SAFE STREETS FOR ALL (SS4A) ACTION PLAN
Safety Countermeasure Fact Sheets
Appendix B

1. Intersection Countermeasures
2. Roadway Departure Countermeasures
3. Pedestrian and Bicycle Countermeasures
4. Speed Management Countermeasures
5. Cross-Cutting Countermeasures

Backplates with Retroreflective Borders

Countermeasure Description

Backplates on traffic signals improve visibility by creating a contrast with the background. Adding a 1- to 3-inch yellow retroreflective border makes them even more noticeable. These backplates help drivers see signals better during both the day and night.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo

Source: South Carolina DOT & FHWA

Safety Benefits
15% reduction in total crashes

Local Context

This treatment can be used on roads with higher speed limits and more traffic (Source: ARC regional safety strategy Plan). It helps improve traffic signal visibility for older drivers and those with color vision deficiencies. It’s also useful during power outages, as it provides a clear stop signal for drivers. Transportation agencies should include backplates with reflective borders in their safety measures at intersections. Adding a reflective border to an existing backplate is a low-cost option. This can be done by using reflective tape or by buying a new backplate with a border already on it. The best way to implement this safety measure is to use it consistently at all signalized intersections within a city or state. Some challenges include installation time and assessing if the existing signal supports can handle the extra wind load from a new backplate. This countermeasure is already being implemented on state routes throughout Fayette county. Within city limits, however, there is still potential to update backplates and make additional improvements.

Source: ARC & FHWA

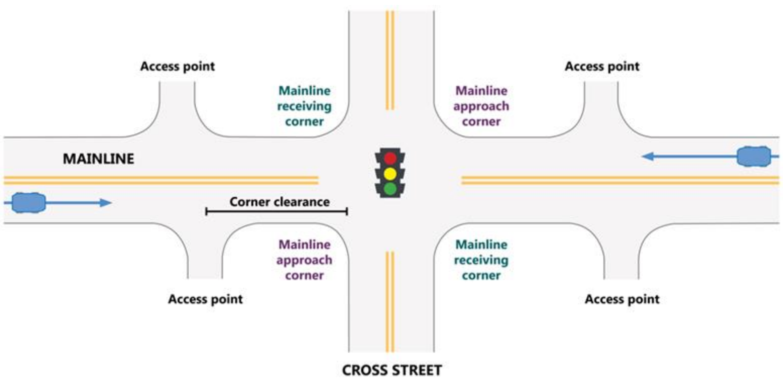
Corridor Access Management

Countermeasure Description

Effective access management involves strategically planning and controlling how people and vehicles enter and exit roadways. This includes carefully considering intersections with other roads and driveways leading to nearby properties. By implementing sound access management practices along a corridor, we can improve safety for all users (drivers, pedestrians, cyclists), encourage walking and biking, and minimize travel delays and traffic congestion.

Implementation Cost	
High	
Medium	✓
Low	

Countermeasure Example Photo



Source: FHWA

Safety Benefits
5-23% reduction in total crashes along two-lane rural roads
25-31% reduction in fatal and injury crashes along urban/suburban arterial

Local Context

The Federal Highway Administration (FHWA) developed crash prediction models to evaluate how different access management strategies affect roadway safety across various environments, including suburban and semi-rural areas like Fayette County. These strategies can be applied individually or in combination to improve safety and traffic flow on local roads.

- **Reduce Access Points:** Close unnecessary driveways, combine multiple driveways, or move them to safer spots.
- **Control Spacing:** Maintain proper distances between intersections and access points.
- **Limit Driveway Movements:** Restrict certain turns (e.g., allow only right-in/right-out).
- **Optimize Driveway Placement:** Position driveways near corners to lower crash rates.
- **Restrict Cross-Road Movements:** Use raised medians to prevent dangerous turns.
- **Improve Intersection Design:** Implement roundabouts or designs that reduce left-turn conflicts.
- **Provide Dedicated Turn Lanes:** Create lanes specifically for left turns, right turns, or two-way left turns.
- **Utilize Local Circulation Roads:** Use lower-speed one-way or two-way roads for local traffic to minimize conflict with main roads.

By implementing these strategies, Fayette County can enhance roadway safety for all users, including drivers, pedestrians, and cyclists, while supporting smoother traffic operations and reducing the likelihood of crashes.

Source: ARC & FHWA

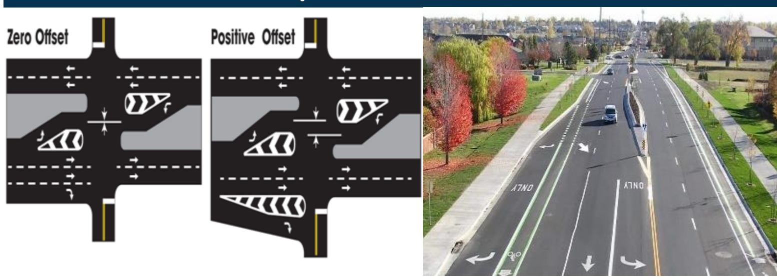
Dedicated left and Right Turn Lanes

Countermeasure Description

Auxiliary turn lanes for both left and right turns enhance intersection safety by separating turning vehicles from the flow of through traffic. These lanes create a designated area for vehicles to decelerate prior to making a turn and for those waiting to execute their turns. Additionally, offsetting the left and right turn lanes increases visibility, significantly boosting safety—particularly when traffic is moving at higher speeds or is less congested.

Implementation Cost	
High	
Medium	✓
Low	

Countermeasure Example Photo



Source: FHWA & City of Greeley, Colorado

Safety Benefits
Left Turn Lane: 28-48% reduction in total crashes
Positive Offset Left-Turn lanes : 36% reduction in fatal and injury crashes
Right Turn Lanes: 14-26% reduction in total crashes

Local Context

At busy intersections in Fayette County, especially where local roads meet major routes like SR 54 or SR 92 adding a dedicated left- and right-turn lanes on the side streets can help reduce traffic conflicts and improve overall safety. This is particularly important in areas experiencing high volumes of turning traffic or where crash data shows a history of turn-related incidents. When planning these turn lanes, it's essential to consider not only vehicle operations but also the safety of pedestrians and cyclists, such as those using multi-use paths in Peachtree City or walking near schools and parks. Offset turn lanes can improve visibility at intersections, but the design must be carefully balanced. Zero or negative offsets may block drivers' sightlines, increasing risk for left-turning vehicles and cyclists. Positive offsets, by contrast, enhance visibility and reduce the chance of serious crashes. By incorporating well-designed turn lanes especially with attention to offset geometry Fayette County can create intersections that are safer and more efficient for all users, whether driving, walking, or biking.

Source: FHWA

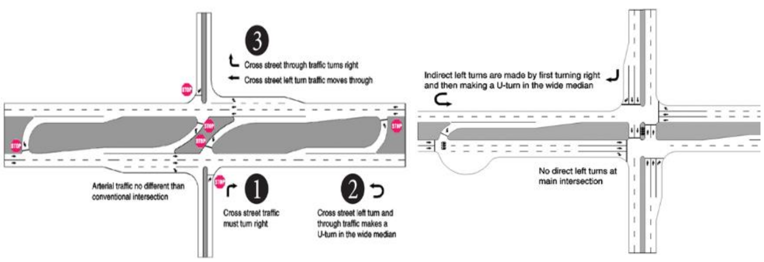
Reduced Left-Turn Conflict Intersections (RCUT)

Countermeasure Description

Reduced Left-Turn Conflict Intersections are innovative geometric designs that reconfigure how left-turn movements are made. By streamlining driver decisions, these designs reduce the risk of high-severity crashes, such as head-on or angle collisions. Two particularly effective designs that use U-turns to facilitate specific left-turn movements are the Restricted Crossing U-Turn (RCUT) and the Median U-Turn (MUT).

