FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN

Local Agency Safety Funding
GUIDE

FOR OFF-SYSTEM ROADWAYS

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GOAL: To reduce fatal and severe injury crashes.
Foreword

Why and How Has This Guide Been Developed?

The Florida Department of Transportation District Seven’s main goal is to “Reduce the Number of Fatalities and Serious Injuries Caused by Traffic Crashes”. To accomplish this main goal and to maximize the safety benefits for local roadways, District Seven encourages local agencies to proactively identify and analyze their safety issues using FDOT District Seven’s data-driven process to score and rank potential projects on a district-wide basis. This goal is complicated by Florida’s wide variety of local agencies, roadway types, and project types, including: rural vs. urban, low-volume vs. high-volume, and intersection vs. roadway segment vs. network-wide. Many local agencies in District Seven have limited safety analysis resources and analysis tools specifically designed for local roadway managers. Currently, there is a vast range of safety documents, program guides, and analysis tools with a wide variety of complexity and applications. Without clear and simple safety guidance for locals, agencies may take a ‘reactive’ approach to safety in their jurisdiction, even when research has shown proactive safety analysis of roadways is more effective in making system-wide safety improvements.

The Federal Highway Administration (FHWA) provides national leadership in identifying, developing, and delivering safety programs and products to local governments to improve highway safety on local and rural roads. FHWA published a set of four manuals designed specifically for local rural road owners: Intersection Safety, Roadway Departure Safety, Roadway Safety Information Analysis, and Developing Safety Plans. These manuals present a data driven safety analysis framework for local agencies across the Nation. Link to FHWA manuals: http://safety.fhwa.dot.gov/local_rural/training.
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1. **Introduction and Purpose**

1.1 **FDOT District Seven Local Roadway Safety Opportunities**

The information in this Guide is specifically directed toward the Florida Department of Transportation (FDOT) District Seven local agency road managers and safety practitioners with responsibility for operating and maintaining local roads. This Guide is designed to provide targeted information on roadway safety, as well as a framework and step by step process that may be used to assess and improve the safety of the local road networks. It outlines how to analyze the available data and identify locations with safety issues, identify appropriate countermeasures, conduct benefit/cost analyses, select projects, and conduct evaluations. It also offers information on the procedures and processes for submitting projects for funding consideration.

1.2 **FDOT District Seven Role in Local Roadway Safety**

FDOT District Seven Safety Office is responsible for administering Florida’s state and federal-aid highway safety improvement funds for state and local roadway safety improvements. This funding primarily comes to District Seven through the state roadway program and the federal-aid safety program: the Highway Safety Improvement Program (HSIP)—a federal-aid program focused on improving traffic safety on all public roads.

FDOT District Seven's administration of these programs encompasses many responsibilities, including: the establishment of program guidance; reviewing applications for improvements on local roadways; ranking applications/projects on a district-wide basis; selecting projects for funding based on the highest potential for reducing fatalities and serious injuries; focusing funding on problem areas identified in the Florida Strategic Highway Safety Plan (SHSP); and assisting with programming and delivery issues through the delivery of the local agency projects.

District Seven strives to assist local agencies to proactively identify the locations with the highest safety needs and to select cost-effective safety improvements.

To help show the interrelationship between FDOT's District Seven project selection process, a diagram showing the HSIP Call-for-Projects Process is provided in Figure 1 on the following page.
The “District 7 Local Agency Safety Funding Guide” provides guidance for a comprehensive proactive safety analysis approach, which includes Location Identification.

If the Resulting B/C is low the Local Agency may use guidance in the new District 7 Local Agency Safety Funding Guide and CDMS to identify new locations and/or countermeasures.

Many Local Agencies will have locations and improvements selected prior to the Call for Projects.

Crash Data: Use locally-preferred source or CDMS.

Preliminary Design Plan/Map showing improvements.

Determine Total Project Cost Detailed Engineer’s Estimate, PE, ROW, CE costs.

Calculate the B/C Ratio: This step must be done using CDMS.

Complete documents & submit to FDOT District 7 (Refer to Section 8 for list of documents to be submitted).

Agency submits Application to District 7 Safety Office.
1.3 The Local Roadway Crash Problem

Statewide for 2013 more than 2,400 people are killed annually in traffic crashes with 40 percent occurring on local roadways. In District Seven, more than 3,100 fatal and serious injury crashes occur annually, with about 50 percent occurring on local roads. That’s about 10 fatal and serious injury crashes daily. Thus, Every Day Counts when it comes to saving lives and reducing injuries.

1.4 “Safety Challenge”

District Seven “challenges” local agencies to commit the modest resources needed to apply the concepts and tools outlined in this Guide. By utilizing this simple framework for identifying, analyzing, implementing, and evaluating a proactive approach for improving safety on their roadways, District Seven is confident that the result will be a better understanding of safety issues and the proven low-cost countermeasures that reduce fatal crashes and serious injuries. Following that, projects can be identified and funding secured to implement the projects. This small investment of time will help District Seven local agencies achieve significant reductions in future fatalities, injuries, and overall crashes. Local agencies may also gain the added benefit of improved job satisfaction of those involved. There are few more rewarding tasks than knowing that these efforts will result in future roadway users arriving safely at their destination instead of becoming statistics.

1.5 Summary of information in this Guide

This Guide provides information on effectively identifying District Seven’s local roadway safety issues and the countermeasures leading to the effective implementation of safety projects that improve safety on local roadways ultimately reducing the number of deaths and serious injuries.

District Seven expects this Guide to support its efforts in reviewing applications for safety improvements on local roadways, ranking applications/projects on a district-wide basis, and selecting projects for funding with the highest potential for reducing fatalities and serious injuries, and evaluating safety projects and the overall safety program. As local agencies throughout District Seven utilize the proactive safety analysis approach outlined in this Guide, their applications for safety improvement funding will include low cost improvements and locations with the highest needs.

