCATIONS

While crashes occurred along the length of the study corridor, they were most prevalent at the intersections shown in Table 6 below.

TABLE 6. COMMON CRASH LOCATIONS.

Intersecting Road*	Total	Severity		Manner of Collision				
		Injury	Fatal	Rear End	Angle	Sideswipe	Not a Collision with Motor Vehicle	Head On
Jefferson River Road	56	27	1	31	14	8	2	1
S. Homewood Drive	38	8	0	22	11	2	1	1
Kathwood Drive	34	12	0	14	5	6	6	2
Camak Drive	33	11	1	16	5	3	8	0
Whitehead Road	30	9	0	10	10	7	3	0

*Listed in order from high to low.

3.4.1 JEFFERSON RIVER ROAD

Jefferson River Road had the highest number of crashes of any intersection. In total, **56 crashes** occurred at or near this intersection, equal to roughly 55% of all crashes along the corridor. Crashes at this location tend to be relatively severe: almost half of all crashes at or near Jefferson River Road resulted in injuries. A total of **27 injury crashes** resulted in **injury to 45 people and two fatalities**⁴.

Crashes at Jefferson River Road primarily occurred when vehicles were stopped (24), turning right or left (13), or changing lanes (5). The most common type of injury crash at this location is rear-end crashes, which represent 56% of all crashes at the intersection. There were also 14 angle crashes, eight (8) sideswipe crashes, two collisions that were not with a motor vehicle, and one head-on collision.

Three-quarters (42) of all crashes at the intersection occurred during daylight hours. Thirteen occurred in the dark, in both lighted and unlighted conditions, and one occurred during dusk. These nighttime crashes include a variety of manners of collisions and vehicle movements, including turning, entering or exiting driveways and parking lots, changing lanes, and traveling straight.

3.4.2 SOUTH HOMEWOOD DRIVE

The intersection of US 129/SR 15 Alt/Jefferson Road and **South Homewood Drive** had the second highest number of intersection crashes, with a total of **38 crashes** over the five-year period. The most common crash types at this intersection are rear-end (22) and angle crashes (11). Of the angle crashes, six involved turning movements, three involved changing lanes, two involved stopped vehicles, and one involved making a U-turn. Slightly more than 20% of crashes in this location caused injuries. In total, **15 people were injured in eight crashes** at South Homewood Drive, the majority of which were rear-end crashes.

⁴ The two fatalities occurred during one crash.

A majority of the crashes at South Homewood Drive (71%) occurred during daylight and about 29% were recorded as taking place at dusk or after dark (nighttime). About 16% of crashes here took place on wet roadways. Analysis of vehicle movements reveals that 25 crashes involved stopped vehicles, eight crashes at this intersection involved turning movements, and four involved changing lanes. One crash involved negotiating a curve, and one involved making a U-turn. The remaining crashes occurred during straight movements.

3.4.3 KATHWOOD DRIVE

Over the five-year time period, a total of **34 crashes** occurred at or near **Kathwood Drive** and US 129/SR 15 Alt/Jefferson Road. Fifteen crashes, or 43% of crashes at the intersection, were **rear-end** crashes. There were also six sideswipe crashes, five angle crashes, and two head-on collisions. There were six collisions classified as "not with motor vehicles," including collisions into ditches and an overturned vehicle. In total, there were **12 injury crashes** at the intersection that resulted in injury to 22 people, representing about 35% of crashes at this location.

A majority of the crashes at this intersection (76%) occurred during daylight and about 24% were recorded as taking place at dusk or after dark (nighttime). About 30% of crashes here took place on wet roadways. More crashes involved northbound and southbound vehicles (generally on the study corridor) than eastbound and westbound vehicles (generally on Kathwood Drive). Analysis of vehicle movements reveals that 13 crashes at this intersection involved stopped vehicles, and six involved vehicles turning right or left. Three crashes involved vehicles changing lanes. One crash involved a parked vehicle, one involved negotiating a curve, and the remaining crashes occurred during straight movements.

3.4.4 CAMAK DRIVE

There were a total of **33 crashes** at or near US 129/SR 15 Alt/Jefferson Road and **Camak Drive**. The most common crash types are rear-end crashes (17) and collisions with objects other than motor vehicles (8). There were also five angle crashes and three sideswipe crashes at the intersection. Of the collisions with objects other than motor vehicles, three were with culverts, three were with ditches, one was with a utility pole, and one was with a highway traffic sign. In total, **20 people were injured in 11 crashes** at Camak Drive, the majority of which were rear-end crashes. There was **one fatal crash** at Camak Drive, as described above. Together injury and fatal crashes comprise about 36% of all crashes at this intersection.

A majority of the crashes at this intersection (72%) occurred during daylight and about 28% were recorded as taking place after dark (nighttime). About 31% of crashes here took place on wet roadways. Analysis of vehicle movements reveals that twelve crashes involved stopped vehicles, eight crashes at this intersection involved negotiating a curve, eight crashes involved turning movements, and three crashes involved changing lanes.

3.4.5 WHITEHEAD ROAD

The intersection of US 129/SR 15 Alt/Jefferson Road with **Whitehead Road** was the site of **30 crashes** between 2011 and 2015. The most common crash types at this location are rear-end (10) and angle crashes (10). Of the angle crashes, five involved at least one vehicle making a left turn, two involved at least one vehicle making a right turn, two involved entering or leaving a driveway, and one involved a vehicle changing lanes. In total, **15 people were injured in nine (9) crashes** at Whitehead Road,

which accounts for roughly 30% of crashes at this intersection. The majority of these were angle and rear-end crashes.

A majority of the crashes at this intersection (77%) occurred during daylight and about 23% were recorded as taking place at dusk or after dark (nighttime). About 30% of crashes (9 crashes) here took place on wet roadways, half of which were after dark. Analysis of vehicle movements reveals that about one-third of crashes (7) at this intersection involved turning movements, and three (3) involved changing lanes.

4 FINDINGS AND RECOMMENDATIONS

This section describes and documents the audit team's findings and observations, and lists recommendations to address identified safety issues. During the audit meeting and field inspection, the team observed issues and conditions that were common throughout the corridor as well as those that apply to specific intersections. Section 4.1 addresses corridor-wide observations and recommendations, while the following sections address specific intersections. Each section is organized so that findings and observations are described first, followed by recommendations.

Recommendations are potential actionable items categorized and rated according to safety benefit, level of effort, timeframe, and estimated cost. Safety benefit, level of effort, and cost are classified as either high, moderate, or low. Timeframe is estimated as short-, intermediate-, and long-term. Photographs are provided as examples of existing conditions, and in some cases, to illustrate potential recommendations. Numbered items shown on recommendation diagrams [**3**] correspond to recommendations listed in the recommendations and ratings tables.

4.1 CORRIDOR-WIDE: US 129/SR 15 ALT/JEFFERSON ROAD

The width of the study corridor contributes to high vehicle speeds along the corridor, creating a safety hazard for pedestrians, cyclists, and turning vehicles. There are very few right and left turn lanes at intersections, and those that are present are too short to accommodate many vehicles. The configuration of intersections that cross the railroad tracks to the east are a particular concern, as the turn lane storage is insufficient and vehicles may be stopped on railroad tracks waiting to turn onto the study corridor. There are sidewalks on only the west side of the study corridor, but few crosswalks along the side streets to the west. Building upon the recommendations from the Prince Avenue RSA, which is a continuation of US 129/SR 15 Alt/Jefferson Road to the south, strategies to help calm vehicle traffic along the study corridor are recommended.

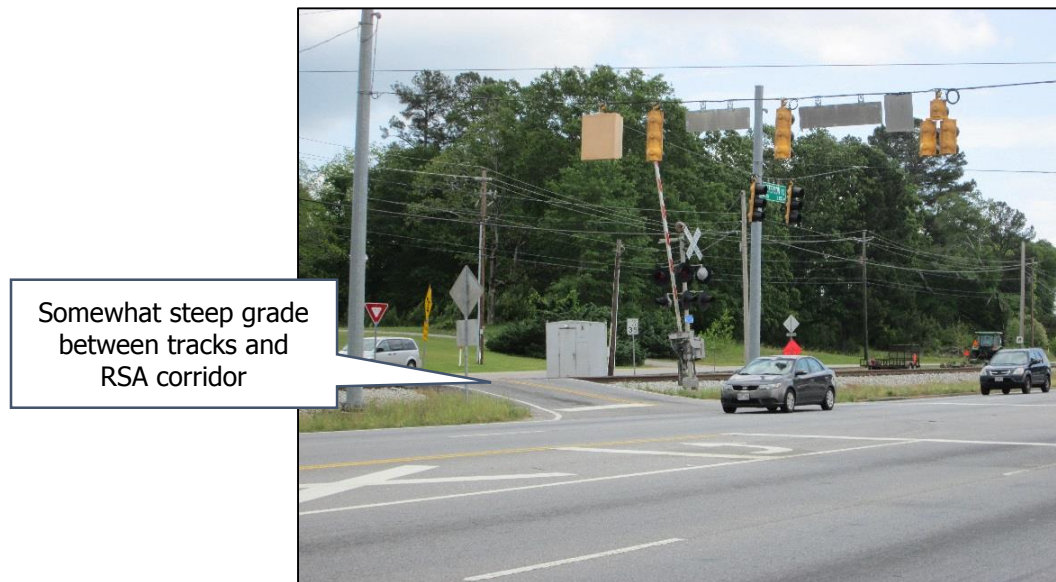
4.1.1 FINDINGS & OBSERVATIONS

1. Intersections are generally **lacking in pedestrian facilities** that are in compliance with the Americans with Disabilities Act (ADA), such as truncated domes and curb ramps.
2. **Crosswalks across side streets are** intermittently **missing** throughout the corridor.
3. There are **no sidewalks** along the east side of the corridor, adjacent to the railroad tracks.
4. There are sidewalks along the west side of the corridor, but many segments are **cracked** or **damaged**, and in some areas the sidewalk is **narrow** and **close to the travel lanes**.
5. **Pavement markings** throughout the corridor, such as crosswalks, stop bars, lane markings, etc. are **worn and faded**.
6. During the night inspection, it was observed that the **raised pavement markers** (RPMs) were **not sufficiently reflective**.
7. **Reflective backplates are missing** on some traffic signals.
8. **Signs are often worn and faded** along the corridor, making it difficult for motorists to see from a distance.
9. **Double-headed arrow signs** (to indicate drivers must turn left or right) **are missing** at T-intersections along the study corridor.
10. **Vegetation** was found to **block some signs** and **commercial driveways** throughout the corridor.

11. **There are few left turn lanes** at the intersections along the RSA corridor. Where left-turn lanes do exist, such as at Whitehead Road and Kathwood Drive, they are **not sufficiently long enough** to accommodate the volume of turning traffic.
12. **Several side streets cross the railroad tracks to the east of the corridor.** On the east leg of some of these intersections, there is **not much storage** room for vehicles between the tracks and the stop bar at US 129/SR 15 Alt/Jefferson Road. Some of these crossings are not level with the RSA corridor. It is suspected that the configuration of these intersections may contribute to vehicle crashes along the RSA corridor, as vehicles from behind the tracks may have a difficult time completing turning movements onto the study corridor before the traffic signal turns red, and the grade of the side street crossing the tracks may cause turning vehicles to slow down as they cross over the tracks.
13. **Seemingly high speeds** were observed and were reported by local participants along the study corridor.
14. During the night inspection, it was observed that US 129/SR 15 Alt/Jefferson Road is **dark between intersections**. It was **particularly dark north of Jefferson River Road and south of Kathwood Drive**. During the night inspection, one **pedestrian** was observed **walking in dark conditions** south of Kathwood Drive.



FIGURE 10. VIEW OF NORTH END OF CORRIDOR, LOOKING NORTH FROM LAVENDER ROAD. NOTE THE "SHARE THE ROAD" SIGN FOR BICYCLES IN THE NORTHBOUND LANES.



Somewhat steep grade
between tracks and
RSA corridor

FIGURE 11. SHORT TURN LANES AND INSUFFICIENT STORAGE AT INTERSECTIONS THAT CROSS RAILROAD TRACKS, SEEN HERE AT WHITEHEAD ROAD.