Implementation Cost	
High	✓
Medium	✓
Low	

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
Two-way stop Controlled to RCUT: 54% reduction in fatal and injury crashes
Signalized intersection to Signalized RCUT : 22% reduction in fatal and injury crashes
Unsignalized intersection to Unsignalized RCUT : 63% reduction in fatal and injury crashes
MUT : 30% reduction in intersection related injury crash rate

Local Context

The RCUT (Reduced Conflict Intersection)—also known as a J-Turn or Superstreet—replaces direct left turns for minor road traffic with a simpler maneuver. Drivers first make a right turn and then a U-turn at a designated location. This design is highly versatile, functioning effectively in a variety of settings, from rural high-speed roads to busy urban and suburban multimodal corridors. In Fayette County, RCUTs are particularly relevant along high-speed state routes like SR 74 and SR 85, where side street traffic frequently struggles to safely enter or cross the mainline.
The MUT (Median U-Turn Intersection), on the other hand, eliminates direct left turns for major road traffic. Instead, drivers continue straight through the intersection, make a U-turn farther downstream, and then turn right at the main intersection. Both designs improve safety and traffic efficiency by significantly reducing conflicts associated with left-turn movements.

Source: FHWA

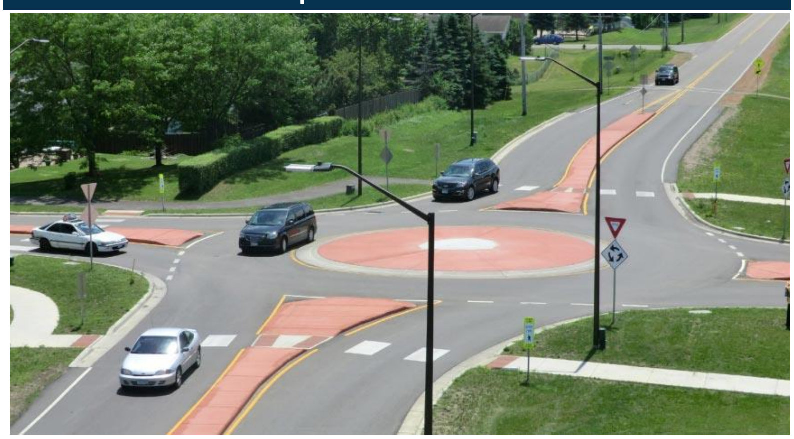
Roundabout

Countermeasure Description

A modern roundabout is a circular intersection designed to move traffic safely and efficiently. It features channelized, curved approaches that naturally reduce vehicle speed. Additionally, roundabouts implement entry yield control, granting right-of-way to vehicles already circulating within the intersection. Traffic flows counterclockwise around a central island, which further minimizes potential conflict points between vehicles. As a result of these design elements, roundabouts significantly lower speeds and reduce conflicts, leading to a substantial decrease in crashes that result in injuries or fatalities.

Implementation Cost	
High	✓
Medium	✓
Low	

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Two way stop Controlled to Roundabout: 82% reduction in fatal and injury crashes
Signalized intersection to Roundabout : 78% reduction in fatal and injury crashes

Local Context

Roundabouts can be utilized in both urban and rural settings, accommodating a variety of traffic conditions. They serve as effective alternatives to traffic signals, two-way stop signs, and all-way stop signs. In Fayette County, roundabouts have been considered or implemented in areas where speed management and safety are critical such as rural intersections with high crash histories or transitions near school zones. A notable example is the upcoming roundabout at the intersection of Redwine Road, Bernhard Road, and Peachtree Parkway. This location, currently an all-way stop, is being converted to a single-lane roundabout to enhance safety and traffic flow for vehicles, pedestrians, bicyclists, and golf carts. Roundabouts are especially effective in managing vehicle speeds and providing smooth transitions from high-speed to low-speed environments while improving overall intersection efficiency and safety.

Source: FHWA

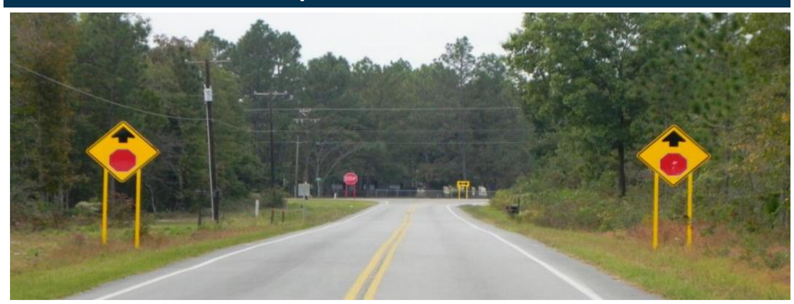
Systemic Application of Multiple Low-Cost Countermeasures (Stop-Controlled)

Countermeasure Description

This systemic approach to intersection safety emphasizes the implementation of a range of low-cost improvements at numerous stop-controlled intersections. These enhancements, which include upgraded signage and improved pavement markings, are designed to boost driver awareness and recognition of both the intersection itself and any potential hazards.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo



Source: FHWA and SCDOT

Safety Benefits

- **10% reduction of fatal and injury crashes at all locations/types/areas**
- **15% reduction of nighttime crashes at all locations/types/areas**
- **27% reduction of fatal and injury crashes at rural intersections**
- **19% reduction of fatal and injury crashes at two-lane by two-lane intersections**

Local Context

To improve safety at stop-controlled intersections in Fayette County, the following low-cost countermeasures can be implemented:

On the Through Approach:

- Enhanced warning signage: Double- and oversized advance warning signs with supplemental street name plaques and flashing beacons, if necessary.
- Reflective sign post upgrades: Retroreflective sheeting on sign posts to improve visibility.
- Improved pavement markings: Enhanced edge lines to delineate through lanes.

On the Stop Approach:

- Advanced warning signage: Double- and oversized "Stop Ahead" warning signs with flashing beacons, if necessary.
- Enhanced stop sign placement: Double- and oversized Stop signs to increase visibility.
- Reflective sign post upgrades: Retroreflective sheeting on sign posts to improve visibility.
- Properly placed stop bars: Ensuring adequate clearance and visibility for stopped vehicles.
- Clear sight triangles: Removing vegetation, parking, or obstructions that limit sight distance.
- Double arrow warning signs: At T-intersections, where necessary, to indicate turning traffic.

Source: FHWA

Yellow Change Intervals

Countermeasure Description

At a signalized intersection, the yellow change interval refers to the duration during which the yellow signal is displayed after the green signal has ended. This yellow indication serves as a warning to road users that the green light is about to turn red.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo

Source: FHWA

Safety Benefits
36-50% reduction in red-light running
8-14% reduction in total crashes
12% reduction in injury crashes

Local Context

Red-light running is a significant contributor to severe crashes at signalized intersections, making the accurate timing of the yellow change interval critically important. An interval that is too short can leave drivers with insufficient time to stop safely, increasing the likelihood of unintentional red-light running. Conversely, an excessively long interval may encourage intentional violations, undermining respect for the signal. In Fayette County particularly along major arterials like SR 54 and SR 74 in Peachtree City and Fayetteville carefully calibrated yellow intervals are essential due to the combination of high approach speeds, multimodal traffic, and complex intersection layouts. Factors such as vehicle speed, driver reaction time, vehicle deceleration capabilities, and intersection geometry must all be considered when determining the appropriate yellow change interval to enhance safety and reduce the likelihood of red-light running.