The proactive safety analysis framework incorporated in this Guide is summarized in Figure 2. This flowchart illustrates how each of the individual sections of this Guide work together to make up a proactive safety analysis approach.
Local Roadway Safety: Proactive Safety Analysis Approach

Collect system-wide crash data CDMS (CARS Data)

Analyze crash data and identify crash concentrations CDMS (GIS Mapping) Highway Safety Manual (HSM)

System Wide  By Segment  By Intersection

Combine crash data analysis with traffic volume data and roadway data analysis, including RSAs CDMS (Web-based Street View)

Select Location based on Analysis Results
Corridors, Roadways Segments, and/or Intersections

Identify Countermeasure
Lower cost CMs = high B/C ratio greater than 2

Estimate the Total Project Cost
Cost to design, cost per crash data construction estimate and construct improvements

Calculate the Project’s B/C Ratio CDMS

Evaluate Project’s Cost Effectiveness
Consider changing location and/or countermeasures

Fund and Construct Improvements
Assess existing funding sources for low-cost projects Seek new funding sources for larger projects

Evaluate the Effectiveness of past projects
The goal is to continually improve future safety decisions
2. **Analyzing Safety Data & Identify Candidate Projects**

The following processes and methods should be considered and used by local agencies in analyzing possible candidate projects for safety funding through FDOT District Seven Safety Office.

2.1 **Reactive vs. Proactive Safety Issue Identification**

There are two basic approaches to address safety issues: Reactive vs. Proactive

**Reactive Approach**
- Recent crashes triggering safety investigations
- Specific recurring crash concentrations triggering safety investigations
- Stakeholder identification of potential locations and request for improvements

**Proactive Approach**
- Ongoing safety analysis of the roadway network driven by any new source of funding
- Ongoing safety analyses of the roadway network *(Preferred Approach!)*

This Guide encourages safety practitioners to pursue a proactive approach and continually analyze the safety issues of their roadway networks to yield the best overall safety results for the local agency.

2.2 **Implementation Approaches**

When agencies identify their safety issues proactively throughout their roadway networks, they may find crash concentrations at their intersections and along corridors. The safety practitioner should then consider which implementation approach to utilize. Typical approaches include:

- Systemic approach
- Spot location approach
- Comprehensive approach incorporating engineering, enforcement, education and emergency medical services

Each of these approaches has benefits and drawbacks. Local agency safety practitioners should be open to implementing any of these approaches as they identify the safety issues and analyze the data documented in Sections 2 and 3 of this Guide.

**Systemic Approach**

The systemic approach is primarily based on addressing a particular crash type and includes application of a proven safety countermeasure at multiple crash locations, corridors, or geographic areas. The implementation of the systemic approach is generally based on ‘system-wide’ crash data with the
estimates of the impacts being made in terms of benefits measured in traffic crash reduction and improvement cost, (Benefit/Cost (B/C) ratio.

There are two methods of application for the systemic approach. This Guide will primarily focus on the approach in which a common crash type is selected for analysis based on the results of crash data analysis. Locations experiencing these crash types and locations with similar geometric features are identified and treated systemically with low-cost, proven safety countermeasures. A second common application of the systemic approach begins with identifying low-cost, effective countermeasures to common traffic safety issues. Once a basic set of countermeasures is identified, the crash data system is analyzed to choose locations where the countermeasures can be cost-effectively deployed. This Guide does not provide further information on the second application method. Further information on this application can be found in detail in the FHWA manuals for Local Rural Road Owners at http://safety.fhwa.dot.gov/local_rural/

Benefits of the systemic approach may include:

- **Widespread effect** - The systemic approach can impact safety issues at a large number of locations on an entire local roadway network and result in high B/C ratios. Projects that combine similar locations that have and haven’t yet experienced crashes can still have high B/C ratios.
- **Crash type prevention** - Using predominant crash types with a high or moderate level of crashes, an agency can address locations that have not yet experienced these crash types, but have similar characteristics to locations with such crash histories (e.g., geometric conditions, traffic volume).
- **Cost-effectiveness** - Implementing low-cost solutions across an entire system or corridor can be a more cost-effective approach to addressing system-wide safety.
- **Reduced data needs** - The systemic approach may be used without detailed crash history for specific locations, thereby reducing data needs.

Drawbacks of the systemic approach may include:

- **Because this approach does not always address locations with a history of crashes, it requires a more advance data analysis to justify improvements at locations.**
- **The systemic approach will rarely include a recommendation for high cost safety improvements at a single location.** Since these are the types of projects that garner attention from decision makers, the media, elected officials, and the general public, additional effort from the safety practitioner may be required to explain the systemic approach and its benefits to those groups.
- **Budgetary constraints.**

**Spot Location Approach**

The spot location approach is typically based exclusively on an analysis of crash history. Due to the fact that some locations in a jurisdiction will likely have a significantly higher number of crashes than others, it is important to identify those locations and treat them in a cost-effective manner.
Benefits of the spot location approach may include:

- Focus on demonstrated needs. The spot location approach focuses directly on locations with a history of crashes and addresses those crashes.
- Justifying improvements can be easy. Because this approach addresses locations with a history of crashes, it is usually easy to justify improvements.
- If low-cost countermeasures are used, this approach can prove very cost effective. Ongoing maintenance and development projects offer a great opportunity for these low-cost improvements to be constructed with little to no additional costs to local agencies.

Drawbacks of the spot location approach may include:

- Assumption that the past equals the future. This approach assumes locations with a history of crashes will continue to experience the same number and type of crashes in the future.
- Minimal overall benefit. Local agencies often use this approach with medium and high cost improvements at specific locations which do not represent their worst high crash concentration locations.

The spot location approach to traffic safety is recommended to be implemented in parallel with the systemic approach to provide the best combination of safety treatments.