FIGURE 12. SINGLE VEHICLE FILLS STORAGE AREA BEHIND STOP BAR ON JEFFERSON RIVER ROAD.

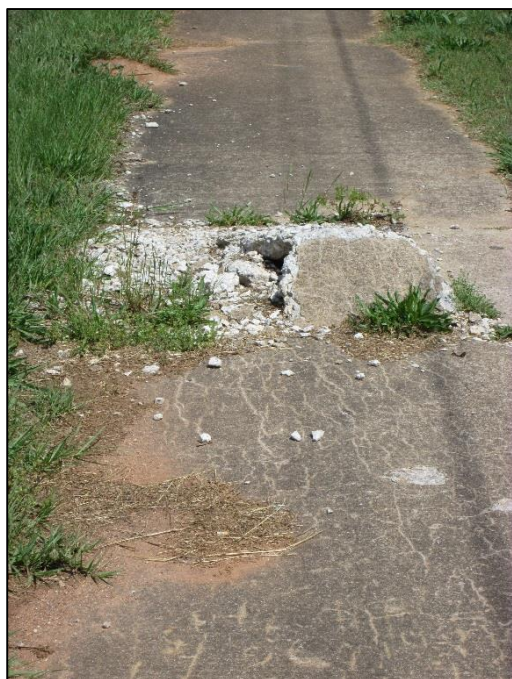


FIGURE 14. DAMAGED SIDEWALK ALONG THE CORRIDOR.



FIGURE 13. SIGN BLOCKED BY VEGETATION.



FIGURE 15. MISSING TRUNCATED DOMES ON PEDESTRIAN RAMPS



FIGURE 16. OUTDATED PEDESTRIAN SIGNAL PUSH BUTTON WITH NO PEDESTRIAN RAMP OR SIDEWALK.



FIGURE 17. TYPICAL SCENE IN WHICH VEHICLES PULL INTO ADJACENT LANES TO GET AROUND THOSE WAITING TO TURN LEFT ONTO A SIDE STREET, SEEN HERE AT THE ENTRANCE TO THE KINDER MORGAN FACILITY.

4.1.2 CORRIDOR-WIDE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Repair and/or install ADA-compliant sidewalks as needed along the west side of the study corridor to provide consistent, predictable pedestrian access and safety.	High	Moderate	Intermediate	Moderate
2. Install ADA-compliant pedestrian facilities at intersections, including curb ramps, truncated domes, and pedestrian push button signals.	High	Moderate	Short Term	Moderate
3. Install crosswalks across all side streets where sidewalk is present to alert motorists to the potential presence of pedestrians.	High	Low	Short Term	Low
4. Replace pavement markings and raised pavement markers (RPMs) throughout the study corridor.	High	Low	Short Term	Low
5. Install reflective backplates on traffic signals along the corridor to improve visibility of signals.	Moderate	Low	Short Term	Moderate

(CORRIDOR-WIDE CONTINUED)		SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
6.	Install horizontal double-headed arrow signs (W1-7) where missing to indicate to drivers that they can only turn right or left onto the study corridor at T-intersections (see Figure 18): <ul style="list-style-type: none"> • Lavender Road • Jefferson River Road • Putters Drive • Moss Side Drive • S. Homewood Drive 	Moderate	Low	Short Term	Low
7.	Trim vegetation as needed to ensure it does not block signs or inhibit the view of driveways, signs, or signals along the corridor.	High	Low	Short Term	Low
8.	Study opportunities to install left-turn lanes at key intersections and implement as appropriate (using existing hatched taper areas where possible).	Moderate	Moderate	Intermediate	Moderate
9.	At intersections with railroad crossings, ensure all stop bars on the east leg of the intersection are as close to the edge line at US 128/SR15 Alt./Jefferson Road as possible without surpassing the minimum four-foot required distance, to provide as much storage space as possible for cars waiting to turn (see Figure 20).	High	Low	Short Term	Low
10.	Conduct an engineering study to determine the need for "Do Not Stop on Tracks" (R8-8) signs on side street approaches to railroad crossings (east legs of intersections).	Moderate	Low	Short Term	Low
11.	Study the feasibility of narrowing existing lanes to 11 feet in width to calm traffic and reduce vehicle speeds. This may provide an opportunity to create a wider multi-use path where the sidewalk exists. Restripe lanes if determined to be feasible.	High	Low	Short Term	Low
12.	Study the feasibility of installing a raised concrete median (with accommodations for driveways and U-turns) to slow traffic and streamline turning movements within the corridor.	High	Low	Low	Low
13.	Design and construct a raised median if determined to be feasible.	High	High	Long Term	High

(CORRIDOR-WIDE CONTINUED)

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
14. Study the feasibility of installing a center-line rumble strip, in lieu of a concrete median, to reduce the potential for head-on collisions along the RSA corridor.	Moderate	Low	Low	Moderate
15. Install additional street lighting mid-block along the corridor, particularly north of Jefferson River Road and south of Kathwood Drive.	High	Moderate	Intermediate	Moderate
16. Examine opportunities to improve connectivity to planned bicycle lanes along Prince Avenue to the south. Coordinate with Bike Athens or other local groups to determine the best connections.	Moderate	Low	Short Term	Low
17. In conjunction with recommendations from the Prince Avenue RSA, consider the use of additional pedestrian safety and traffic calming elements in the southern portion of the study corridor, where there is a greater intensity of development and higher pedestrian activity.	High	Moderate	Intermediate	Moderate

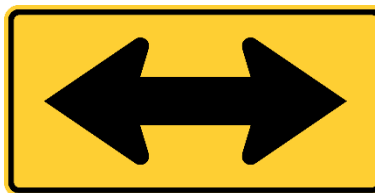


FIGURE 18. LARGE DOUBLE-HEADED HORIZONTAL ARROW SIGN (W1-7) USED TO WARN MOTORISTS TO TURN RIGHT OR LEFT ONLY.



R8-8

FIGURE 19. DO NOT STOP ON TRACKS (R8-8) SIGNS SHOULD BE USED WHERE SIDE STREETS CROSS RAILROAD TRACKS.

As described in Section 8B.28 of the Manual on Uniform Traffic Control Devices (MUTCD), stop lines on paved at-grade crossings equipped with active control devices such as signals or gates should be installed a minimum of eight feet in advance of the gate, but no closer than 15 feet in advance of the nearest rail. A stop line at an intersection with a cross-street must be no closer than four feet from the edge line of the intersecting road.

The MUTCD also provides guidance on the placement of "Do Not Stop On Tracks" (B8-8) signs (Section 8B.09). These should be installed whenever the potential for vehicles stopping on the tracks at a grade crossing is significant. Placement of these signs should be determined as part of an engineering study, and should be provided on the right side of the roadway on either the near or far side of the grade crossing, depending upon visibility to approaching drivers.

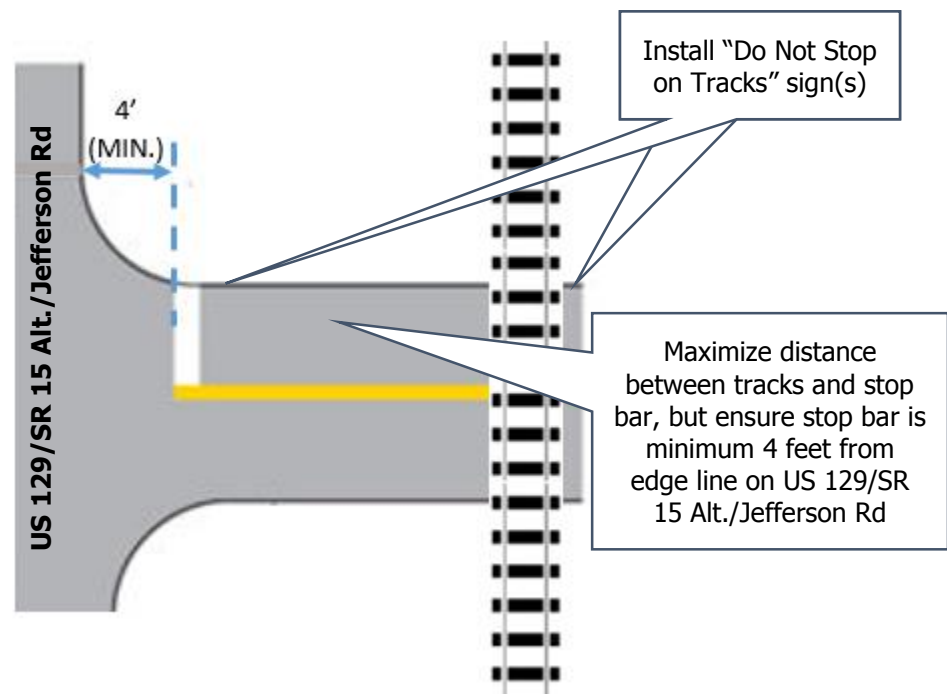


FIGURE 20. DIAGRAM ILLUSTRATING RECOMMENDED PLACEMENT OF STOP BAR RELATIVE TO RAILROAD CROSSINGS.

Raised Medians

Given the high speeds and high volume of traffic along US 129/SR 15 Alt/Jefferson Road, the audit team recommends considering the installation of a raised median throughout the corridor. Below is a synopsis of some FHWA guidance and best practices for raised medians in urban areas. A list of resources is included in the appendix.

Raised medians are appropriate in some locations and not appropriate in others. The FHWA recommends that raised medians or refuge islands should be considered in curbed, multilane roadways in both urban

and suburban areas. Raised medians are most useful on high volume, high speed roads.⁵ Raised medians help manage motor vehicle traffic and provide comfortable left-hand turning pockets with fewer or narrower lanes, which can also help reduce vehicle speeds. They are a benefit to pedestrians because they can serve as a place of refuge for people on foot who cross a street midblock or at intersections. They also provide space for street trees and other landscaping which, in turn, can help reduce speeds by changing the character of a street.

The FHWA encourages the addition of medians and refuge islands to improve motorist and pedestrian safety by providing space to install additional lighting and for signage on multilane roadways. Although there is not substantial pedestrian traffic crossing the RSA corridor, raised medians are also effective in reducing the likelihood of motor vehicle crashes, decreasing delays for motorists, increasing capacity, and can provide space for landscaping within the right-of-way, helping to create more of a sense of place along a corridor.

Raised medians are especially recommended in areas with a mix of significant pedestrian and vehicular traffic - more than 12,000 average daily traffic (ADT) - and intermediate or high travel speeds. Traffic volumes on US 129/SR 15 Alt/Jefferson Road exceed this recommended threshold by 35% to 85% percent, depending on the segment of the corridor. Medians are recommended to be at least four feet wide (preferably eight feet) and sufficiently long to allow pedestrians to stand and wait for gaps in traffic before crossing the second half of the street.

Raised medians have been used successfully in many urban and suburban locations across the country, including Tempe and Tucson, Arizona; Sarasota and Tampa, Florida; New York, New York; Detroit, Michigan; University Place, Washington; and elsewhere. Case studies are available at the FHWA's Pedestrian Safety Guide and Countermeasure Selection System website, http://pedbikesafe.org/PEDSAFE/casestudies.cfm?op=C&subop=b&CM_NUM=22.

⁵ <http://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/16.htm>

4.2 @ LAVENDER ROAD

4.2.1 FINDINGS & OBSERVATIONS

1. The **skew angle** of the intersection may create **sight distance issues** for traffic turning left from Lavender Road onto northbound US 129/SR 15 Alt/Jefferson Road, and for northbound traffic on US 129/SR 15 Alt/Jefferson Road to see vehicles entering the study corridor from Lavender Road.
2. There is a **painted island** on the west leg of the intersection, across Lavender Road, to delineate the right and left turn lanes.
3. There is a "Do Not Enter Sign" near the railroad tracks (on the east side of the RSA corridor). The **sign is incorrectly faced toward Lavender Road**, making it appear as if traffic from Lavender Road is not permitted to turn onto the study corridor.
4. The **yield sign** on the west leg of the intersection, for vehicles turning right from Lavender Road onto southbound US 129/SR 15 Alt/Jefferson Road, is **not at the correct angle**, making it **difficult for motorists to see the sign**.
5. During the night inspection, it was observed that the post-mounted **street sign** for Lavender Road is **not reflective**.
6. North of the intersection, there is a center turn lane that extends northward for approximately 935 feet. However, there are no driveways, curb cuts, or intersecting roads along this portion of the roadway.