Source: FHWA

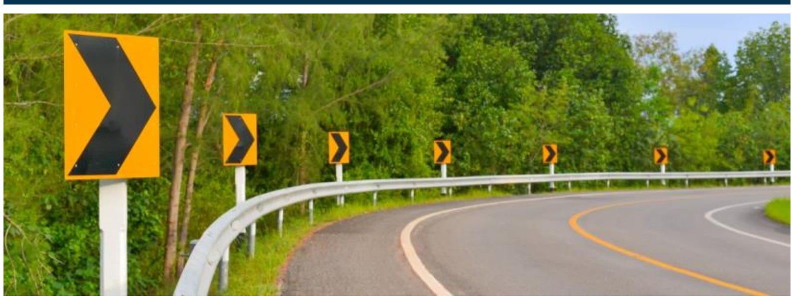
Enhanced Delineation for Horizontal Curves

Countermeasure Description

Improved delineation significantly boosts driver awareness of impending curves by offering distinct visual indicators regarding the curve's direction, sharpness, and advisable speed. Effective strategies may include advanced pavement markings, in-lane curve warnings, retroreflective strips on signposts, curve delineators, chevron signs, larger fluorescent or retroreflective signage, dynamic curve warning displays, and speed radar feedback signs.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
Chevrons Signs : 16% reduction in non intersection fatal and injury crashes
Oversized Chevron Signs: 15% reduction in fatal and injury crashes
In Lane Curve Warning Pavement Markings:35-38% reduction in all crashes.
New Fluorescent Curve Signs: 18% reduction in non-intersection, head –on, run-off-road, and sideswipe in rural areas.

Local Context

Fayette County can successfully adopt enhanced delineation strategies by taking the following steps:

- Aligning Signing Practices with MUTCD Standards: By ensuring that signing practices conform to the Manual on Uniform Traffic Control Devices (MUTCD) principles, agencies can provide consistent traffic control devices for similar curves. This uniformity helps set clear expectations for drivers.
- Implementing a Systematic Approach for Problem Identification: A proactive safety analysis is essential for identifying horizontal curves with elevated crash risk. This assessment should include factors such as curve radius, traffic volume, the presence of intersections within the curve, and any sight distance limitations caused by vegetation, elevation, or development. In Fayette County, this approach is especially relevant on rural collector roads and arterials—such as sections of Redwine Road or SR 92—where sharp curves and limited visibility have historically contributed to run-off-road crashes.
- Choosing the Most Effective Delineation Strategies: Once the issues are identified and MUTCD compliance is verified, agencies should select the most suitable delineation strategies. An incremental approach that begins with the most cost-effective solutions can often yield the best results over time.

Source: FHWA

Longitudinal Rumble Strips and Stipes on Two-lane Roads

Countermeasure Description

Rumble strips are raised or milled features on the road surface designed to alert drivers through tactile and auditory feedback when they stray from their lane. These strips can be installed on the shoulder, along the edge of the road, or near the center of an undivided highway.

Rumble stripes, on the other hand, are a type of rumble strip where a pavement marking is applied on top of the raised strip. This design enhancement improves visibility and durability of the marking, especially in wet or low-light conditions, and is particularly beneficial in areas where snowplowing operations are common.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo

Source: FHWA

Safety Benefits
Center line Rumble Strips : 44-64% reduction in head-on fatal and injury crashes on two-lane rural roads
Shoulder Rumble Strips: 13-51% reduction in single vehicle, run-off-road fatal and injury crashes

Local Context

In the United States, roadway departure crashes contribute to over half of all fatal roadway incidents each year. To mitigate these occurrences, rumble strips and stripes are employed to alert distracted, drowsy, or inattentive drivers who veer out of their lanes. Their effectiveness increases significantly when implemented on a systematic basis. Transportation agencies should prioritize the use of milled centerline rumble strips, even in passing zones where feasible, along with milled edge line or shoulder rumble strips that include bicycle gaps to maintain multimodal accessibility. In Fayette County, these treatments are particularly applicable on rural, higher-speed corridors such as SR 85, SR 92, and roads like Sandy Creek Road or Lees Mill Road where roadway departures have historically contributed to run-off-road and head-on crashes. Incorporating rumble strips into broad safety programs, targeted corridor safety upgrades, and routine resurfacing or reconstruction projects can significantly improve safety outcomes, especially in areas with limited lighting or frequent nighttime travel.

Source: FHWA

Median Barriers

Countermeasure Description

Median barriers serve as crucial safety features on divided highways, effectively separating opposing lanes of traffic. By doing so, they significantly diminish the likelihood of head-on collisions, which tend to occur more frequently at the higher speeds typical of these roadways.

Implementation Cost	
High	✓
Medium	✓
Low	✓

Countermeasure Example Photo

Source: AASHTO

Safety Benefits

97% reduction in cross-median crashes

Local Context*

AASHTO's Roadside Design Guide (RDG) provides guidelines for median barrier installation on high-speed, fully controlled-access roadways. Barriers are generally recommended for medians 30 feet or less in width with an average daily traffic (ADT) exceeding 20,000 vehicles per day. Barriers are optional for medians wider than 50 feet and ADTs below 20,000 vehicles per day. For medians between 30 and 50 feet, the RDG suggests an analysis to determine the cost-effectiveness of installation. To reduce cross-median crashes, transportation agencies should review their head-on crash history on divided highways to identify hot spots and implement a systemic approach to barrier placement based on risk factors such as traffic volume, vehicle types, median crossover history, crash incidents, and roadway geometry.

Types of Median Barriers:

Cable Barriers: These flexible systems consist of steel cables anchored by sturdy posts. They are designed to absorb crash energy, thereby reducing the force of impact on vehicle occupants.

Metal-Beam Guardrails: Constructed with semi-rigid W-beam or box-beam configurations, these barriers deform upon impact. This not only absorbs some of the energy from a collision but also helps redirect the vehicle away from danger.

Concrete Barriers: As rigid structures, these barriers offer little deflection during an impact. Their primary function is to redirect collision energy, and they require minimal ongoing maintenance.

* Some countermeasures, such as median barriers, may not be suitable for Fayette County due to roadway design, limited right-of-way, or surrounding land use. These measures should be considered on a case-by-case basis for feasibility and effectiveness.