**Comprehensive Approach**

The comprehensive approach introduces the concept of the “4 E’s of Safety”: Engineering, Enforcement, Education, and Emergency Medical Services (EMS). This approach recognizes that not all locations can be addressed solely by infrastructure improvements. Incorporating other elements is often required to achieve marked improvement in roadway safety. Some roadway segments may be identified for which targeted enforcement and education is an appropriate countermeasure. In general, the most common violations are speeding, failure-to-yield, aggressive driving, failure to wear safety belts, distracted driving, and driving while impaired. When locations are identified as having these type violations, coordination with the appropriate law enforcement agencies is needed to deploy visible targeted enforcement and education to reduce the potential for future driving violations and related crashes. To improve the effect, education and outreach efforts may also be used to supplement enforcement and engineering efforts. An efficient EMS system is integral to reducing injuries and fatalities resulting from traffic crashes and is key to ensuring prompt emergency response to traffic crashes. Prompt EMS response can be the difference between an injury being “recoverable” versus becoming a “long-term disability or even death”.

**2.3 Analyzing Local Roadways**

This Guide encourages District Seven local agency safety practitioners to proactively analyze their roadway networks with the intention of yielding the best overall safety benefits. When utilizing a proactive safety
analysis approach, safety practitioners need to consider a wide range of information sources—including those used in reactive analysis approaches.

There are a number of information sources that can be accessed to get a clearer picture of the safety issues on the roadway network. These can be formal information or informal sources, including:

**Formal sources:**
- District Seven and local crash databases
- Law enforcement crash reports, citations
- Field assessments
- Road Safety Assessments

**Informal sources:**
- Observational information from road maintenance crews, law enforcement and emergency responders.
- Citizen notification of safety concerns

Examining crash history will help safety practitioners identify locations with an existing roadway safety problem, and also identify locations that are susceptible to future roadway crashes. In addition to location identification, this data can provide information regarding crash causation that ultimately provides insights into identifying potentially effective countermeasures. Emphasis on data-driven decisions is indicative of reliability and efficiency. The more reliable the data, the more likely the decisions regarding safety improvements will be effective. However, detailed, reliable crash data are not available in all areas. Under this circumstance, the practitioner should use the best available information and professional judgment to make the best decisions. In an effort to mitigate these situations, FDOT District Seven has developed the Crash Data Management System (CDMS) which includes GIS mapping tools to access all documented collisions district-wide. This data is now available to all FDOT District Seven’s local agencies through the CDMS database. *(Section 2.4 & 2.5 for more details)*

As a guideline, it is generally accepted that at least 3 years of historical data be used for crash history analysis, though additional years of data can provide more information. Due to the randomness of crashes in a given year, a multi-year average of safety data will smooth outlier years of relatively high or low roadway crash occurrences. If only severe crashes are analyzed (those that resulted in a fatality and/or serious injury), more years of data may be necessary for an effective evaluation. Regardless of the analysis period, consideration should also be given to any geometric improvements or changes in traffic patterns that could have occurred. When selecting the number of years of data and analyzing the data, consider any significant changes to the roadway or environment during the analysis period. Such as, was the roadway widened or redesigned, is there a new commercial development or new residential development, which can increase traffic volumes and patterns.
2.4 FDOT and Local Crash Databases

Florida Department of Transportation (FDOT) has a central repository for storing crash data, called CARS, which stands for Crash Analysis Reporting System (CARS). CARS is a comprehensive data source for roadway safety analysis that includes almost all public roads in the database. This database is maintained with data from the Florida Department of Highway Safety and Motor Vehicles long form “Florida Traffic Crash Reports”. The information in CARS is available to all FDOT districts. In addition, District Seven has developed a Crash Data Management System (CDMS) with crash data extracted from CARS on a monthly basis and allows more flexibility in accessing the data. This information is available for District Seven local agencies by contacting the District Seven Safety Office.

Crash databases can be used for both spot location treatments and systemic deployments, depending on the details of the collected data. For example, if a high number of crashes are occurring at a particular curve or along a segment of roadway, a spot treatment at that location may be appropriate. However, systemic treatment of multiple locations experiencing similar crash types may be necessary and most beneficial for reducing fatalities and injuries.

**Recommended Action:** Obtain at least 3 years (ideally 5 years would be better) of network-wide crash data to identify local roads that have a history of roadway crashes. Identify predominant roadway crash locations, crash sub-types and other common characteristics.

As safety practitioners gather formal and informal information relating to the safety of their roadway networks, they are encouraged to develop a separate spreadsheet to help track and manage this data. This spreadsheet can serve as a database to help an agency identify locations and crash characteristics representing their greatest safety issues and guide them in identifying appropriate countermeasure(s). The spreadsheet should capture the data gathered in each of Sections 2.1 through 2.13. The FHWA manual on Roadway Departure Safety: A Manual for Local Rural Road Owners - [http://safety.fhwa.dot.gov/local_rural/training/fhwasa1109/](http://safety.fhwa.dot.gov/local_rural/training/fhwasa1109/) has a good example spreadsheet, but it is expected that each agency’s spreadsheet should be formatted to meet their needs.

2.5 Crash Data Management System (CDMS)

Site Features:

- Applications to query map and download geo-referenced CARS data
- Summary tables based on data included in CARS individual crash reports; these summary tables can be generated based on specified data fields or spatial limits
- Virtual field review by connecting the crash location to GIS mapping allowing the examination of the existing roadway infrastructure and dimensions
- Safety Office Annual Benefit Cost Analyses form used to calculate the Benefit/Cost Ratio for the HSIP application process. For latest form go to [http://www.tampabaytrafficsafety.com/SitePages/Home.aspx](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx)
• Identifies critical safety areas in order to apply selective enforcement activities and educational efforts

**Recommended Action:** District Seven local agencies utilize either the third party web-based traffic records system or this District Seven CDMS. The CDMS database can help the safety practitioner complete or assist with each of the actions in **Sections 2.1 through 2.13** (as noted in the individual sections) and the website includes several tutorials specifically designed to support the individual sections of this Guide. Local safety practitioners may find the CDMS output files as a great starting point to build their tracking spreadsheet discussed in the recommendation of **Section 2.1**.