FIGURE 22. YIELD SIGN AT INCORRECT ANGLE IN THE SOUTHWEST CORNER OF THE INTERSECTION.



FIGURE 21. MISLEADING "DO NOT ENTER" SIGN FACING SOUTHBOUND DRIVERS NEAR LAVENDER ROAD.



FIGURE 23. PAINTED ISLAND AT LAVENDER ROAD.

4.2.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Remove or reposition the "Do Not Enter" sign on the east side of the intersection.	Moderate	Low	Short Term	Low
2. Adjust the angle of the yield sign in the southwest quadrant to make it more visible to motorists turning right from Lavender Road onto the study corridor.	Moderate	Low	Short Term	Low
3. Replace the street sign for Lavender Road with a reflective street sign.	High	Low	Short Term	Low
4. Consider replacing the painted island with a concrete one to channelize turns and improve visibility of the side street.	Moderate	Moderate	Intermediate	Moderate
5. Consider redesigning the intersection to remove the skew angle. Identify and carry out implementation steps as appropriate.	High	High	Long Term	High



FIGURE 24. DIAGRAM OF RECOMMENDATIONS FOR LAVENDER ROAD.

4.3 @ WHITEHEAD ROAD

4.3.1 FINDINGS & OBSERVATIONS

1. There is a "**Low Ground Clearance Sign**" on the northeast corner of the intersection, intended to warn motorists turning right from northbound US 129/SR 15 Alt/Jefferson Road onto Whitehead Road that the undercarriage of their vehicles may scrape the railroad tracks as they cross. Because the sign is on the far side of the intersection, it **does not serve as a warning sign** ahead of the crossing.
2. There is virtually **no queueing space in the left turn lane** for vehicles turning from southbound US 129/SR 15 Alt/Jefferson Road onto Whitehead Road.
3. There is **no left turn lane** for vehicles turning from northbound US 129/SR 15 Alt/Jefferson Road into the Shell gas station on the west side of the corridor. The **northernmost driveway** is **too close** to the intersection.
4. On Whitehead Road, the **driveway** for the former automobile repair shop is **too close to the intersection**.



FIGURE 25. DRIVEWAY TOO CLOSE TO INTERSECTION AND NO LEFT-TURN LANE INTO GAS STATION.



FIGURE 26. LOW GROUND CLEARANCE SIGN ON FAR SIDE OF INTERSECTION SHOULD BE RELOCATED TO NEAR SIDE.



FIGURE 27. SHORT TURN LANES AND INSUFFICIENT LANE STORAGE FOR VEHICLES TURNING ONTO WHITEHEAD ROAD.



FIGURE 28. RELATIVELY STEEP GRADE AT RAILROAD CROSSING ON WHITEHEAD ROAD.

4.3.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the "Low Ground Clearance Sign" to the southeast corner of the intersection.	Moderate	Low	Short Term	Low
2. Install longer left turn lanes with greater queuing capacity at the intersection.	High	Moderate	Intermediate	Moderate
3. Restripe the hatched taper area to create a left-turn lane from northbound US 129/SR 15 Alt/Jefferson Road into the Shell gas station.	High	Moderate	Intermediate	Moderate
4. Convert the northernmost driveway at the Shell gas station to right-in/right-out.	High	Low	Short Term	Low
5. Consider reconfiguring the driveway to the former automobile repair shop (northwest quadrant), so that turning movements at the business do not interfere with traffic flow. This could be done by closing off or tapering part of the driveway to force people to exit farther from the intersection.	Moderate	Moderate	Intermediate	Moderate

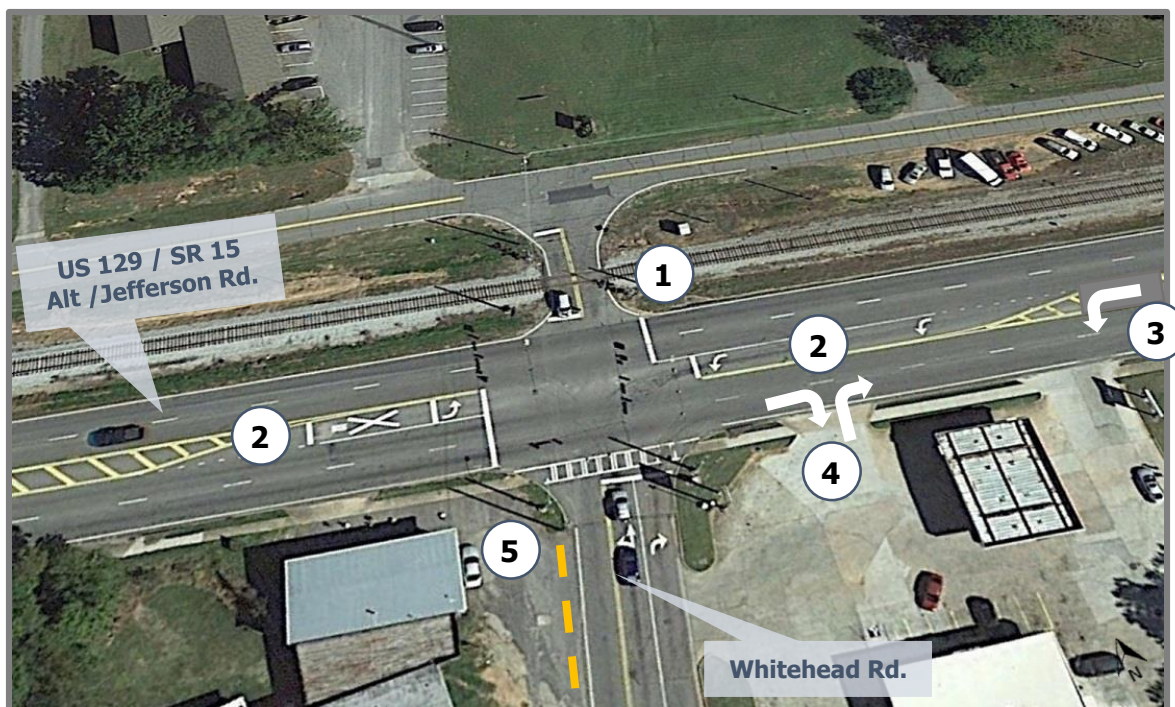


FIGURE 29. DIAGRAM OF RECOMMENDATIONS FOR WHITEHEAD ROAD.

4.4 @ FIREFIGHTER COURT

4.4.1 FINDINGS & OBSERVATIONS

1. The **stop bar** on the west leg of the intersection, across Firefighter Court, is **set too far back**, creating **sight distance issues** for vehicles turning onto US 129/SR 15 Alt/Jefferson Road.
2. The **"Do Not Enter" sign** at the fire station is **incorrectly angled** towards US 129/SR 15 Alt/Jefferson Road and may be misleading to approaching motorists.



FIGURE 30. STOP BAR SET TOO FAR BACK ON FIREFIGHTER COURT.



FIGURE 31. VIEW LOOKING NORTHBOUND FROM STOP BAR ON FIREFIGHTER COURT.



FIGURE 32. "DO NOT ENTER" SIGN AT FIRE STATION DRIVEWAY FACES TOWARD STUDY CORRIDOR.

4.4.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the stop bar across Firefighter Court closer to the intersection.	High	Low	Short Term	Low
2. Adjust the angle of the "Do Not Enter" sign to face the proper direction.	Moderate	Low	Short Term	Low



FIGURE 33. DIAGRAM OF RECOMMENDATIONS FOR FIREFIGHTER COURT.

4.5 @ JEFFERSON RIVER ROAD

4.5.1 FINDINGS & OBSERVATIONS

1. There is a **"Low Ground Clearance Sign"** on the northeast corner of the intersection, intended to warn motorists turning from northbound US 129/SR 15 Alt/Jefferson Road onto Jefferson River Road that the undercarriage of their vehicles may impact the railroad tracks as they cross. Because the sign is on the far side of the intersection, it **does not serve as a warning sign** ahead of the crossing.
2. There are **no turn lanes** on US 129/SR 15 Alt/Jefferson Road at Jefferson River Road.
3. All of the **traffic signals** at the intersection are located on the **same overhead line**, contributing to **"visual clutter"** and potentially creating **confusion for motorists**.⁶ From Jefferson River Road, **one of the signal heads is blocked** from immediate view.
4. There is **no overhead street sign** for Jefferson River Road. The **post-mounted street sign** is **small** and **not readily visible**.
5. On the southwest quadrant of the intersection, the northernmost **driveway** for the gas station is **too close to the intersection**.
6. There is **no street light at the intersection**.



FIGURE 34. JEFFERSON RIVER ROAD INTERSECTION, VIEWED FROM SOUTHBOUND LANES. NOTE ALL TRAFFIC SIGNALS ARE ON SAME OVERHEAD LINE.

⁶ FHWA, *Signalized Intersections: Information Guide*, (FHWA-HRT-04-091), <http://www.fhwa.dot.gov/publications/research/safety/04091/11.cfm>



FIGURE 35. RAILROAD CROSSING AT JEFFERSON RIVER ROAD. NOTE "LOW GROUND CLEARANCE" SIGN ON FAR SIDE OF INTERSECTION AND SMALL POST-MOUNTED STREET NAME SIGN.

4.5.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the "Low Ground Clearance Sign" to the southeast corner of the intersection.	Moderate	Low	Short Term	Low
2. Install an overhead street name sign for Jefferson River Road.	High	Low	Short Term	Low
3. Relocate the blocked signal head to allow the signal to be more visible from Jefferson River Road.	High	Low	Short Term	Low
4. Consider re-installing the traffic signals on mast arms or separate overhead wires to reduce visual clutter and improve visibility of the signals.	High	Moderate	Intermediate	Moderate
5. Install a street light at the intersection.	High	Moderate	Intermediate	Moderate
6. Consider realigning the driveway for the gas station to tie into the signalized intersection or converting the northernmost driveway to right-in/right-out.	High	Moderate	Intermediate	Moderate

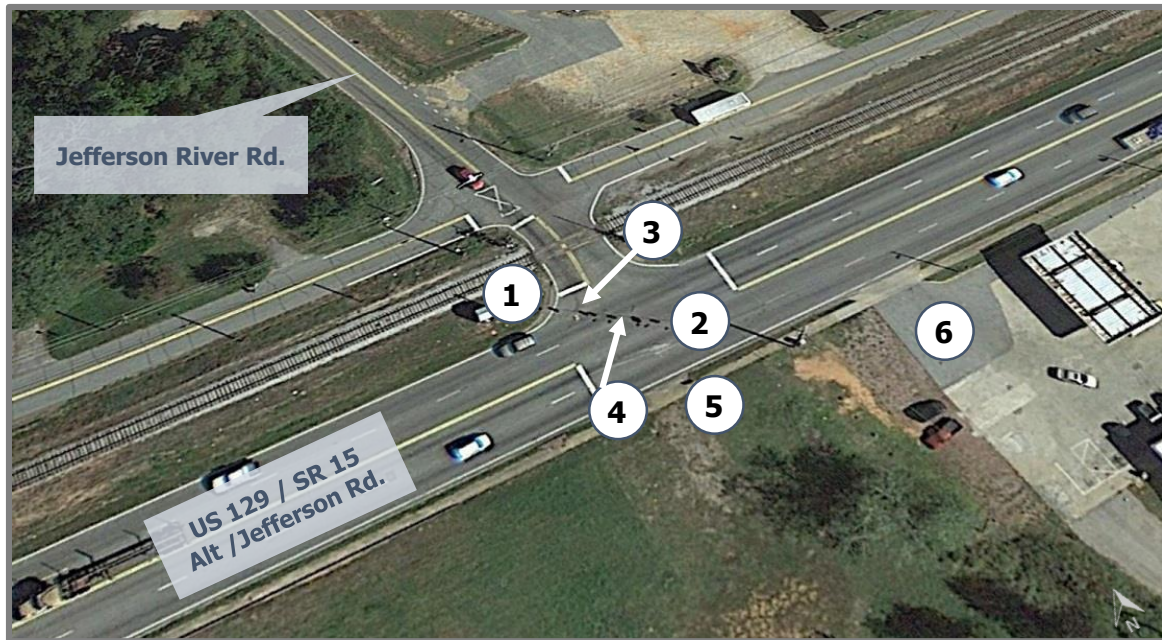


FIGURE 36. DIAGRAM OF RECOMMENDATIONS FOR JEFFERSON RIVER ROAD.