Source: FHWA

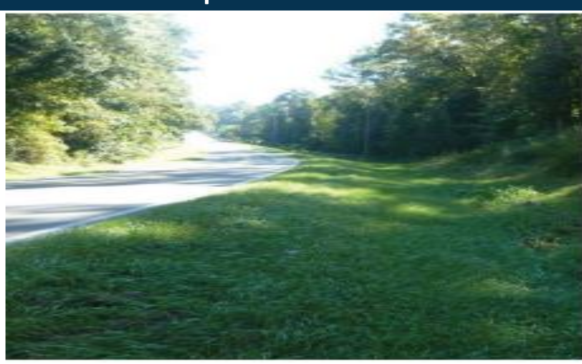
Roadside Design Improvement at Curves

Countermeasure Description

According to the nationwide Fatality Analysis Reporting System (FARS), horizontal curves present a significant safety challenge, accounting for 27% of all fatal crashes. Alarmingly, 80% of these incidents involve vehicles veering off the roadway. To combat this issue, "Roadside Design Improvements" focus on enhancing safety along the outer edges of curves, where the risk is highest. These improvements include a variety of treatments aimed at reducing the severity of crashes by providing safer recovery options for vehicles that leave the roadway. By minimizing the likelihood of fatalities and serious injuries, these measures can be applied individually or in combination. They are especially recommended for curves where data indicates a high risk of roadway departure leading to severe or fatal outcomes.

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo



Source: ARC

Safety Benefits
Flatten sideslopes : 8-12% reduction for single-vehicle crashes
Increase the distance to roadside features: 22-44% reduction for all crashes

Local Context

Horizontal curves are a major safety concern, contributing to approximately 27% of all fatal crashes nationwide. Alarmingly, about 80% of these crashes involve vehicles running off the roadway. To mitigate this risk, roadside design improvements aim to enhance safety along the outer edges of curves where the likelihood of roadway departures is highest. In Fayette County, such enhancements are particularly relevant on rural roadways like Veterans Pkwy, Tyrone Rd, or certain segments of SR 92 and SR 54, where curves, narrow shoulders, and limited clear zones increase the potential for serious run-off-road incidents. Implementing roadside design improvements at these locations can significantly reduce the likelihood of fatalities and serious injuries, particularly when guided by crash data and site-specific evaluations.

Source: FHWA

Safety Edge

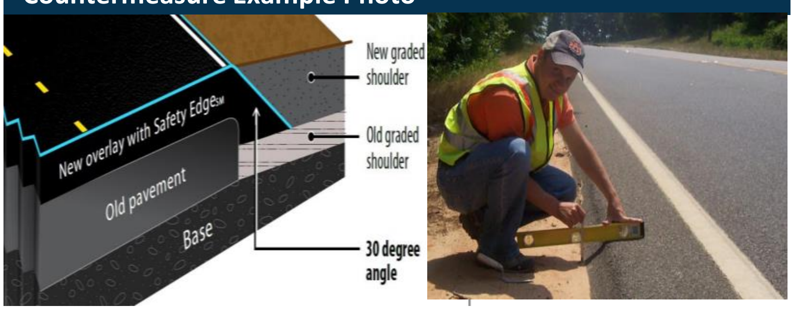
Countermeasure Description

The SafetyEdge^{SM} technology shapes the edge of the pavement at approximately 30 degrees from the pavement cross slope during the paving process. This safety practice eliminates the potential for vertical drop-off at the pavement edge, has minimal effect on project cost, and can improve pavement durability by reducing edge raveling of asphalt. Rural road crashes involving edge drop-offs are 2-4 times more likely to include a fatality than other crashes on similar roads.[1] Vehicles may leave the roadway for various reasons ranging from distracted driver errors to low visibility, or to the presence of an animal on the road. Exposed vertical pavement edges can cause vehicles to become unstable and prevent their safe return to the roadway. The SafetyEdge^{SM} gives drivers the opportunity to return to their travel lane while maintaining control of their vehicle.

Implementation Cost

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
11% reduction in fatal and injury crashes
21% reduction in run-off road crashes
19% reduction in head-on crashes

Local Context

The SafetyEdgeSM technology can be implemented on Fayette County roadways with minimal changes to current paving practices. For asphalt roads, it simply involves attaching a commercially available device to the paver's screed or endgate during hot-mix asphalt placement. On concrete roads, the angled edge can be easily shaped on-site by the contractor using standard construction methods. Unlike conventional vertical pavement edges, some transportation agencies permit the SafetyEdgeSM to remain exposed during construction. However, it's important to ensure that, by the completion of the project, the roadside is level with the pavement—whether using the SafetyEdgeSM or traditional edge design. Over time, roadside settling, erosion, or tire wear may cause edge exposure. In these situations, the SafetyEdgeSM design, with its tapered slope, offers a safer transition for vehicles than the abrupt drop-off of a vertical pavement edge making it a potential choice for enhancing roadside safety in Fayette County.

Source: FHWA

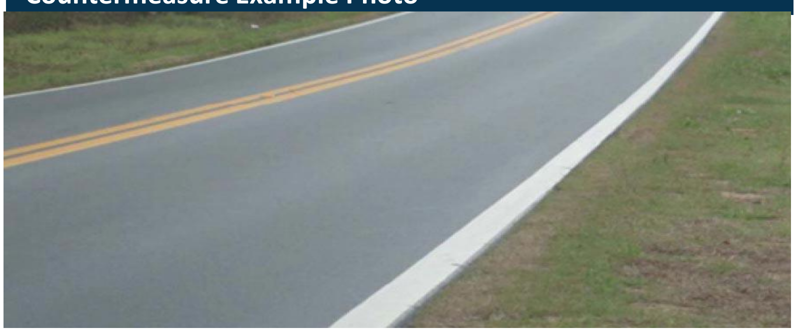
Wider Edge Lines

Countermeasure Description

Roadway departures account for over half of all traffic fatalities in the United States. A significant contributing factor is drivers' inability to clearly perceive the edge of the travel lanes and the road's alignment ahead. To mitigate this risk, wider edge lines can significantly improve lane boundary visibility. By increasing the marking width from the standard 4 inches to 6 inches, drivers are provided with a more defined visual cue. This enhanced visibility reduces the likelihood of unintended lane departures.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits
37% reduction for non-intersection, fatal and injury crashes on rural, two-lane roads.
22% reduction in fatal and injury crashes on rural freeways

Local Context

Wider edge lines increase drivers’ perception of the edge of the travel lane and can provide a safety benefit to all facility types (e.g., freeways, multilane divided and undivided highways, two-lane highways) in both urban and rural areas. Agencies should also consider implementing a systemic approach to wider edge line installation-based roadway departure crash risk factors. Potential risk factors for two-lane rural roads include:

- **Pavement and shoulder widths.**
- **Presence of curves.**
- **Traffic volumes.**
- **History of nighttime crashes.**

In Fayette County, wider edge lines may be especially beneficial on rural corridors like Brooks Woolsey Road, Ellison Road, ,where limited shoulder space and curvilinear geometry increase the risk of vehicles drifting out of the travel lane. Incorporating wider edge lines on such roads as part of resurfacing projects or targeted safety programs can improve lane visibility and enhance safety for all road users, particularly during nighttime or low-visibility conditions.

Source: FHWA

Appropriate Speed Limits for All Road Users

Countermeasure Description

Controlling speed is crucial for reducing traffic fatalities and serious injuries, especially on non-limited access roads where vehicles and vulnerable road users (like pedestrians and cyclists) share space. States and local governments play a key role in setting appropriate speed limits to protect everyone, particularly vulnerable road users. Enforcing these limits is a cornerstone of the Safe System Approach, a comprehensive framework for improving road safety. Evidence shows that adjusting speed limits can effectively lower travel speeds, reducing the frequency and severity of traffic crashes.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo

Source: MUTCD

Safety Benefits

In alignment with Vision Zero and Safe System principles, setting speed limits below the 85th-percentile speed prioritizes safety over speed, helping to reduce the likelihood and severity of crashes while promoting greater driver compliance with posted limits.