### 2.6 Florida Traffic Crash Report

Both State and local law enforcement officials can be an important source of roadway crash data. Law enforcement crash reports can be valuable in identifying the location and contributing circumstances to roadway crashes. The following variables (at a minimum) should be extracted and compiled from the crash reports:

- Location
- Date and time
- Crash type
- Crash severity
- Weather conditions
- Violation Type
- Light conditions
- Sequence of events
- Contributing circumstances
- Driver Variables: Age of driver, DUIs, use of seat belt, etc.
- Vehicle type

Similar to the crash database, the information in the crash reports can be used to assist in the identification of potential infrastructure and non-infrastructure safety treatments and the deployment approach.

**Recommended Action:** Develop a relationship with law enforcement officers responsible for enforcement and crash investigation and EMS personnel. This could foster cooperation in sharing crash reports and safety information and collaboration on problem roadway segments. Local agencies should consider using District Seven CDMS or the countywide web-based traffic records system to access the local crash report data. In addition local agencies need to consider law enforcement, EMS and other first responders who are often the “eyes and ears” of safety who can provide more timely information regarding emerging safety issues than crash reports.

### 2.7 Observational Information

Law enforcement officers, EMS, and local agency field personnel may serve as valuable resources to identify problem areas. Since they travel extensively on local roads, they can continuously monitor roads for actual or potential problems (e.g., poor delineation, fixed objects near the roadway, missing signs, signs
of vehicles leaving the road). Law enforcement observations of driver behavior and roadway elements can provide valuable information to the local road agency. Additionally, law enforcement officers are sometimes aware of problem areas based on citations written, even if crashes related to the violations have not yet occurred. Field personnel often keep logs of their work, including sign and guardrail replacements, debris removal, and edge drop-off repairs. These logs can provide supplemental information about crashes that may not have been reported to law enforcement.

Information obtained from field personnel, EMS personnel, and law enforcement officers can help support all three methods of implementation approaches: spot location treatments, systemic deployments, and the comprehensive approach. Often, traffic violations such as speeding and impaired driving lend themselves to education and enforcement solutions to address these behaviors and supplement the intended infrastructure countermeasures.

Work programs and local Capital Improvements Programs (CIP) should be evaluated to identify future scheduled improvements to the location of concern. Scheduling safety improvements coincident with other construction and maintenance activities can provide cost savings through economy of scale and also provide for a safer environment by allowing a single MOT to facilitate both activities.

**Recommended Action:** Add information received from law enforcement, EMS, and field personnel observations to the agency’s tracking spreadsheet. Develop a system for field personnel to report and record observed roadway safety issues and a mechanism to address them.

### 2.8 Public Notifications

Occasionally, when unsafe situations are observed, local citizens may notify the local government by email, letter, telephone, or at a public meeting. These sources can serve as indicators that a safety issue may exist and may warrant further review and analysis to determine the extent of the issues.

Information identifying safety issues on local roads may also come from community or regional newspapers, newsletters, correspondence, and from local homeowner and neighborhood associations. This information can help pinpoint which segments are candidates for review; it also benefits the local agency safety program and its relationships with the community.

**Recommended Action:** Review and summarize these information sources, identifying segments or corridors with multiple notifications and record the locations, dates, and nature of the problem that are cited. Add information received from public notifications to the Table 1 spreadsheet.

### 2.9 Roadway Data

It is also valuable to obtain information about the existing roadway infrastructure. The following roadway characteristics are often used to assist safety practitioners in safety analyses of roadway segments:
• Roadway surface (dirt, aggregate, asphalt, concrete)
• Roadway cross-section
• Roadway geometry (horizontal, and vertical)
• Lane information (number, width)
• Shoulder information (width, type)
• Median (type, width)
• Facility design speed and posted speed limit
• Traffic control devices present (signs, signals, pavement marking, rumble stripes, delineation, etc.)
• Roadside hardware (guardrail, end treatments, concrete barriers, cable barrier, sign and luminaire supports, crash cushions)

This information can be combined with crash data to help local safety practitioners identify appropriate locations and treatments to improve safety. For example, if a local rural segment is experiencing a high number of horizontal curve-related crashes, analysis of the inventory of roadway elements could reveal that the roadway does not have sufficient signage installed in advance of many of those curves.

The District Seven CDMS, described in Section 2.2, can provide safety practitioners with much of this roadway data visually by using GIS mapping. By utilizing CDMS safety practitioners can save hours and even days during the initial steps in the safety analysis of their network. Once agencies start to define individual safety projects for funding and future construction, actual field reviews such as road safety assessments are needed to ensure a complete understanding of the project location and context.

**Recommended Action:** Identify and track roadway characteristics for the intersections, roadway segments, and corridors being considered for safety improvements.

### 2.10 Exposure Data

The actual number of crashes can sometimes provide misleading information about the most appropriate locations for treatment. Introducing exposure data helps to create a more effective comparison of locations. Exposure data provides a common metric to the crash data so roadway segments and intersections can be compared more appropriately, helping local agencies prioritize their potential safety improvements.

The most common type of exposure data used on roadway segments is traffic volume. A count of the number and type of vehicles and pedestrians can provide information for comparison. For example, if two roadway segments have the same number of crashes but different traffic volumes, the segment with fewer vehicles (i.e., less exposure) will have a higher crash rate, meaning that vehicles were more likely to have experienced a crash along that roadway segment.
**Recommended Action:** Consider the availability of exposure data and track it along with the other crash data to help prioritize potential safety improvements.

### 2.11 Field Assessments and Road Safety Assessments (RSA)

In conjunction with the collection of crash data, the local road practitioner should always consider conducting field assessments to help determine the safety of the roadway network and suspect problem locations. Assessing locations in the field provides additional information to the local practitioner that will factor into confirming issue identification and countermeasure selection.