4.6 @ CAMAK DRIVE

4.6.1 FINDINGS & OBSERVATIONS

1. This intersection is unsignalized and is located in a **horizontal and vertical curve**, creating possible **sight distance issues** for motorists traveling along US 129/SR 15 Alt/Jefferson Road and those turning from Camak Drive onto the study corridor.
2. There are **no turn lanes** at the intersection.
3. North of the intersection, near the car wash, the **advanced warning sign** for the intersection (for southbound traffic on the study corridor) is **damaged**.
4. There is a **high volume of heavy trucks** at this intersection.
5. On the southwest corner of the intersection, there is a **guardrail** adjacent to the church property. The guardrail is **not tall enough** and **does not comply with safety standards**.
6. There is **no buffer along the sidewalks** on the west side of the study corridor, placing **pedestrians very close to the travel lanes**.
7. There are two **sign posts** at the church (at the southwest corner of the intersection) that are **missing sign faces**.



FIGURE 38. DAMAGED INTERSECTION AHEAD AND RAILROAD CROSSING SIGN.

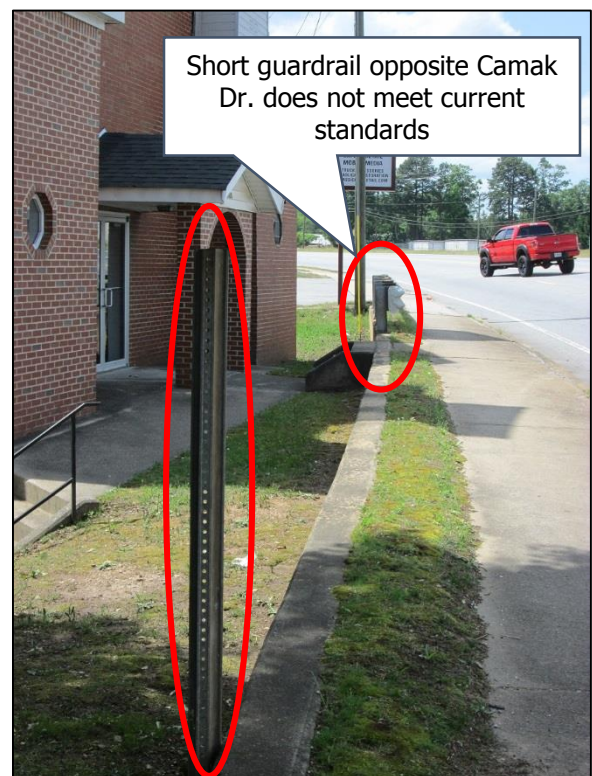


FIGURE 37. EMPTY SIGN POST, SHORT GUARDRAIL, AND SIDEWALK WITH NO BUFFER NEXT TO TRAVEL LANES IN FRONT OF ST. JAMES BAPTIST CHURCH OPPOSITE OF CAMAK DRIVE.

4.6.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Repair or replace the advanced warning sign for the intersection.	Moderate	Low	Short Term	Low
2. Remove the empty sign posts in front of the church near the intersection.	Moderate	Low	Short Term	Low
3. Remove the existing guardrail at the intersection and replace with a guardrail that meets current standards.	High	Moderate	Short Term	Moderate
4. Create a buffer or barrier along the sidewalks at the intersection.	High	Moderate	Intermediate	Moderate
5. Investigate the possibility of closing the intersection or converting the intersection to a right-in/right-out only. Camak Drive connects to Jefferson River Road and motorists could use the signal at that intersection for access to US 129/SR 15 Alt/Jefferson Road.	High	Moderate	Intermediate	Moderate

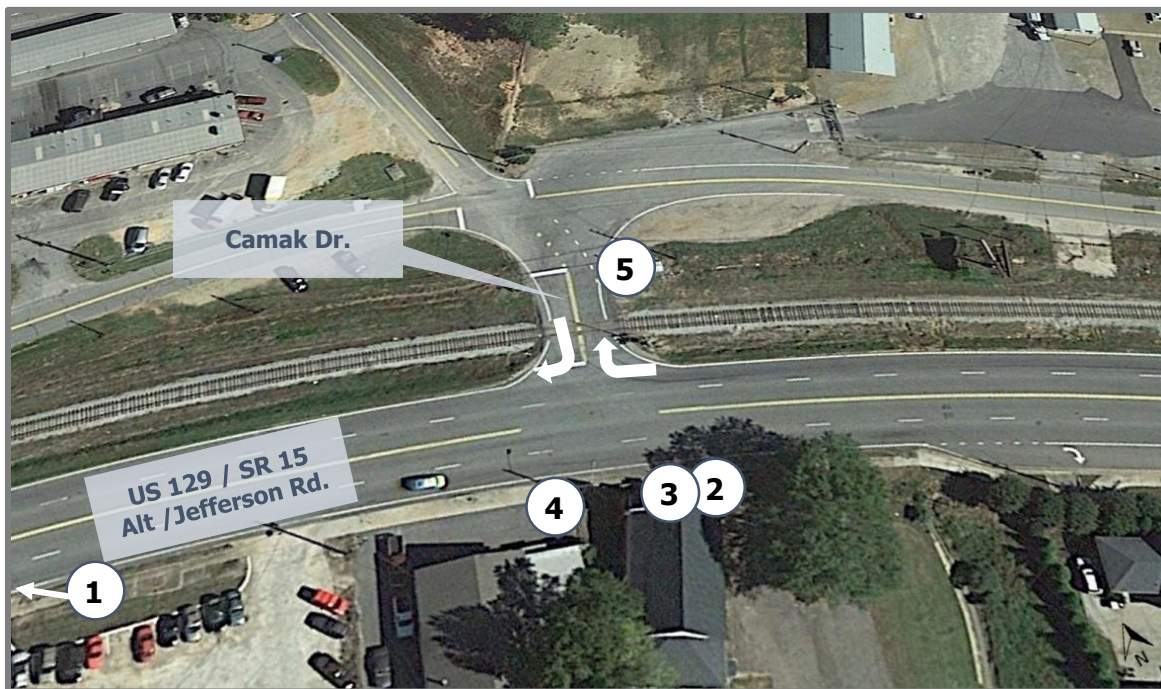


FIGURE 39. DIAGRAM OF RECOMMENDATIONS FOR CAMAK DRIVE.

4.7 @ PUTTERS DRIVE

4.7.1 FINDINGS & OBSERVATIONS

1. There is a right-turn lane for southbound vehicles along the study corridor to access Putters Drive. This, combined with the fact that the intersection is **located along a horizontal curve** on US 129/SR 15 Alt/Jefferson Road, creates **limited sight distance** for vehicles turning from Putters Drive onto the study corridor.
2. There is a painted island at this intersection that has both a stop sign for vehicles turning left (northbound) off of Putters Drive and a yield sign for drivers turning right (southbound).
3. South of Putters Drive, near the Kinder Morgan Athens Oil terminal, is a **faded, worn sign** for northbound traffic that reads, **"Watch for Stopped Trucks."** The sign is likely intended to warn drivers about large tanker trucks waiting to cross the railroad tracks or access the oil terminal.



FIGURE 41. LIMITED SIGHT DISTANCE FROM PUTTERS DRIVE.



FIGURE 40. FADED, WORN SIGN ADVISING MOTORISTS OF POSSIBLE STOPPED TRUCKS AHEAD.



FIGURE 42. (RIGHT) VIEW LOOKING SOUTHBOUND ACROSS PUTTERS DRIVE.

4.7.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Investigate sight distance issues at the intersection and consider converting Putters Drive to right-in/right-out. Implement if determined to be feasible.	High	Moderate	Intermediate	Moderate
2. Replace the “Watch for Stopped Trucks” sign so that it is more visible and reflective.	Moderate	Low	Short Term	Low



FIGURE 43. DIAGRAM OF RECOMMENDATIONS FOR PUTTERS DRIVE.

4.8 @ CRESCENT ROAD

4.8.1 FINDINGS & OBSERVATIONS

1. There is **no street sign** for Crescent Road.
2. **Debris and sediment** was observed in the roadway, indicating **poor drainage at the intersection**.
3. On US 129/SR 15 Alt/Jefferson Road just north of Crescent Road, there is a **driveway that is too close to the intersection**.



FIGURE 44. DEBRIS AND SEDIMENT ON SIDEWALK NORTH OF CRESCENT ROAD.

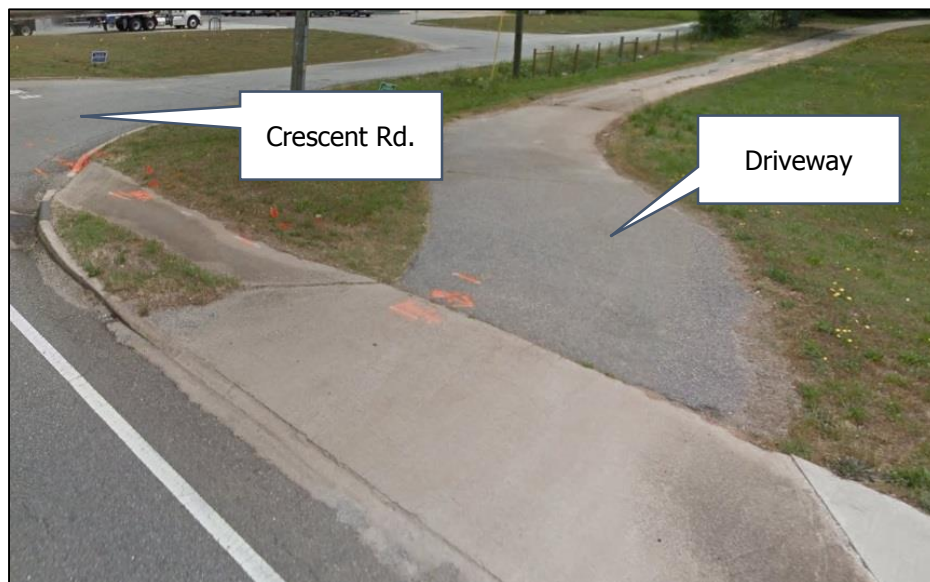


FIGURE 45. DRIVEWAY TOO CLOSE TO INTERSECTION AT CRESCENT ROAD.