Local Context

Posted speed limits often match the legislative statutory speed limits. However, designated authorities, including state and sometimes local jurisdictions, can establish non-statutory speed limits or designate reduced speed zones and many are doing so. Non-statutory speed limits must be based on an engineering study, conducted in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), involving multiple factors and engineering judgment. When setting a speed limit, agencies should consider a range of factors, including pedestrian and bicyclist activity, crash history, land use context, intersection spacing, driveway density, roadway geometry, roadside conditions, roadway functional classification, traffic volume, and observed speeds.

Source: FHWA

Variable Speed Limits (VSLs)

Countermeasure Description

Setting appropriate speed limits is crucial for maintaining a safe and efficient transportation network. These limits are determined through engineering studies that consider factors like traffic volumes, operating speeds, roadway characteristics, and crash history. However, road conditions can change rapidly due to factors such as congestion, crashes, and weather. Drivers usually choose their speeds based on ideal conditions like good weather, straight roads, and clear visibility. When these conditions aren't met, the risk of crashes increases. Implementing variable speed limits (VSLs) that adapt to changing circumstances can help reduce crash frequency and severity.

Implementation Cost	
High	✓
Medium	✓
Low	✓

Countermeasure Example Photo

Source: FHWA & WSDOT

Safety Benefits

Safety Benefits
34% reduction in total crashes
65% reduction for rear-end crashes
51% reduction in fatal and injury crashes

Local Context*

Variable Speed Limits (VSLs) use current roadway information, such as traffic speed, volume, weather, and road conditions, to determine and display appropriate speeds to drivers. This strategy enhances safety and traffic flow by reducing speed variance, also known as speed harmonization. VSLs improve driver expectations by providing advance information about slowdowns and potential lane closures, thus reducing the likelihood of secondary crashes. They can also mitigate adverse weather conditions or slow fast-moving traffic as it approaches a queue or bottleneck.

VSLs are particularly effective on urban and rural freeways and high-speed arterials with speed limits over 40 mph. They are often part of Active Traffic Management (ATM) plans or incorporated into existing Road Weather Information Systems. When used with ATM, VSLs can reduce rear-end, sideswipe, and other crashes on high-speed roadways. VSLs may be implemented as regulatory or advisory systems and can apply to entire roadway segments or individual lanes.

* Certain countermeasures, like VSLs, may not be feasible for Fayette County due to factors such as roadway design, limited right-of-way, or the surrounding land use. These measures should be evaluated individually to assess their feasibility and potential effectiveness.

Source: FHWA

Speed Safety Cameras (SSCs)

Countermeasure Description

Safe Speeds is a core principle of the Safe System Approach because high-speed crashes are more likely to be fatal. Enforcing safe speeds has been challenging, but with better information and tools, communities can reduce speeds. Agencies can use Speed Safety Cameras (SSCs) to effectively supplement traditional enforcement, engineering measures, and education. SSCs detect speeding and capture photographic or video evidence of vehicles violating the speed limit, helping to change social norms around speeding.

* Certain countermeasures, like Speed Safety Camera, may not be feasible for Fayette County due to factors such as roadway design, limited right-of-way, or the surrounding land use. These measures should be evaluated individually to assess their feasibility and potential effectiveness.

Implementation Cost	
High	✓
Medium	✓
Low	

Countermeasure Example Photo

Source: FHWA

Safety Benefits
Fixed Units: 54% reduction in total crashes and 47% reduction for injury crashes.
P2P Units: 37% reduction for fatal and injury crashes on urban expressways and principal arterial.
Mobile Units: 20% reduction in fatal and injury crashes on urban principal arterial.

Local Context

Agencies should conduct a network analysis of speeding-related crashes to identify locations to implement SSCs. The analysis can include scope (e.g., widespread, localized), location types (e.g., urban/suburban/rural, work zones, residential, school zones), roadway types (e.g., expressways, arterials, local streets), times of day, and road users most affected by speed-related crashes (e.g., pedestrians, bicyclists).

SSCs can be deployed as:
•**Fixed units**—a single, stationary camera targeting one location.
•**Point-to-Point (P2P) units**—multiple cameras to capture average speed over a certain distance.
•**Mobile units**—a portable camera, generally in a vehicle or trailer.

Source: FHWA

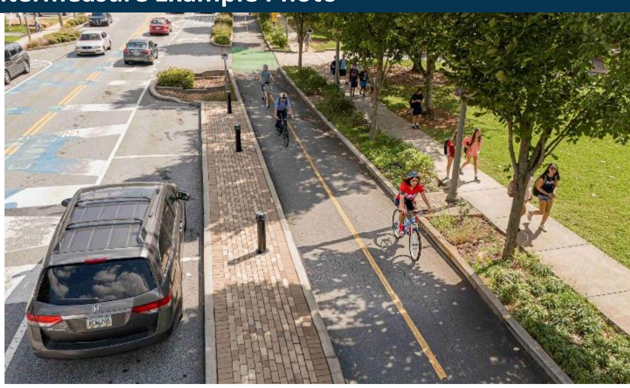
Bicycle Lanes

Countermeasure Description

Most fatal bicycle crashes occur outside intersections, especially when motor vehicles overtake cyclists. The risk is heightened by the size and speed differences between vehicles and bicycles, which deters many from cycling. To enhance safety and encourage cycling, states and localities must prioritize installing dedicated bicycle lanes. This crucial step aligns with the Safe System Approach, which emphasizes separating users in space to minimize the risk of severe crashes.

Implementation Cost	
High	✓
Medium	✓
Low	✓

Countermeasure Example Photo



Source: ARC

Safety Benefits

Bicycle Lane Additions: 49% reduction in total crashes on urban four-lane undivided collectors and local roads.

Bicycle Lane Additions: 30% reduction in total crashes on urban two-lane undivided collectors and local roads.

Local Context

FHWA's Bikeway Selection Guide and Incorporating On-Road Bicycle Networks into Resurfacing Projects help agencies determine the most beneficial facilities for various contexts. Bicycle lanes can be added to new roadways or existing roads by reallocating space in the right-of-way through Road Diets. Separated bicycle lanes, using vertical elements like flexible delineator posts, curbs, or vegetation, provide additional safety by creating a physical barrier between cyclists and motorized traffic lanes. For marked bike lanes without vertical elements, a lateral offset with a marked buffer helps further separate bicyclists from vehicle traffic, enhancing safety.

In Fayette County, expanding bicycle lane networks is especially relevant in Peachtree City, which already features an extensive golf cart path system and a growing interest in multimodal travel. Opportunities also exist to integrate on-road bike lanes into resurfacing projects along corridors like SR 54, Redwine Road, and Hood Avenue linking key destinations while supporting safe and comfortable travel for cyclists. These enhancements are aligned with broader active transportation goals and can improve both recreational and commuter biking experiences.