An assessment can be as informal as driving or walking the road network looking for evidence of roadway crashes. An informal field assessment can be performed by an in-house multidisciplinary team with a traffic safety expert, law enforcement personnel, and others. The team can visit several sites and document evidence of crashes or deficiencies on the roadway or roadside. Examples of crash activity may include damaged trees or fences, skid marks, ruts on the shoulder, car parts on the shoulder, and/or pavement drop-offs. This information can be used to develop recommendations for improvement.

Field reviews can also be more formalized such as by conducting a Road Safety Audit (RSA). An RSA is a formal safety performance examination of an existing or future road by an independent, multidisciplinary team. The team examines and reports on existing or potential road safety issues and identifies opportunities for safety improvements for all road users ([http://safety.fhwa.dot.gov rsa/](http://safety.fhwa.dot.gov/rsa/)).

Informal field assessment and more formal RSAs provide an opportunity for local safety practitioners to gather and summarize all of the information sources discussed above in Section 2. If implemented correctly, they can reduce the overall time and resource needs for the project delivery process by early-identification of potential project delivery obstacles and the most appropriate countermeasures. Far too often, safety projects experience significant time delays and increased resource needs because safety, environmental, right-of-way, infrastructure, and operational impacts and public opposition are not identified until late in the project delivery process. At the very least, these late-identified impacts cause time delays for the agency to go back and work through them, but quite often they result in major elements of the project having to be re-scoped and then redesigned.

As with other sources of information, evidence discovered in a field assessment and RSA can help support spot location treatments and/or systemic deployments. For example, if field evidence indicates there have been multiple roadway departure crashes on a single curve (due to multiple ruts on the roadside, fence repairs, or vehicle parts found on the roadside from more than one vehicle), a spot treatment may be appropriate to address safety at the curve. If similar types of crashes are occurring on several curves on the roadway network, then systemic deployment of appropriate countermeasure(s) could be a viable solution.
Agencies considering RSAs for the first time are encouraged to consider requesting support from the District Seven Safety Office. For more information on RSA: http://safety.fhwa.dot.govrsa/

**Recommended Action:** Consider completing field assessments or RSAs. Develop simple straightforward criteria on when one of these will be undertaken. The information gathered during these assessments should be added to the agency’s tracking spreadsheet.

**Safety Data Analysis**
Proactive safety analysis will assist in making informed decisions on the type, deployment levels, and locations for safety countermeasures. This builds on the previous discussions on information sources that identify safety issues. “Safety Data Analysis” is one of the most critical steps in an agency’s overall proactive safety analysis approach. Ideally, agencies regularly analyze the safety data for their entire roadway networks to identify and prioritize the locations with the most severe safety issues. This step is often skipped by agencies reacting to a recent crash and the corresponding public outcry. Without completing this step, agencies may leave their most critical safety locations undetected and select countermeasures that do not yield the maximum safety benefits. FDOT recommends all agencies complete this step before starting their applications for safety improvement program funding.

As agencies analyze their safety data, they will need to select the implementation approach that will most effectively address the safety issues; systemic approach, spot location approach, or a comprehensive approach. These implementation approaches were described in Section 2.2.

**2.12 Quantitative Analysis**
Crash data analysis is used to determine the extent of the roadway safety issues, the priority for the application of scarce resources, and selection of appropriate countermeasures. The two main quantitative analysis methods for roadway crashes are crash frequency and crash rate.

**Crash Frequency**
Crash frequency is defined as the number of crashes occurring within a determined study area. A safety local practitioner can determine crash counts using information compiled from the District Seven CDMS crash database or law enforcement crash reports or other methods discussed in Section 2, including the District Seven – Crash Data Management System (CDMS) tools. With this information, the practitioner can:

- Summarize the crashes by attributes such as type, severity and location
- Spatially display the sites on a pin map or a GIS software package
- Collision diagrams showing the direction of movement of vehicles and pedestrians involved and stationary objects that played a role in the crashes
- Provide a report sorted by location and crash type to identify problem locations
- Determine predominant roadway crash types and associated roadway physical characteristics
- Determine appropriate countermeasures
Once this information is collected and displayed, the practitioner can complete a methodical analysis by county or route and also a cluster analysis to determine those roadway locations that have experienced a high or moderate level of crashes.

Local agency safety practitioners have their preferred methods for completing these analyses, but for those who don’t and for those who are willing to try something new, the District Seven recommends utilizing the CDMS tools and the processes outlined in this Guide.

**Crash Rate**
Crash rate analysis can be a useful tool to determine how a specific roadway or segment compares with similar types of roadway classifications. A count of the number of crashes is often inadequate when comparing multiple roadways of varying lengths and/or traffic volume. Crash rate is often used to prioritize locations for safety improvements when working with limited budgets and trying to achieve the greatest safety benefits with limited resources. Where traffic volume data is unavailable, other information can be used to provide exposure information. One often-used factor is the length of the roadway segment on each route studied. Comparing the number of roadway crashes per mile (segment analysis) or per intersection (spot analysis) can help an agency identify potential opportunities to improve safety. The FHWA published a set of four manuals (which this Guide is based on) designed specifically for local rural road owners: Intersection Safety, Roadway Departure Safety, Roadway Safety Information Analysis, and Developing Safety Plans. These manuals include formulas for calculating crash rates on roadway segments and intersections. Link to FHWA manuals: [http://safety.fhwa.dot.gov/local_rural/training](http://safety.fhwa.dot.gov/local_rural/training).

Even though both crash frequency and crash rate are helpful for local agency safety practitioners to effectively rank their most critical locations for improvements, the limited district traffic volumes on local roads precludes District Seven from using the crash rate methodology in district-wide project scoring and ranking processes for the HSIP program. FDOT’s methodology is discussed in detail in **Section 5** of this Guide.