4.8.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Install a post-mounted street name sign for Crescent Road at the intersection.	High	Low	Short Term	Low
2. Investigate and repair the drainage issues at the intersection if warranted.	Moderate	High	Intermediate	Moderate
3. Reconfigure or re-locate the driveway to have its access point on Crescent Road rather than on the study corridor.	High	Moderate	Intermediate	Moderate

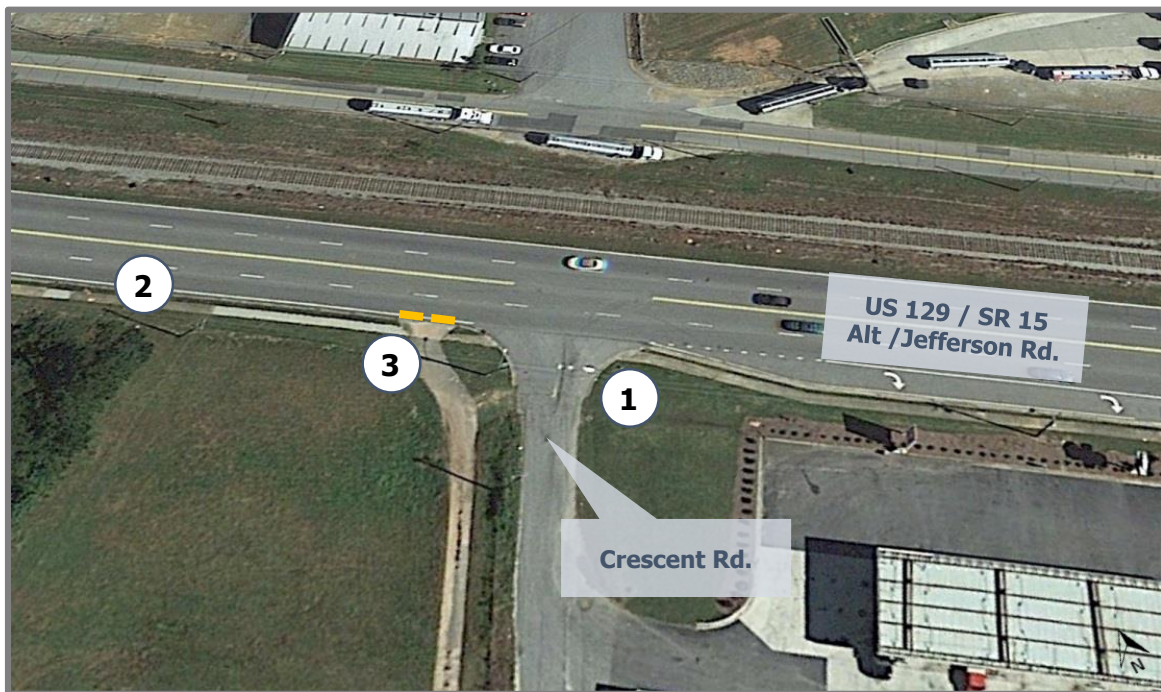


FIGURE 46. DIAGRAM OF RECOMMENDATIONS FOR CRESCENT ROAD.

4.9 @ CRESCENT LANE

4.9.1 FINDINGS & OBSERVATIONS

1. Crescent Lane is a **private road**.
2. **Sediment** from the retaining wall at the south of the intersection was observed **on the sidewalk**.
3. Just south of Crescent Lane, a **speed limit sign blocks the "Intersection Ahead" sign** for Kathwood Drive from some angles.

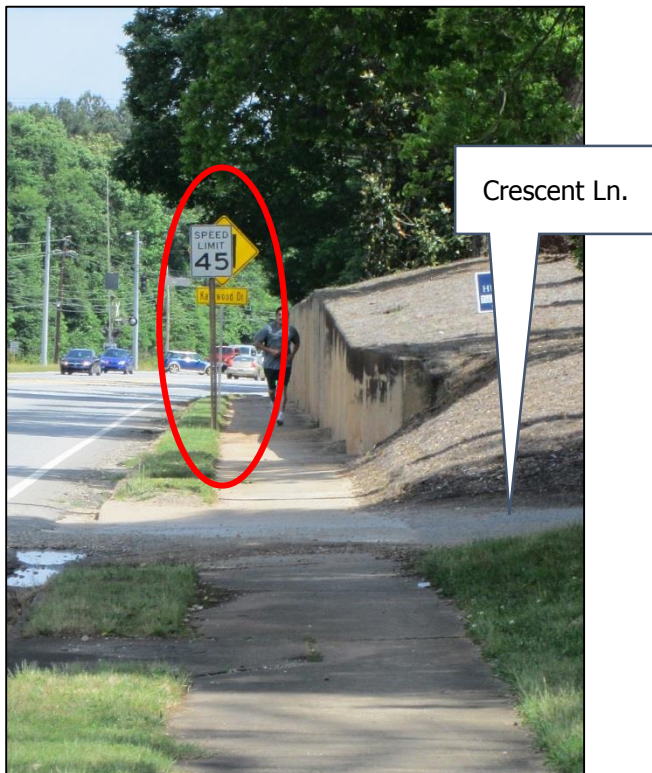


FIGURE 48. VIEW SOUTHBOUND ALONG SIDEWALK ACROSS CRESCENT LANE. NOTE SIGN BLOCKING OTHER SIGN.



FIGURE 47. CLOSE-UP OF SEDIMENT FROM RETAINING WALL ON THE SIDEWALK.

4.9.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Clear the sediment from the sidewalk and repair the retaining wall at the intersection.	Moderate	Low	Short Term	Low
2. Relocate speed limit and "Intersection Ahead" signs so they do not block one another.	Moderate	Low	Short Term	Low

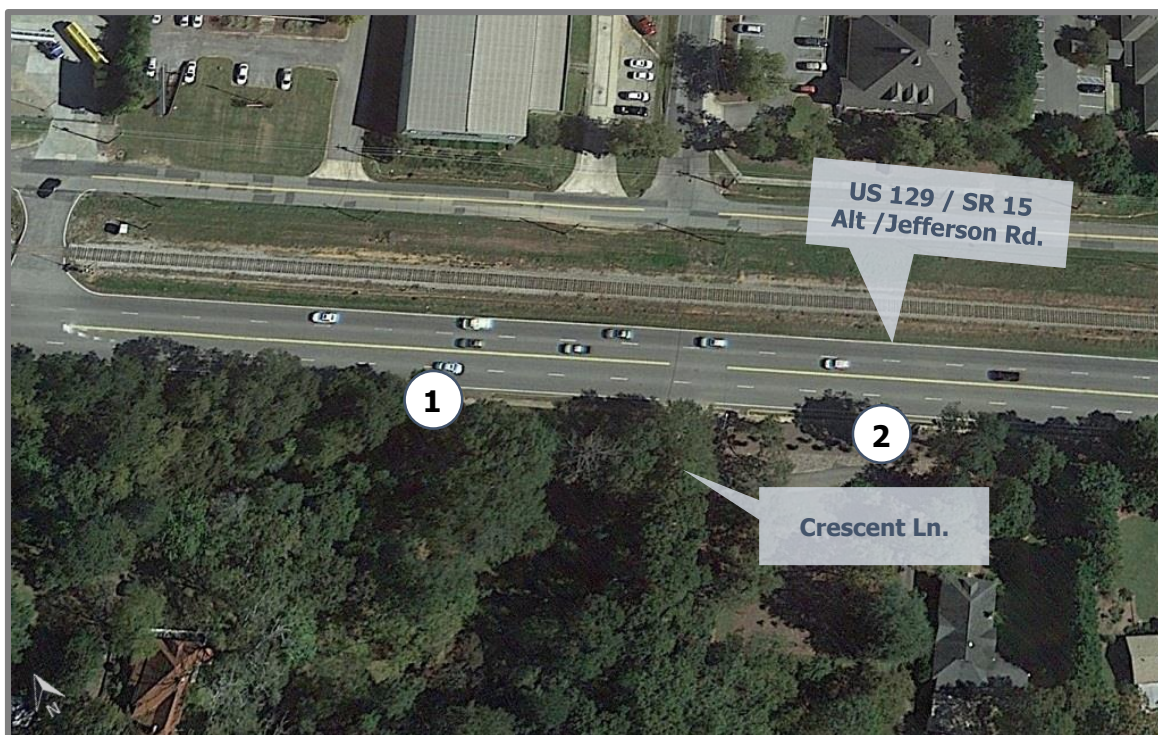


FIGURE 49. DIAGRAM OF RECOMMENDATIONS FOR AREA AROUND CRESCENT LANE.

4.10 @ MOSS SIDE DRIVE

4.10.1 FINDINGS & OBSERVATIONS

1. There is **no advanced warning sign** for the intersection.
2. There are **sight distance issues** for vehicles turning from Moss Side Drive onto US 129/SR 15 Alt/Jefferson Road. This is due to the **retaining wall** on the northwest corner of the intersection and **overhanging vegetation** on the southwest corner of the intersection.
3. Moss Side Drive **connects with Trinity Place to the south**, providing a signalized intersection that could be used for safer access to northbound US 129/SR 15 Alt/Jefferson Road if needed.



FIGURE 50. LIMITED SIGHT DISTANCE FROM MOSS SIDE DRIVE (LOOKING NORTHBOUND).



FIGURE 51. VIEW SOUTHBOUND ACROSS MOSS SIDE DRIVE.

4.10.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Install an advanced warning "Intersection Ahead" sign for Moss Side Drive in both directions.	High	Low	Short Term	Low
2. Trim vegetation at the intersection to improve visibility south of the Moss Side Drive on the west side of US 129/SR 15 Alt/Jefferson Road.	High	Low	Short Term	Low
3. Investigate sight distance at the intersection and consider converting Moss Side Drive to right-in/right-out, directing northbound traffic to the signal at Trinity Place. Implement if determined to be feasible.	High	Moderate	Intermediate	Moderate

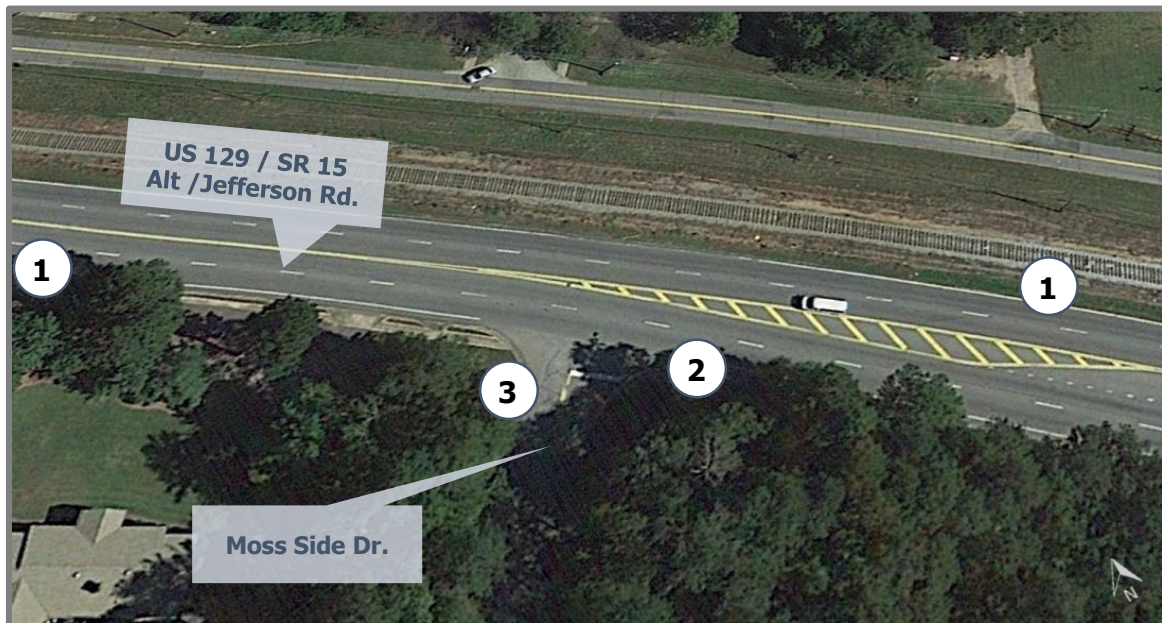


FIGURE 52. DIAGRAM OF RECOMMENDATIONS FOR MOSS SIDE DRIVE.

4.11 @ KATHWOOD DRIVE

4.11.1 FINDINGS & OBSERVATIONS

1. Kathwood Drive has **good connectivity** with several other roads in the vicinity and as such, experiences a decent volume of vehicular traffic.
2. The audit team observed a **substantial amount of traffic waiting at the signal** on Kathwood Drive during the field inspection (in the middle of the afternoon). After a full green cycle, the team counted more than 12 vehicles waiting at the signal on Kathwood Drive to access US 129/SR 15 Alt/Jefferson Road.
3. The **traffic signal heads** at the intersection appear to be **hanging too low** from the overhead wires.



FIGURE 53. LOW-HANGING TRAFFIC SIGNALS AT KATHWOOD DRIVE.



FIGURE 54. VEHICLES WAITING AT THE TRAFFIC SIGNAL ON KATHWOOD DRIVE.