Source: FHWA

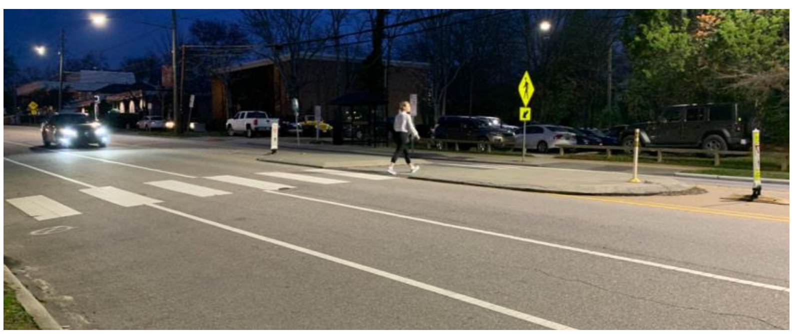
Crosswalk Visibility Enhancements

Countermeasure Description

Reduced visibility at crosswalks, caused by poor lighting, parked vehicles, and roadway curvature, greatly compromises pedestrian safety. On busy multilane roads with over 10,000 Average Annual Daily Traffic (AADT), a simple marked crosswalk is often not enough. Implementing more robust crossing improvements is crucial to reduce the risk of pedestrian accidents. High-visibility crosswalks, adequate lighting, and clear signage/markings are three key enhancements that improve crosswalk visibility. These measures not only increase driver awareness of pedestrians but also guide users to safe crossing locations. Agencies can implement these features individually or in combination.

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
Bicycle Lane Additions: 49% reduction in total crashes on urban four-lane undivided collectors and local roads.
Bicycle Lane Additions: 30% reduction in total crashes on urban two-lane undivided collectors and local roads.

Local Context

High-visibility crosswalks
High-visibility crosswalks use patterns (i.e., bar pairs, continental, ladder) that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks. They should be considered at all midblock pedestrian crossings and uncontrolled intersections. Agencies should use materials such as inlay or thermoplastic tape, instead of paint or brick, for highly reflective crosswalk markings.
Improved Lighting
The goal of crosswalk lighting should be to illuminate with positive contrast to make it easier for a driver to visually identify the pedestrian. This involves carefully placing the luminaires in forward locations to avoid a silhouette effect of the pedestrian.
In Fayette County, increasing crosswalk visibility is particularly important near schools, parks, and multi-use path crossings, especially in Peachtree City, where golf carts and pedestrians frequently share the roadway environment. Locations such as crossings along Peachtree Parkway and SR 54, or near community centers and recreational areas, would benefit from improved pavement markings and signage to alert drivers and support safe multimodal travel.

Source: FHWA

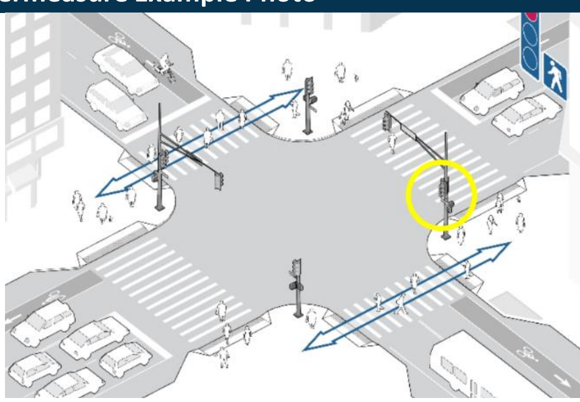
Leading Pedestrian Interval (LPI)

Countermeasure Description

A leading pedestrian interval (LPI) allows pedestrians to enter the crosswalk at a signalized intersection 3-7 seconds before vehicles receive a green signal. This extra time enables pedestrians to establish their presence in the crosswalk before vehicles start turning. LPIs offer several benefits, including increased visibility of pedestrians, reduced conflicts between pedestrians and vehicles, a higher likelihood of motorists yielding to pedestrians, and enhanced safety for pedestrians who may be slower to start crossing the intersection.

Implementation Cost	
High	
Medium	
Low	✓

Countermeasure Example Photo



Source: Arlington County, Virginia

Safety Benefits
13% reduction in pedestrian-vehicle crashes at intersection

Local Context

FHWA's Handbook for *Designing Roadways for the Aging Population* recommends implementing Leading Pedestrian Intervals (LPIs) at intersections with high turning vehicle volumes. Transportation agencies should consult the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on LPI timing and ensure pedestrian signals are accessible to all users. The cost of implementing LPIs is very low when it only requires altering signal timing.

Source: FHWA

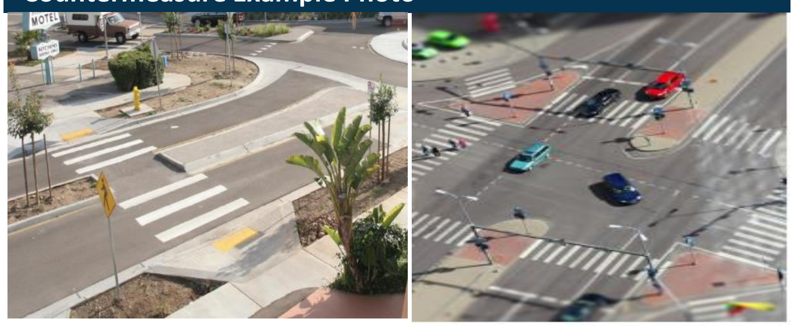
Medians and Pedestrian Refuge Islands

Countermeasure Description

A median is the space separating opposing lanes of traffic, excluding turn lanes. In urban and suburban settings, medians may be defined by pavement markings, raised structures, or islands designed to separate motorized and non-motorized road users. A pedestrian refuge island, or crossing area, is a specialized type of median that provides a designated safe space for pedestrians to pause while crossing the road, enhancing their protection and safety.

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits
Median with Marked Crosswalk: 46% reduction in pedestrian crashes.
Pedestrian Refuge Island: 56% reduction in pedestrian crashes.

Local Context

Medians and pedestrian refuge islands enhance pedestrian safety by allowing individuals to cross one direction of traffic at a time, significantly reducing exposure to moving vehicles. These features are especially effective on multi-lane roads with high traffic volumes and speeds, where crossing the entire roadway in one movement can be challenging—particularly for children, older adults, and people with mobility limitations. In Fayette County, implementing refuge islands can improve safety at key pedestrian crossings along major corridors such as SR 54, SR 85, and SR 74, especially in areas with commercial development or near transit stops. In Peachtree City, Fayetteville, and Tyrone, where multi-use paths and sidewalks intersect with busy arterials, medians with pedestrian refuges can create safer connections between neighborhoods, schools, and shopping centers.

Source: FHWA

Grade Separated Path Crossings

Countermeasure Description

A grade-separated crossing—such as an overpass or underpass—physically separates pedestrians, cyclists, and golf cart users from motor vehicle traffic, eliminating conflict points at high-traffic roadways and enhancing multimodal connectivity.

Implementation Cost	
High	✓
Medium	
Low	

Countermeasure Example Photo

Source: Movement and Place

Safety Benefits
Grade-separated crossings can reduce pedestrian and bicyclist crashes by up to 90% at high-volume intersections.
Removes at-grade conflicts and improving visibility and user compliance.

Local Context

In Peachtree City, Fayetteville, and Tyrone, where an extensive multi-use path network supports golf carts, cyclists, and pedestrians, grade-separated crossings would significantly enhance safety and continuity at major arterial crossings such as SR 54 or SR 74, addressing critical gaps in the active transportation network.

Source: FHWA

Pedestrian Hybrid Beacons (PHB)

Countermeasure Description

The Pedestrian Hybrid Beacon (PHB) is a traffic control device designed to improve pedestrian safety at mid-block crossings and uncontrolled intersections on high-speed roadways. Featuring two red lenses above a single yellow lens, the PHB remains inactive until a pedestrian activates it by pressing a call button. Once triggered, the beacon begins a flashing yellow-to-red light sequence, alerting motorists to slow down and stop, granting pedestrians the right-of-way to cross. After pedestrians complete their crossing, the beacon deactivates and returns to its inactive state.