**Recommended Action:** Review crash data collected through actions included in **Section 2** by using pin-maps and collision diagrams. Separate pin-maps for specific crash types may be beneficial to the selection of specific countermeasures. To assist local agencies with prioritization of safety improvements, calculating crash rates should also be considered using “lengths” and/or “traffic volumes”.

**2.13 Qualitative Analysis**

Qualitative analysis considers the physical characteristics of the identified sites. This can take the form of examination of maps, photographs, or a field assessment. As discussed in **Section 2**, this qualitative information and field assessments can be a field assessment or more formalized as a road safety assessment (RSA).
For local agencies completing a proactive safety analysis of their entire roadway networks, it may not be practical to conduct field assessments of all locations with collision concentrations. For this reason, safety practitioners are encouraged to utilize internet-mapping tools to view maps and photographs and virtually visit these sites from their offices. As discussed earlier in this Guide, the CDMS database automatically links the local crash locations to GIS mapping, which offers a significant time savings over reviewing sites individually. However, a field review should be conducted before projects are submitted for funding.

**Recommended Action:** Incorporate qualitative analysis elements into agency’s proactive analysis approach.
3. Identify Countermeasures

With the location and crash problems identified from actions completed in Section 2, the safety practitioners now need to select the set of proposed safety improvements to reduce the likelihood of future crashes. Individual elements of standard safety improvements are referred to as countermeasures. Many countermeasures have corresponding Crash Modification Factors (CMFs).

When applied correctly, CMFs are tools that can help agencies identify the expected safety impacts of installing various countermeasures to reduce crashes. CMFs are multiplicative factors used to estimate the expected number of crashes after implementing a given countermeasure at a specific site (the lower the CMF, the greater the expected reduction in crashes). Crash Reduction Factors (CRFs) are directly connected to the CMFs and are another indication of the effectiveness of a particular treatment, measured by the percentage of crashes the countermeasure is expected to reduce. The CRF for a countermeasure is defined mathematically as 1 – CMF (the higher the CRF, the greater the expected reduction in crashes).

To use the limited highway safety funding in the most cost effective manner, local agencies are encouraged to identify and implement the optimal combination of countermeasures to achieve the greatest benefits. Combined with crash cost data and project cost information, CMFs can help safety practitioners compare the benefit-to-cost ratio (B/C ratio) of multiple countermeasures and then choose the most appropriate scope for their proposed safety improvement projects.

3.1. Selecting Countermeasures and Crash Modification Factors / Crash Reduction Factors

Selecting an appropriate countermeasure and corresponding CMF is similar to choosing the right tool for a job. In some cases, the countermeasure and CMF may not be perfect, but may still work well enough to get the job done by providing a reasonable estimation of the countermeasure's effect. In other cases, using an improper countermeasure and CMF may do more harm than good. Applying a CMF that does not fit the specific situation may not allow a reasonable estimate of the countermeasure's safety effectiveness and may result in selecting a less cost-effective treatment.

The FHWA is leading a concerted effort to develop information on CMFs and make it available to State and local agencies. The CMF Clearinghouse, a free online data base is accessible at www.cmfclearinghouse.org, details the varying quality and reliability of CMFs available to transportation professionals.

The FHWA identifies three main considerations necessary to assure appropriate selection of CMFs for a given countermeasure: the availability of relevant CMFs, the applicability of available CMFs, and the quality of applicable CMF's:
**Availability:** The availability of a CMF that applies to a specific situation depends on whether research has been conducted to determine the safety effects of a particular countermeasure or combination of countermeasures, and whether researchers have documented it. The CMF Clearinghouse contains more than 2,900 CMFs and posts quarterly updates to include the latest research.

**Applicability:** In general, once a safety practitioner determines that one or more CMFs exist for a specific countermeasure, the next step is to determine which CMF is the most applicable. Applicability depends on how closely the CMF represents the situation to which it will be applied. Safety practitioners should evaluate the potentially applicable CMFs, eliminating any that are not appropriate for the situation. They need to choose the most appropriate CMFs for their specific project based on factors including but not limited to: urban areas vs. rural areas; low vs. high traffic volumes, 2-lane vs. 6-lane roadways; individual vs. combination treatments; signalized vs. non-signalized intersections; and minor crashes vs. fatal crashes. If safety practitioners choose to use a CMF outside the range of applicability, the safety effect will likely be over or underestimated.

**Quality:** Often a search for applicable CMFs results in multiple CMFs for the same countermeasure. To help make a selection, a practitioner needs to examine the quality of each CMF. The quality of a CMF can vary greatly depending on several factors associated with the process of developing the CMF. The primary factors that determine the quality of a CMF are the study design, sample size, standard error, potential bias, and data source. Both the Highway Safety Manual (HSM) and the CMF Clearinghouse provide some indication of the quality of each CMF. The CMF Clearinghouse provides a star rating for each based on a scale of 1 to 5, where 5 indicates the highest quality. The most reliable CMFs in the HSM are indicated with a bold font. Note: Additional detail information is provided in the Highway Safety Manual see web site at: [http://safety.fhwa.dot.gov/hsm/](http://safety.fhwa.dot.gov/hsm/)

**In summary:** When selecting which countermeasures and CMFs to apply to their specific safety needs, local agency safety practitioners need to consider the **availability** of relevant CMFs, the **applicability** of available CMFs, and the **quality** of applicable CMFs. Understanding that this may be challenging without many years of experience, local safety practitioners should seek engineering expertise from a county traffic safety engineer or the District’s Safety Engineer. Practitioners are encouraged to utilize the Crash Modification Factors Clearinghouse [http://www.cmfclearinghouse.org](http://www.cmfclearinghouse.org) and the NCHRP Report 500 (23 volumes): Guidelines for Implementation of the AASHTO Strategic Highway Safety Plan, [http://safety.transportation.org/guides.aspx](http://safety.transportation.org/guides.aspx).
4. **Off-System Safety Project Application Form**