4.11.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Investigate the height of the traffic signal heads and adjust if needed.	High	Low	Short Term	Low
2. Conduct a study to determine the feasibility of closing the intersection at Kathwood Drive and US 129/SR 15 Alt/Jefferson Road or converting Kathwood Drive to right-in/right-out. This would reduce the potential number of conflict points along the RSA corridor. Implement if determined to be feasible. <i>Note: One potential barrier to this recommendation is the substantial volume of traffic that already uses Kathwood Drive for access to US 129/SR 15 Alt/Jefferson Road. Traffic counts may need to be considered.</i>	Moderate	Low	Short Term	Low

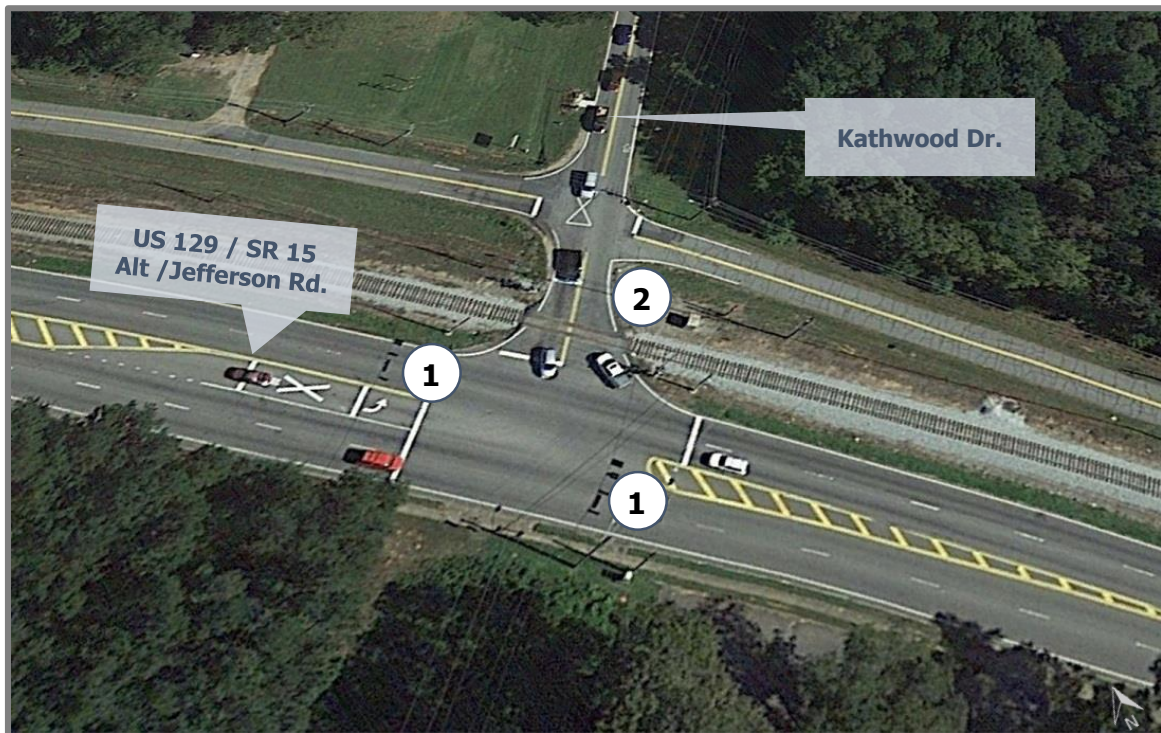


FIGURE 55. DIAGRAM OF RECOMMENDATIONS FOR KATHWOOD DRIVE.

4.12 @ TRINITY PLACE / COUNTRY CLUB DRIVE

4.12.1 FINDINGS & OBSERVATIONS

1. Traveling southbound and northbound, the **advanced “Intersection Ahead” and railroad crossing warning signs** for Trinity Place **do not indicate Country Club Drive** to the east of the study corridor.
2. The **reduced speed limit warning sign** for southbound traffic is **damaged** (about 1,000 feet north of Trinity Place).
3. The **sidewalks** on the west side of US 129/SR 15 Alt/Jefferson Road are **not aligned correctly** across Trinity Place, due to the right-turn only lane from the study corridor onto Trinity Place.



FIGURE 57. SIGN MISSING REFERENCE TO ATHENS COUNTRY CLUB.



FIGURE 56. SIDEWALKS INCORRECTLY ALIGNED FORCE PEOPLE ON THE SIDEWALK INTO TRAVEL LANES.



FIGURE 58. VIEW SOUTHBOUND ACROSS TRINITY PLACE/COUNTRY CLUB DRIVE.

4.12.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Add a name plate for Country Club Drive to the advanced warning signs for Trinity Place north and south of the intersection.	Moderate	Low	Short Term	Low
2. Replace the reduced speed limit warning sign for southbound vehicles north of Trinity Place.	Moderate	Low	Short Term	Low
3. Realign the sidewalks at the west side of the intersection, across Trinity Place.	High	Moderate	Intermediate	Moderate

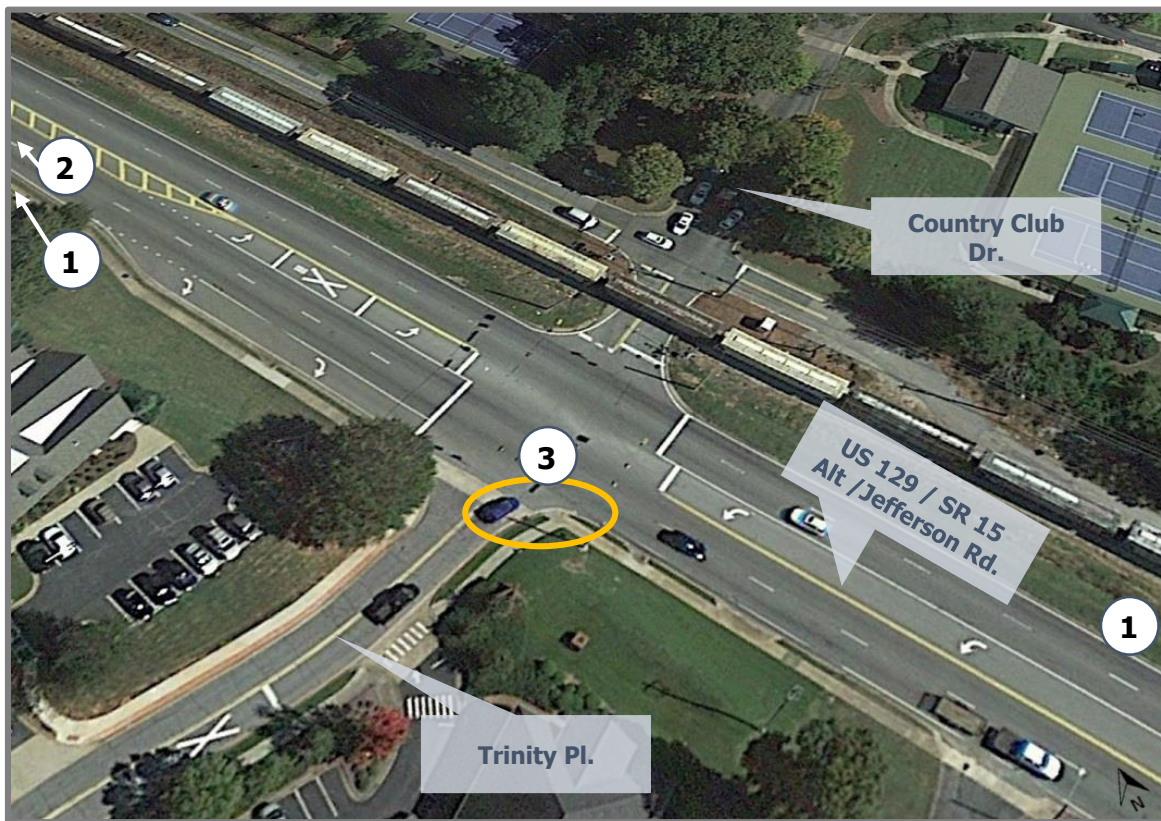


FIGURE 59. DIAGRAM OF RECOMMENDATIONS FOR TRINITY PLACE/COUNTRY CLUB DRIVE.

4.13 @ SOUTH HOMEWOOD DRIVE

4.13.1 FINDINGS & OBSERVATIONS

1. The **pedestrian ramps** across South Homewood Drive are **oriented towards the travel lanes** of the roadway.
2. The **stop bar** on South Homewood Drive is **too close to the intersection**.
3. The **guardrail** on the east side of US 129/SR 15 Alt/Jefferson Road **does not extend far enough** to the north.



FIGURE 60. SIDEWALKS ACROSS S. HOMEWOOD DRIVE DO NOT ALIGN.



FIGURE 61. PEDESTRIAN RAMPS DO NOT ALIGN AND STOP BAR IS AHEAD OF PEDESTRIAN RAMP ON SOUTHWEST CORNER.

4.13.2 RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Move the stop bar on South Homewood Drive further back from the intersection.	High	Low	Short Term	Low
2. Realign the pedestrian ramps across South Homewood Drive. Consider adding a right-turn lane on South Homewood Drive during the re-alignment to create a safer pedestrian crossing and improve sight distance for vehicles turning left onto northbound US 129/SR 15 Alt/Jefferson Road.	Moderate	Moderate	Intermediate	Moderate
3. Extend the guardrail on the east side of the study corridor farther to the north.	High	Low	Short Term	Low

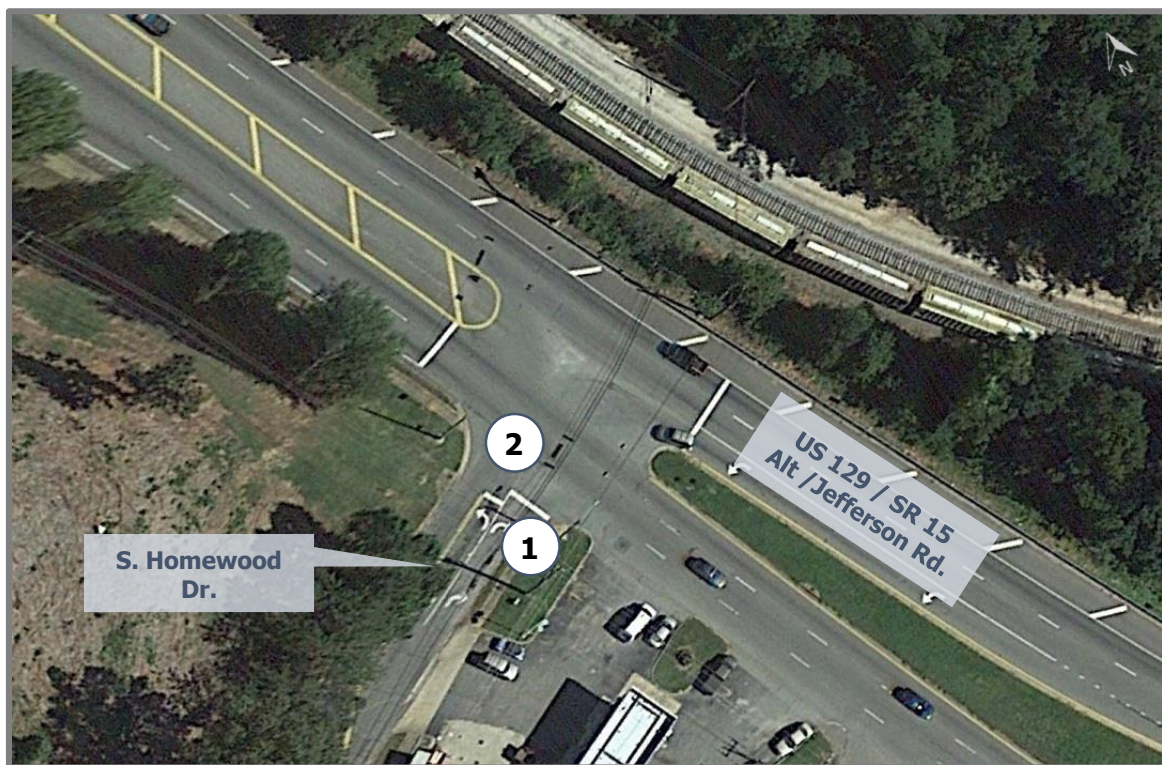


FIGURE 62. DIAGRAM OF RECOMMENDATIONS FOR S. HOMEWOOD DRIVE.