Implementation Cost	
High	✓
Medium	✓
Low	

Countermeasure Example Photo

Source: FHWA

Safety Benefits
55% reduction in pedestrian crashes.
29% reduction in total crashes.
15% reduction in serious injury and fatal crashes.

Local Context

Fayette County can refer to the Manual on Uniform Traffic Control Devices (MUTCD) for guidance on the appropriate application of Pedestrian Hybrid Beacons (PHBs). PHBs are most effectively used on multi-lane roads with high vehicle volumes and speeds where pedestrian crossings are challenging and standard crosswalk markings may not provide adequate protection.

Fayette County has incorporated Pedestrian Hybrid Beacons (PHBs) into its pedestrian improvement plans. Specifically, a PHB was installed at an at-grade crossing of Redwine Road near the intersection with Birkdale Drive and Quarters Road. This enhancement is part of a broader initiative to expand the multi-use path network and improve safety for pedestrians, cyclists, and golf cart users.

Source: FHWA

Rectangular Rapid Flashing Beacons (RRFBs)

Countermeasure Description

Marked crosswalks and pedestrian warning signs improve safety, but they may not always ensure drivers notice and yield to pedestrians. To enhance visibility and increase driver awareness at uncontrolled, marked crosswalks, transportation agencies can install Pedestrian Actuated Rectangular Rapid Flashing Beacons (RRFBs). RRFBs consist of two rectangular yellow LED arrays that flash alternately at a high frequency when activated. This rapid flashing significantly improves the visibility of pedestrians to approaching drivers..

Implementation Cost	
High	
Medium	✓
Low	

Countermeasure Example Photo

Source: FHWA

Safety Benefits
47% reduction in pedestrian crashes.
98% increase for motorist yielding.

Local Context

The RRFB is applicable to many types of pedestrian crossings but is particularly effective at multilane crossings with speed limits less than 40 miles per hour. Research suggests RRFBs can result in motorist yielding rates as high at 98 percent at marked crosswalks, but varies depending on the location, posted speed limit, pedestrian crossing distance, one- versus two-way road, and the number of travel lanes. RRFBs can also accompany school or trail crossing warning signs. RRFBs are placed on both sides of a crosswalk below the pedestrian crossing sign and above the diagonal downward arrow plaque pointing at the crossing. The flashing pattern can be activated with pushbuttons or passive (e.g., video or infrared) pedestrian detection, and should be unlit when not activated.

Source: FHWA

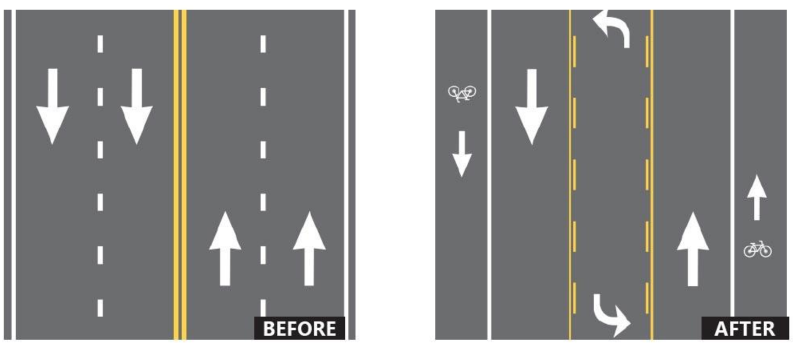
Road Diets (Roadway Reconfiguration)

Countermeasure Description

A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL).

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits
Four lane to three-lane Road Diet Conversion: 19-47% reduction in total crashes.

Local Context

A Road Diet is a cost-effective safety enhancement strategy, especially when coordinated with routine resurfacing or pavement overlay projects. By reconfiguring roadway space often reducing four-lane undivided roads to three lanes (one travel lane in each direction with a center turn lane) a Road Diet can be implemented with minimal or no additional cost. These treatments are most effective on roadways with existing and projected average daily traffic (ADT) volumes of 25,000 vehicles or fewer. To further support Fayette County's goals for safer, more livable streets, a variety of traffic calming measures can be integrated alongside or independent of Road Diets. To further enhance street safety and livability, Fayette County can combine Road Diets with other traffic calming treatments, such as:

•Splitter Islands: Slow and guide vehicles at intersections.
•Median Islands: Offer pedestrian refuge and narrow roadways.
•Curb Extensions: Shorten crossing distances and improve visibility.
•Chicanes: Add curves to slow traffic naturally.
•Speed Humps & Raised Crosswalks: Slow vehicles and highlight pedestrian zones.
•Mini-Roundabouts: Improve flow and reduce speeds at intersections.
•Greenways & Streetscaping: Use landscaping and design to visually calm traffic.
•Bike and Pedestrian Infrastructure: Add sidewalks, bike lanes, and trails to support active travel.

Source: FHWA

Path/Sidewalks

Countermeasure Description

A walkway is any type of defined space or pathway for use by a person traveling by foot or using a wheelchair. These may be pedestrian walkways, shared use paths, sidewalks, or roadway shoulders.
Sidewalks and multi-use paths are foundational elements of a safe, accessible, and connected transportation network. These facilities encourage walking and biking by providing dedicated, comfortable spaces that separate non-motorized users from vehicular traffic.

Implementation Cost	
High	✓
Medium	✓
Low	✓

Countermeasure Example Photo

Source: FHWA

Safety Benefits
Sidewalks: 65-89% reduction in crashes involving pedestrian walking along roadways.

Local Context

Sidewalks are particularly effective in urban and suburban areas for improving pedestrian safety, supporting ADA accessibility, and fostering walkable communities. Multi-use paths, typically wider and designed to accommodate pedestrians and cyclists. In Fayette County, the Fayette Forward Transportation Plan prioritizes expansion of the sidewalk and path network to fill gaps, improve access to schools, parks, and commercial centers, and enhance safety. Peachtree City's extensive golf cart path system, along with new path connections along Redwine Road, illustrates the county's commitment to multimodal connectivity. Municipalities like Fayetteville, Tyrone, and Brooks are also identifying strategic locations to improve or extend pedestrian infrastructure. Integrating these facilities into road widening, resurfacing, or development projects ensures long-term mobility benefits for all users.

Source: FHWA

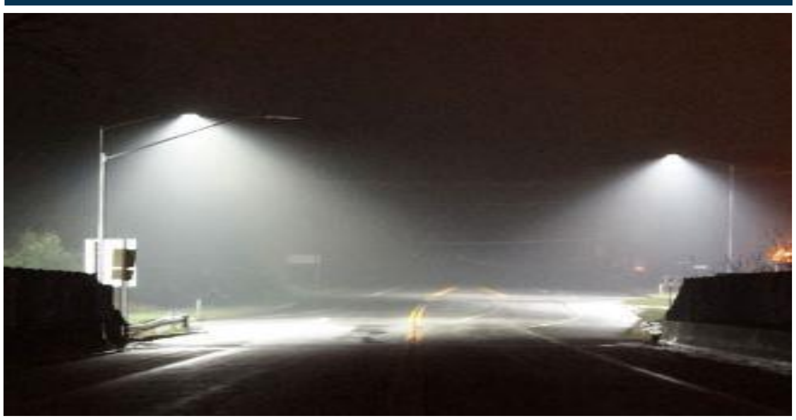
Lighting

Countermeasure Description

Nighttime driving is significantly more dangerous than daytime driving. Although only 25% of vehicle miles are traveled at night, they account for a disproportionately high number of fatal crashes, with a fatality rate three times higher than during the day. This increased risk is due to reduced visibility, which limits a driver's ability to quickly react to hazards or roadway changes within the limited range of headlights. To mitigate this risk, continuous or spot lighting can be strategically implemented along road segments, at intersections, and at pedestrian crossings to enhance visibility and reduce the likelihood of crashes.