**Critical Issues and Requirements**

- Our true goal: “Reducing Fatal and Serious Injury Crashes”
- Validity of submitted projects
- Identify “agency coordinator” for Local HSIP program
- Perform “Due diligence” Feasible? Constructible?
- Beware of R/W, drainage, utility, environmental and public issues
- Adherence to applicable federal standards
- Fulfilling Local Agency Program (LAP)commitments
- Support from elected officials, governing bodies and the general public
- Competent concept drawings and construction estimates
- Competent crash modification calculations
- B/C analyses
- NPV analyses

**All local agencies intending to submit safety project applications for federal safety funding under the Highway Safety Improvement Program will be required to attend at least 4 CTST meetings per year and present the concept for each project at one CTST meeting prior to the application deadline of May 15, 2015. Project presentation arrangements should be made prior to the meeting by contacting Rhonda Grice (D& CTST Coordinator) at 813-975-6717 or rhonda.grice@dot.state.fl.us.**

**Due Diligence**

- Is there a demonstrated crash history with fatalities and/or serious injuries? Gather crash data and assess causative factors.
- Are there safety countermeasures that will mitigate crashes? Apply crash modification factors.
- Perform detailed field review. Note all opportunities to improve safety. (Several countermeasures may be effective and eligible for funding)
- Research available R/W maps and plats, easements, existing roadway and signalization plans and utility plans. Assess impacts of improvements.
- Prepare concept drawings, preliminary estimate and initial B/C calculation. (This is a good point to coordinate with Safety Ambassador/District Seven)
- Establish project “champion” who can discuss safety and project details with District Seven.
- Assign responsibilities for all aspects of project such as project management, design, utility coordination, public involvement, etc.

**Project Follow-through**

- Fulfillment of **ALL** LAP project commitments by each FDOT District is monitored by FDOT’s Executive Board and the Florida Transportation Commission.
- Before the Department “locks down” a LAP project in the 5-Yr Work Program, it will require reasonable assurances that the local agency will deliver the project as programmed.
- Securing and maintaining project support among elected official and agency managers is essential. This must be done **prior** to programming.

Remember, District Seven Safety Office staff, the LAP Program Administrator and the Safety Ambassadors are available to assist in advancing your projects and completing the Off-System Safety Project Application Form. Use the **HSIP Application Online Process** for your safety projects. Last year’s 2013 cycle was the first funding year that an online pilot program was used to collect safety project data; the process consisted of downloading forms and submitting them electronically. For the 2014 HSIP Funding cycle the online process was expanded to consolidate the applications into a single online form. Note that although the form was designed with capital improvement constructions projects in mind, the application of materials request, study support and other alternate safety efforts can be submitted through this online form by utilizing applicable fields. This new online application will be the normal process for local agencies to submit their safety projects and supporting data. Each District 7 Local Agency should work with their respective District 7 Safety Ambassadors to receive your Agency Access ID & Password to give you access to the HSIP Application Online Process. If your agency does not have an access ID or password please contact Anthony Chaumont at [achaumont@tindaleoliver.com](mailto:achaumont@tindaleoliver.com) or call 813.224.8862.

Note: Forms are still available for manual input however using the online process will be more **beneficial for the local agencies**. Go to [http://www.tampabaytrafficsafety.com/SitePages/Home.aspx](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx) to download or print the latest form or use the online forms available to input data and submit directly to the District Seven Safety Office.

**NOTE:** The online copy of the application has been placed in this guide to allow the user the ability to see what data is collected by the online system for your candidate safety project.
Application Type

Project Title:
(Enter short title for the project)
Example: "AVPM Lithia Pincrest from SR 60 to Fishhawk"

Application Type:

Application Type Comment:
(If applicable type a comment)

Note that not all the fields in the application form are required for each application request type. Please provide comments and upload supporting documentation as appropriate to support your request.

Agency Information

Preparer Information

Preparer Agency:
Preparer Name:
Preparer Title:
Preparer Email:
Preparer Phone:

Agency Approving Person

Authorized Agency Approver Name:
(Agency approving person requires Public Works Director or equivalent position)
Authorized Agency Approver Title:

Authorized Agency Approver Signature:
(By signing, I hereby approve the proposed project and certify that the information contained in the form and required supplemental documentation is accurate and complete to the best of our knowledge)
### Roadway Description

**Location Description:**
(Provide specific details, including the exact location of the project.)

*Example: “Corridor along SR-54 in west Pasco County from US-19 to CR-1 (Little Road)”*

<table>
<thead>
<tr>
<th>Major Roadway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Road Name:</td>
</tr>
<tr>
<td>Major Road Speed Limit:</td>
</tr>
<tr>
<td>Major Road Number of Lanes:</td>
</tr>
<tr>
<td>Major Road AADT:</td>
</tr>
<tr>
<td>Major Road Lighting Type:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cross Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Street(s):</td>
</tr>
<tr>
<td>(Provide project limits if it is a corridor)</td>
</tr>
</tbody>
</table>

*Example: “From the Pasco/Hillsborough County Line to CR-583A (Sunset Lane)”*

<table>
<thead>
<tr>
<th>Cross Street Speed Limit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross Street Number of Lanes:</td>
</tr>
<tr>
<td>Cross Street AADT:</td>
</tr>
<tr>
<td>Cross Street Lighting Type:</td>
</tr>
</tbody>
</table>

### Project Description

**Problem Description:**
Describe the reason for proposed improvement.

*Example: “This section of roadway was identified as exhibiting a cluster of severe injury crashes. A safety review identified the following patterns: a high incident of angle and left-turn crashes, 32 of 68 total (47%), vulnerable road user crashes, 1 pedestrian, 2 bicycle crashes, a high number of mid-block crashes, 31 at intersection (50%), 51 mid-block crashes (59%), 6 head-on (7%). The attached Technical Memorandum describes the findings in detail.”*
Past Improvements:
(Describe any past improvements or actions to correct the issue)

Proposed improvements:
(List and discuss the improvements proposed by this application)

Example: “Replace the two-way left turn lane with a raised separator islands and dedicated bike lanes throughout. The improvement will reduce the number of angle, side-swipe, rear-end, and fixed object crashes by reducing the number of possible conflict points. See the attached Technical Memorandum for a more detailed description.”