5 CONCLUSION

Located just outside of downtown Athens, the SR 129/SR 15 Alt/Jefferson Road corridor serves a variety of users, including commuters, day-to-day drivers, heavy trucks, and people on foot. It connects the City of Athens with area highways and serves as a link between a more urban environment on the south end and a less dense, suburban setting at the north end. In the span of just over two miles, the speed limit shifts from 55 mph near Lavender Road to 40 mph near Trinity Place/Country Club Drive. Within the corridor are a variety of uses, including retail, industrial facilities, restaurants, churches, residential neighborhoods, and recreational attractions. The wide range of uses in the area, combined with the changes in road design and speed limit within the study corridor, present several safety challenges.

Based upon analysis of existing conditions and firsthand observation, the top concerns of the audit team revolve around high vehicle speeds, the lack of turn lanes at key intersections, some areas of limited sight distance, and the geometry of the intersections that cross the railroad tracks parallel to the study corridor. Given these constraints and existing conditions, the audit team sought to identify a mix of technical enhancements and traffic control measures that will improve safety for all users without negatively impacting capacity.

Following the conclusion of the audit, GDOT and representatives from Athens-Clarke County will coordinate to prioritize next steps and to determine responsibility for implementation of recommendations based upon available resources as appropriate.

In the short-term, steps can be taken to improve pedestrian facilities, such as the installation of ADA-compliant ramps, signals, and crosswalks, as well as replacing pavement markings and RPMs throughout the corridor. Consistent and visible signage will also improve safety by making it easier for motorists to read and follow signs. Changes and improvements should be made consistently throughout the corridor. For example, crosswalks are currently missing across some side streets and should be provided consistently along the corridor. Over the next two or so years, the audit team recommends increasing the length of left-turn lanes on the corridor to increase storage capacity and potentially reduce the likelihood of rear-end crashes.

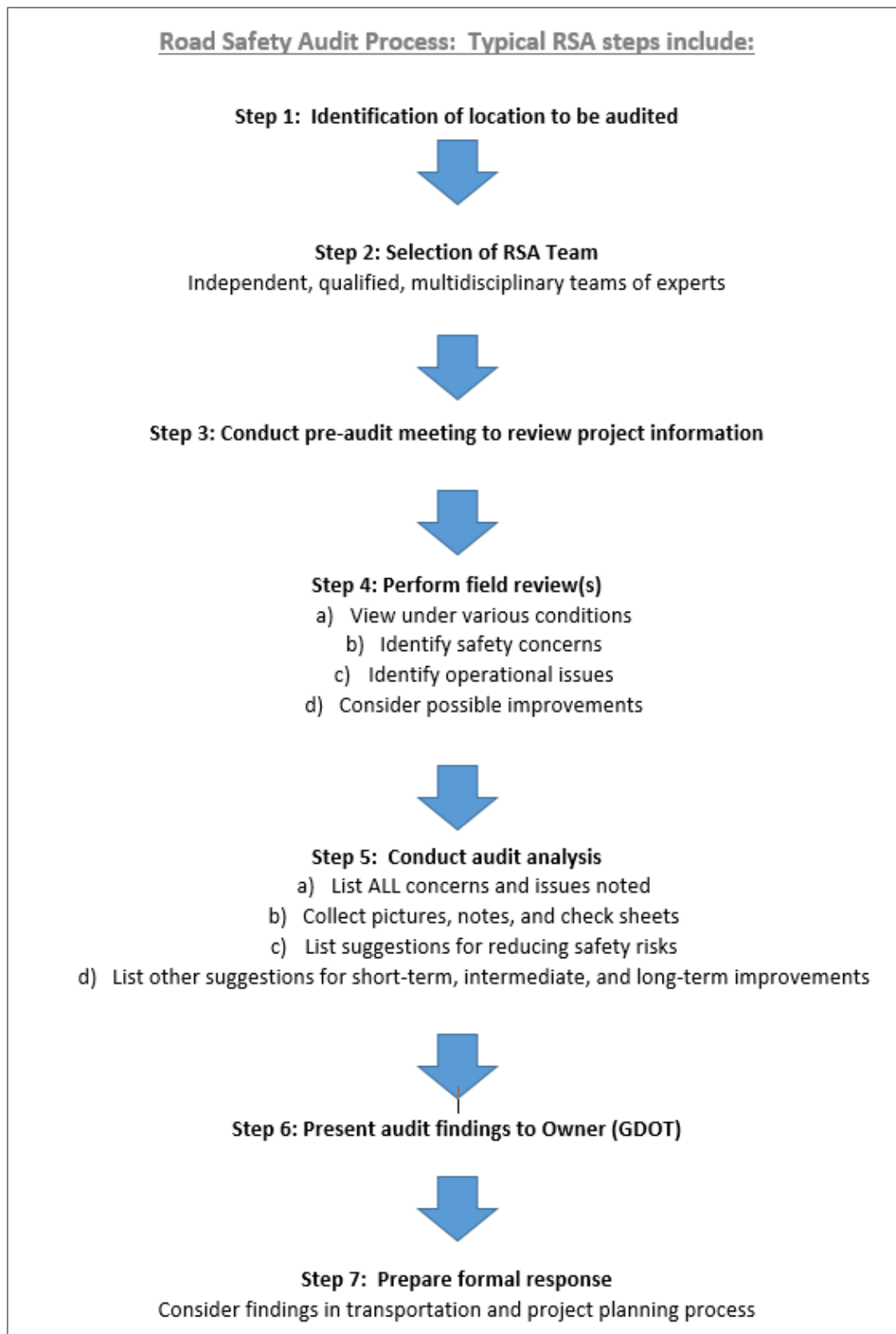
In the longer term, the audit team recommends studying the feasibility of reducing lane widths and installing a raised median throughout the corridor to help channelize turning movements and reduce vehicle speeds. It is also recommended to conduct a wider access study of the corridor to identify opportunities to reduce potential conflicts at intersections, by potentially (a) closing off one or more of the intersections that cross the railroad tracks or (b) reconfiguring these intersections.

APPENDICES

- A. RSA Process Diagram
- B. Audit Invitation Letter
- C. Audit Meeting Agenda
- D. Audit Meeting Sign-in Sheet
- E. Select Crash Data
- F. Resources on Raised Medians
- G. Recommendations At-a-Glance

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APPENDIX A. RSA PROCESS DIAGRAM



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APPENDIX B. RSA MEETING INVITATION

Thoresen, Erin

Subject: Road Safety Audit for SR 15 ALT/US 129 from Homewood Drive to N of Lavender Road, Clark County

Location: ACC Transportation & Public Works Department, 2nd Floor Auditorium, 120 W. Dougherty St., Athens, GA 30601

Start: Tue 5/3/2016 1:30 PM

End: Tue 5/3/2016 8:00 PM

Recurrence: (none)

Meeting Status: Accepted

Organizer: Osborn, Lakeshia D.

Dear Road Safety Audit Participant:

The Georgia Department of Transportation has determined that a Road Safety Audit (RSA) is appropriate for the location described above. You have been identified as a potential member of the Audit team because of your expertise and experience in local conditions, traffic engineering, safety, roadway design, traffic operations, human factors or some other knowledge specialty area that may be useful in identifying practical solutions for this location. Therefore, your participation is requested for the Audit.

The RSA for this location is expected to require one day of your time. Realizing this is a major investment of effort, please accept this letter as an expression of appreciation for your consideration and hopefully your participation. A RSA is a formal safety performance examination of a roadway section or intersection performed by an independent, qualified and multidisciplinary team of experts to identify potential solutions to improve the safety of the selected roadway location. The design of the location will be considered, however, this is NOT a design activity. Consequently, this is indeed a positive opportunity to identify short-term, intermediate and long-term solutions which can be considered for implementation by the Department in cooperation with the local governments and the community in the immediate vicinity of the location.

As stated above, it is anticipated that this RSA will require one day your time, and it will be performed on Tuesday, May 3. It will begin at 1:30 PM with a briefing meeting held at the **Athens-Clark County Public Works Office**. During this time we will furnish all the materials and information you will need to perform the field inspection which will occur directly after the briefing. The field inspection will be conducted along the corridor of SR 15 ALT/US 129 from Homewood Drive to N of Lavender Road in Clark County, GA. Following the inspection, there will be a debriefing at the meeting location where observations and recommendations will be consolidated. A night time inspection will be performed after-dark. Your participation in the after-dark field visit is encouraged but, not required. The purpose of the after-dark inspection will be to determine the existing conditions at the site under limited visibility conditions and, to identify those specific improvements related to nighttime operations. A final report including recommendations for improvements and will be returned to you and a follow-up meeting will be set up to discuss further actions by the Department and/or the local government.

Again, your participation in this activity is greatly appreciated. A response to let us know your availability for the meetings and inspections will also be greatly appreciated. If there are any questions please feel free to contact me as my information can be found below.

*****Parking at the office is limited so please carpool if possible.*****

Thanks,

Lakeshia Osborn

Georgia Department of Transportation
Office of Traffic Operations
(404) 635-2464
(404) 635-2960 (fax)

100 years ago – on August 16, 1916 – the seeds were planted for what would grow into the Georgia Department of Transportation. With the official launch of the Centennial celebration, please join us as we explore GDOT's role in getting Georgia out of the mud - from humble beginnings to today's modern transportation system. *Celebrating a century of simply the best in safety, service and innovation.* Visit <http://www.dot.ga.gov/AboutGDOT/gdotcentennial> #GDOT100

APPENDIX C. AUDIT MEETING AGENDA



G R E S H A M
S M I T H A N D
P A R T N E R S

US 129 / SR 15 Alt. / Jefferson Road
From Homewood Drive to Lavender Road
Road Safety Audit
Athens-Clarke County, GDOT District 1

GDOT Statewide Roadway Safety Audits
Project #: CSSTP-0011-00(651)
PI No. 0011651
GS&P Project No: 28121.14

MEETING DATE: May 3, 2016

MEETING TIME: 1:30 PM –8:00 PM

LOCATION: Athens-Clarke County Public Works Department
120 W. Dougherty St., Athens, GA 30601

AGENDA

1. Introduction of attendees (1:30 PM)
2. RSA Process
 - a. Overview of RSA process
 - b. Goals/Expectations for this RSA
3. General Discussion of Road Safety Audit for US 129 / SR 15 Alt. / Jefferson Road
 - a. Overview of Study Area
 - b. Reason(s) for Road Safety Audit
 - c. Known Issues
 - d. Crash Data

Design Services For The Built Environment

2325 Lakeview Parkway, Suite 300 / Alpharetta, Georgia 30009-7940 / Phone 770.754.0755 / www.greshamsmith.com



AGENDA

Page 2

4. Field Inspection (on-site by 2:30 PM at Homewood Shopping Center)
 - a. Use Checklist – focus on safety issues
 - i. Identification and enumeration of issues
 - ii. Identification and listing of short-term, intermediate, and long-term solutions and safety enhancements along corridor
 - b. Take notes – document existing conditions and potential solutions
5. Field inspection debriefing – at Athens-Clarke County Public Works (arrive by 5:00 PM)
 - a. Session to identify, enumerate, and list safety deficiencies and potential solutions
6. Adjourn at 6:30 PM
7. Nighttime Inspection – *Optional (approximately 8:45 PM)*

APPENDIX D. AUDIT MEETING SIGN-IN SHEET



Road Safety Audit
Sign-In Sheet
US 129 / SR15 Alt. / Jefferson Road: from Homewood Drive to Lavender Road – Athens-Clarke County
May 3, 2016

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APPENDIX E. SELECT CRASH DATA

Crash data provided by GDOT for the years 2011-2015 for US 129/SR 15 Alt/Jefferson Road between Lavender Road and South Homewood Drive was used to generate the following tables. These tables represent select data, not all crashes within the study area during this timeframe.