Implementation Cost	
High	✓
Medium	✓
Low	

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
42% reduction for nighttime injury pedestrian crashes at intersection.
33-38% reduction for nighttime crashes at rural and urban intersections.
28% reduction for nighttime injury crashes on rural and urban highways.

Local Context

Roadway Segments: Research indicates that continuous lighting on both rural and urban highways (including freeways) has an established safety benefit for motorized vehicles. Agencies can provide adequate visibility of the roadway and its users through the uniform application of lighting that provides full coverage along the roadway and the strategic placement of lighting where it is needed the most.
Intersection and Pedestrian Crossings: Increased visibility at intersections at nighttime is important since various modes of travel cross paths at these locations. Agencies should consider providing lighting to intersections based on factors such as a history of crashes at nighttime, traffic volume, the volume of non-motorized users, the presence of crosswalks and raised medians, and the presence of transit stops and boarding volumes.

Source: FHWA

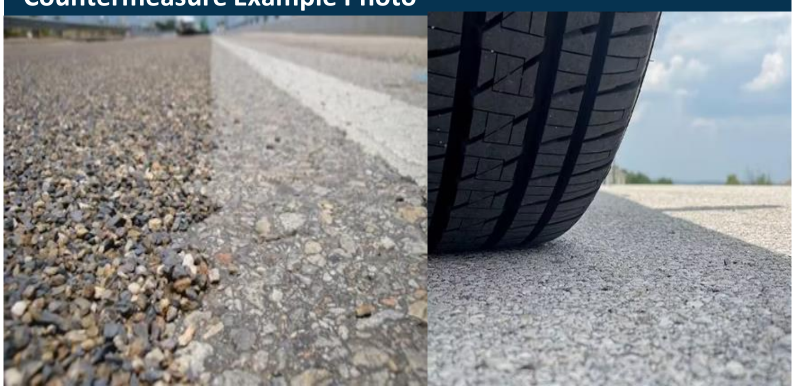
Pavement Friction Management

Countermeasure Description

Pavement friction is a crucial factor influencing vehicle-roadway interaction and significantly impacts crash frequency. Regularly measuring, monitoring, and maintaining pavement friction, particularly at locations with frequent turning, slowing, and stopping maneuvers, is essential for preventing numerous roadway departure, intersection, and pedestrian-related crashes. Leveraging continuous pavement friction data in conjunction with crash and roadway data enables more targeted and efficient application of friction treatments like High Friction Surface Treatment (HFST), maximizing their effectiveness in enhancing road safety.

Implementation Cost	
High	
Medium	✓
Low	

Countermeasure Example Photo



Source: Construction Pro and Roads and Bridges Website

Safety Benefits
63% reduction for injury crashes at ramps.
48% reduction for injury crashes at horizontal curves.
20% reduction for total crashes at intersection.

Local Context

High Friction Surface Treatment (HFST) is a safety countermeasure used to improve pavement grip and reduce crash potential on Fayette County roadways. It involves applying a durable, skid-resistant aggregate, most effectively calcined bauxite, over a thermosetting polymer resin binder that holds the material in place. This combination significantly increases surface friction and improves traction, especially in wet conditions. In Fayette County, HFST is particularly recommended for areas where enhanced friction is critical, including sharp curves, interchange ramps, intersection approaches, steep downhill grades, and high-speed intersections with signals or stop signs. Locations with a history of crashes, such as rear-end, wet-weather, failure-to-yield, or red-light-running incidents, are ideal candidates. Approaches to crosswalks can also benefit from HFST to improve safety for pedestrians.

Source: FHWA

Road Safety Audit (RSAs)

Countermeasure Description

While most transportation agencies have traditional safety review procedures in place, a Road Safety Audit (RSA) or assessment stands out as a unique approach. RSAs are conducted by a multidisciplinary team that is independent of the project. They consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner.

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo

Source: FHWA

Safety Benefits
10-60% reduction in total crashes

Local Context

Road Safety Audits (RSAs) can be carried out at any stage of a roadway project in Fayette County, from early planning through final construction. These audits may be tailored to focus on specific roadway users, such as drivers, pedestrians, bicyclists, motorcyclists, or a combination of all users. Whenever possible, it is recommended that RSAs be conducted during the earliest phases of project development—while design alternatives are still being considered—to allow for the greatest flexibility in incorporating safety improvements.

Source: FHWA

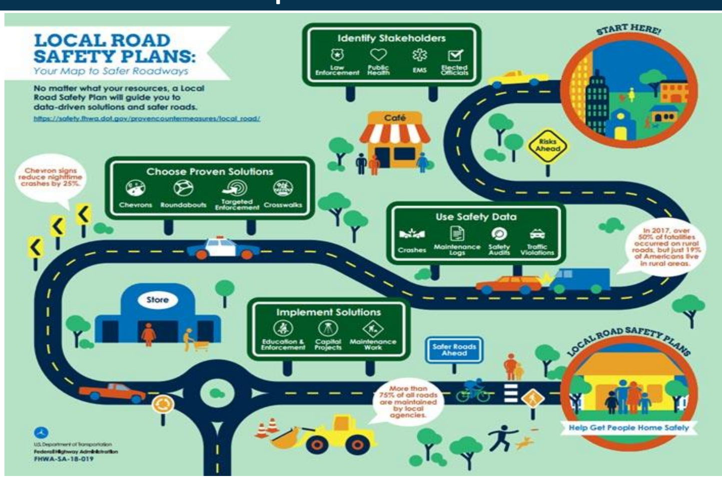
Local Road Safety Plans (LRSPs)

Countermeasure Description

A Local Road Safety Plan (LRSP) offers a structured approach to identifying, analyzing, and prioritizing safety improvements on local roads. Tailored to address specific local needs and issues, the LRSP process results in a prioritized action list aimed at reducing fatalities and serious injuries. The Federal Highway Administration (FHWA) provides valuable resources, including an LRSP Do-It-Yourself website, to guide local agencies and their partners in creating and implementing effective LRSPs.

Implementation Cost	
High	
Medium	✓
Low	✓

Countermeasure Example Photo



Source: FHWA

Safety Benefits

Safety Benefits
10-60% reduction in total crashes

Local Context

Developing a Local Road Safety Plan (LRSP) is essential for enhancing road safety at the local level and aligning with a State's Strategic Highway Safety Plan (SHSP). Key elements of an LRSP include engaging stakeholders from engineering, enforcement, education, and emergency services; fostering collaboration among various agencies to leverage expertise and resources; identifying target crash types and implementing proven safety countermeasures; and establishing timelines and goals for implementation and evaluation. LRSPs are valuable tools for prioritizing safety improvements, demonstrating proactive risk management, and reducing fatalities and injuries on local roads. They should be considered living documents that are regularly updated to reflect evolving local needs and priorities.

Source: FHWA