Accident ID	Date	Time	Route	Intersecting Route	Injuries	Fatalities	Manner of Collision	Light	Surface
4783844	3/26/14	2:04:00 PM	JEFFERSON RD SR 15	CAMAK DR	0	1	Rear End	Daylight	Dry
5248818	4/10/15	9:19:00 AM	15 ALT JEFFERSON RD	PUTTERS DR	2	1	Angle	Daylight	Dry
5441870	9/24/15	12:30:00 PM	GA 15 ALT JEFFERSON RD SR 15 RD	JEFFERSON RIVER RD	1	2	Head On	Daylight	Dry

Fatal Crashes

Accident ID	Date	Time	Route	Intersect. Route	Injuries	Fatalities	First Harmful Event	Light	Surface
5239259	3/30/15	6:01:00 PM	ALT JEFFERSON SR 15 RD	S. HOMEWOOD DR	1	0	Pedal-Cycle	Daylight	Dry
5237840	3/31/15	6:13:00 PM	ALT JEFFERSON SR 15 RD	TRINITY PL	1	0	Pedal-Cycle	Daylight	Dry
5358007	6/30/15	6:11:00 AM	JEFFERSON RD	WHITEHEAD RD	1	0	Pedestrian	Daylight	Dry

Pedestrian and Bicycle Crashes

Accident ID	Date	Time	Route	Intersecting Route	Injuries	Fatalities	Manner of Collision	Light	Surface
4219634	9/6/2012	4:34:00 PM	ALT JEFFERSON SR 15 RD	CAMAK DR	5	0	Angle	Daylight	Dry
5289308	5/14/2015	5:39:00 PM	GA15 ALT JEFFERSON RD	CRESCENT DR	7	0	Rear End	Daylight	Dry
5560782	12/18/2015	7:49:00 PM	ALT JEFFERSON SR 15 RD	JEFFERSON RIVER RD	6	0	Angle	Dark-Lighted	Dry

Crashes that Resulted in 5 or more Injuries

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APPENDIX F. RECOMMENDATIONS AT-A-GLANCE

CORRIDOR-WIDE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Repair and/or install ADA-compliant sidewalks as needed along the west side of the study corridor to provide consistent, predictable pedestrian access and safety.	High	Moderate	Intermediate	Moderate
2. Install ADA-compliant pedestrian facilities at intersections, including curb ramps, truncated domes, and pedestrian push button signals.	High	Moderate	Short Term	Moderate
3. Install crosswalks across all side streets where sidewalk is present to alert motorists to the potential presence of pedestrians.	High	Low	Short Term	Low
4. Replace pavement markings and raised pavement markers (RPMs) throughout the study corridor.	High	Low	Short Term	Low
5. Install reflective backplates on traffic signals along the corridor to improve visibility of signals.	Moderate	Low	Short Term	Moderate
6. Install horizontal double-headed arrow signs (W1-7) where missing to indicate to drivers that they can only turn right or left onto the study corridor at T-intersections (see Figure 18): <ul style="list-style-type: none"> • Lavender Road • Jefferson River Road • Putters Drive • Moss Side Drive • S. Homewood Drive 	Moderate	Low	Short Term	Low
7. Trim vegetation as needed to ensure it does not block signs or inhibit the view of driveways, signs, or signals along the corridor.	High	Low	Short Term	Low
8. Study opportunities to install left-turn lanes at key intersections and implement as appropriate (using existing hatched taper areas where possible).	Moderate	Moderate	Intermediate	Moderate

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
9. At intersections with railroad crossings, move the stop bars on the east leg of the intersection to the east side of the railroad tracks, to prevent cars from stopping on tracks while waiting to turn.	High	Low	Short Term	Low
10. Study the feasibility of narrowing existing lanes to 11 feet in width to “calm traffic” and reduce vehicle speeds. This may provide an opportunity to create a wider multi-use path where the sidewalk exists. Restripe lanes if determined to be feasible.	High	Low	Short Term	Low
11. Study the feasibility of installing a raised concrete median (with accommodations for driveways and U-turns) to slow traffic and streamline turning movements within the corridor.	High	Low	Low	Low
12. Design and construct a raised median if determined to be feasible.	High	High	Long Term	High
13. Study the feasibility of installing a center-line rumble strip, in lieu of a concrete median, to reduce the potential for head-on collisions along the RSA corridor.	Moderate	Low	Low	Moderate
14. Install additional street lighting mid-block along the corridor, particularly north of Jefferson River Road and south of Kathwood Drive.	High	Moderate	Intermediate	Moderate
15. Examine opportunities to improve connectivity to planned bicycle lanes along Prince Avenue to the south. Coordinate with Bike Athens to determine the best connections.	Moderate	Low	Short Term	Low
16. In conjunction with recommendations from the Prince Avenue RSA, consider the use of additional pedestrian safety and traffic calming elements in the southern portion of the study corridor, where there is a greater intensity of development and higher pedestrian activity.	High	Moderate	Intermediate	Moderate

LAVENDER ROAD RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Remove or reposition the "Do Not Enter" sign on the east side of the intersection.	Moderate	Low	Short Term	Low
2. Adjust the angle of the yield sign in the southwest quadrant to make it more visible to motorists turning right from Lavender Road onto the study corridor.	Moderate	Low	Short Term	Low
3. Replace the street sign for Lavender Road with a reflective street sign.	High	Low	Short Term	Low
4. Consider replacing the painted island with a concrete one to channelize turns and improve visibility of the side street.	Moderate	Moderate	Intermediate	Moderate
5. Consider redesigning the intersection to remove the skew angle. Identify and carry out implementation steps as appropriate.	High	High	Long Term	High

WHITEHEAD ROAD RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the "Low Ground Clearance Sign" to the southeast corner of the intersection.	Moderate	Low	Short Term	Low
2. Install longer left turn lanes with greater queuing capacity at the intersection.	High	Moderate	Intermediate	Moderate
3. Restripe the hatched taper area to create a left-turn lane from northbound US 129/SR 15 Alt/Jefferson Road into the Shell gas station.	High	Moderate	Intermediate	Moderate
4. Convert the northernmost driveway at the Shell gas station to right-in/right-out.	High	Low	Short Term	Low
5. Consider reconfiguring the driveway to the former automobile repair shop (northwest quadrant), so that turning movements at the business do not interfere with traffic flow. This could be done by closing off or tapering part of the driveway to force people to exit farther from the intersection.	Moderate	Moderate	Intermediate	Moderate

FIREFIGHTER COURT RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the stop bar across Firefighter Court closer to the intersection.	High	Low	Short Term	Low
2. Adjust the angle of the "Do Not Enter" sign to face the proper direction.	Moderate	Low	Short Term	Low

JEFFERSON RIVER ROAD RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Relocate the "Low Ground Clearance Sign" to the southeast corner of the intersection.	Moderate	Low	Short Term	Low
2. Install an overhead street name sign for Jefferson River Road.	High	Low	Short Term	Low
3. Relocate the blocked signal head to allow the signal to be more visible from Jefferson River Road.	High	Low	Short Term	Low
4. Consider re-installing the traffic signals on mast arms or separate overhead wires to reduce visual clutter and improve visibility of the signals.	High	Moderate	Intermediate	Moderate
5. Install a street light at the intersection.	High	Moderate	Intermediate	Moderate
6. Consider realigning the driveway for the gas station to tie into the signalized intersection or converting the northernmost driveway to right-in/right-out.	High	Moderate	Intermediate	Moderate

CAMAK DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Repair or replace the advanced warning sign for the intersection.	Moderate	Low	Short Term	Low
2. Remove the empty sign posts in front of the church near the intersection.	Moderate	Low	Short Term	Low
3. Remove the existing guardrail at the intersection and replace with a guardrail that meets current standards.	High	Moderate	Short Term	Moderate
4. Create a buffer or barrier along the sidewalks at the intersection.	High	Moderate	Intermediate	Moderate
5. Investigate the possibility of closing the intersection or converting the intersection to a right-in/right-out only. Camak Drive connects to Jefferson River Road and motorists could use the signal at that intersection for access to US 129/SR 15 Alt/Jefferson Road.	High	Moderate	Intermediate	Moderate

PUTTERS DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Investigate sight distance issues at the intersection and consider converting Putters Drive to right-in/right-out. Implement if determined to be feasible.	High	Moderate	Intermediate	Moderate
2. Replace the "Watch for Stopped Trucks" sign so that it is more visible and reflective.	Moderate	Low	Short Term	Low

CRESCENT ROAD RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Install a post-mounted street name sign for Crescent Road at the intersection.	High	Low	Short Term	Low
2. Investigate and repair the drainage issues at the intersection if warranted.	Moderate	High	Intermediate	Moderate
3. Reconfigure or re-locate the driveway to have its access point on Crescent Road rather than on the study corridor.	High	Moderate	Intermediate	Moderate

CRESCENT LANE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Clear the sediment from the sidewalk and repair the retaining wall at the intersection.	Moderate	Low	Short Term	Low
2. Relocate speed limit and "Intersection Ahead" signs so they do not block one another.	Moderate	Low	Short Term	Low

MOSS SIDE DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Install an advanced warning "Intersection Ahead" sign for Moss Side Drive in both directions.	High	Low	Short Term	Low
2. Trim vegetation at the intersection to improve visibility south of the Moss Side Drive on the west side of US 129/SR 15 Alt/Jefferson Road.	High	Low	Short Term	Low
3. Investigate sight distance at the intersection and consider converting Moss Side Drive to right-in/right-out, directing northbound traffic to the signal at Trinity Place. Implement if determined to be feasible.	High	Moderate	Intermediate	Moderate

KATHWOOD DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Investigate the height of the traffic signal heads and adjust if needed.	High	Low	Short Term	Low
2. Conduct a study to determine the feasibility of closing the intersection at Kathwood Drive and US 129/SR 15 Alt/Jefferson Road or converting Kathwood Drive to right-in/right-out. This would reduce the potential number of conflict points along the RSA corridor. Implement if determined to be feasible. <i>Note: One potential barrier to this recommendation is the substantial volume of traffic that already uses Kathwood Drive for access to US 129/SR 15 Alt/Jefferson Road. Traffic counts may need to be considered.</i>	Moderate	Low	Short Term	Low

TRINITY PLACE / COUNTRY CLUB DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Add a name plate for Country Club Drive to the advanced warning signs for Trinity Place north and south of the intersection.	Moderate	Low	Short Term	Low
2. Replace the reduced speed limit warning sign for southbound vehicles north of Trinity Place.	Moderate	Low	Short Term	Low
3. Realign the sidewalks at the west side of the intersection, across Trinity Place.	High	Moderate	Intermediate	Moderate

SOUTH HOMEWOOD DRIVE RECOMMENDATIONS & RATINGS

	SAFETY BENEFIT	LEVEL OF EFFORT	TIME FRAME	COST
1. Move the stop bar on South Homewood Drive further back from the intersection.	High	Low	Short Term	Low
2. Realign the pedestrian ramps across South Homewood Drive. Consider adding a right-turn lane on South Homewood Drive during the re-alignment to create a safer pedestrian crossing and improve sight distance for vehicles turning left onto northbound US 129/SR 15 Alt/Jefferson Road.	Moderate	Moderate	Intermediate	Moderate
3. Extend the guardrail on the east side of the study corridor farther to the north.	High	Low	Short Term	Low

APPENDIX G. REFERENCES ON RAISED MEDIANS

Federal Highway Administration. *State Best Practice Policy for Medians*. (FHWA-SA-11-019). Retrieved June 2016 from http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa11019/.

Federal Highway Administration. *Safety Benefits of Raised Medians and Pedestrian Refuge Areas*. (FHWA-SA-10-020). Retrieved June 2016 from http://safety.fhwa.dot.gov/ped_bike/tools_solve/medians_brochure/.

FHWA. *Medians and Pedestrian Crossing Islands in Urban and Suburban Areas*. (FHWA-SA-12-011). Retrieved June 2016 from http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.cfm.

FHWA. *Safety Benefits of Raised Medians and Pedestrian Refuge Areas*. (FHWA-SA-10-020). Retrieved June 2016 from http://safety.fhwa.dot.gov/ped_bike/tools_solve/medians_brochure/medians_brochure.pdf.