Upload Technical Memo or Study which identified/justified the project at the end of the form.

Community Traffic Safety Team Involvement

CTST Participation

CTST Project Presentation Date:
(Involvement in CTST throughout the year is a mandatory prerequisite for participation in this local projects HSIP application process. Please indicate which CTST meetings have been attended, and which meeting this proposed project was discussed.)

Attended Other CTST Meeting Date 1:

Attended Other CTST Meeting Date 2:

Attended Other CTST Meeting Date 3:

Public Notice / Hearing & Public Involvement

Public Notice

Has public notice taken place?
(support from the public for the proposed improvement is an important component, particularly for safety improvements that impact access to/from sites. Indicate weather or not a public hearing took place.)

Public Notice Date:

Upload Supporting Documentation from Public Notice/Hearing at the end of the form.

Project Criteria

https://sharepoint.tindaleeditor.com/sites/OTTSafety/HSIP%20Application%202015/HSIP%20Application%202015Newifs.aspx?List=bc4dfb29%203b2... 3/6
### Florida Strategic Highway Safety Plan (SHSP) Support

**SHSP Support:**
(Does the proposed project support the Florida Strategic Highway Safety Plan (SHSP) as identified at [http://www.dot.state.fl.us/safety/MSP2012/SHSP-2012.htm](http://www.dot.state.fl.us/safety/MSP2012/SHSP-2012.htm))

**SHSP Emphasis Areas:**
(Select all SHSP emphasis areas supported by the proposed project)
- Aggressive Driving
- At Intersection
- At Risk Driver
- Distracted Driving
- Impaired Driving
- Lane Departure
- Traffic Data
- Vulnerable Road User

### Highway Safety Action Plan (HSAP) Support

**Highway Safety Action Plan Support:**
(Is this project a part of an official Highway Safety Action Plan?)

**Highway Safety Action Plan Name:**
(Which Highway Safety Action Plan is this project a component of?)

**Example:** 2013 Pedestrian Safety Action Plan

### Standards Compliance and Design Exceptions

**Minimum Standards Compliance:**
(Has the proposed improvement been constructed in compliance with minimum standards?)

**Green Book Compliance:**
(Does the operation of the facility comply with minimum local street and road standards (Florida Green Book)?)

**Special Design Provisions:**
(Are there any special design provisions required?)

Upload Special Design Provisions Supporting Documentation at the end of the form.

### Field Review and Photo Log

**Field Review:**

**Location Properly Maintained:**

**Application Improvement Typical:**

Upload Field Review / Site Visit Pictures at the end of the Form.

### Concept Plans

**Have plans preparation begun:**

**Have plans been reviewed by FDOT:**

**Typical section sketch of proposed improvements:**
(Include slopes, pavement, curbs, shoulders, drainage items, existing terrain, etc.)

**Are utility adjustments required:**

---

https://sharepoint.finedaledriver.com/sites/07/Safety4/HSBPLIST/HSB%20Application%202015/HSB%20Application%202015NewFile.aspx?List=bc4d9b2f%203b2... 4/8
### Local Agency Safety Funding Guide for Off-System Roadways

### Is the project cost effective?

(Does NOT require substantial design amenities such as drainage restructuring, wooden structures, curb and gutter, gravity walls, etc.)

Upload Supporting Documentation at the end of the Form.

### Preliminary Environmental Assessment

Free of environmental impacts:

### Right of Way

Right of Way:

(Does the improvement be done within existing Right Of Way?)

Other agency jurisdiction approval:

(if this project abuts into another agencies jurisdiction, has approval been obtained from the appropriate persons for this project?)

Upload Right-of-Way Supporting Documentation at the end of the Form.

### Severe Injury Crash History

<table>
<thead>
<tr>
<th>Date Range (Years)</th>
<th>Crashes</th>
<th>Pedestrian</th>
<th>Bicycle</th>
<th>Dark</th>
<th>Intersection</th>
<th>Run Off Road</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All</td>
<td>Fatal Injury</td>
<td>Incap Injury</td>
<td>Non Incap Injury</td>
<td>Fatal Injury</td>
<td>Incap Injury</td>
</tr>
<tr>
<td>From:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>To:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Crashes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Summary of Project Cost

<table>
<thead>
<tr>
<th>Phase</th>
<th>Summary of Funding Request Costs</th>
<th>Improvement Life (Years)</th>
<th>Capital Recovery Factor</th>
<th>Annualized Improvement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Requested Federal Funds</td>
<td>Local Contribution</td>
<td>Total Project Cost</td>
<td></td>
</tr>
<tr>
<td>Study:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design:</td>
<td></td>
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<tr>
<td>ROW:</td>
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<td></td>
</tr>
<tr>
<td>Structures:</td>
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</tr>
<tr>
<td>Roadway:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signs and Marking:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lighting:</td>
<td></td>
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<tr>
<td>Signification:</td>
<td></td>
<td></td>
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<td>ITS:</td>
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<tr>
<td>Utilities:</td>
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<td>MOT:</td>
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<tr>
<td>Mobilization:</td>
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</tr>
<tr>
<td>CEI:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
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</tbody>
</table>

[Link](https://sitepoint.tindaledriver.com/sites/07/Safety/HBIP/Lists/HBIP%20Application%203.2015/HBIP%20Application%203.2015new.htm.aspx?ListId=bc4d9b2%20c02...)
### Other Crash Related Costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Crash Cost:</td>
<td></td>
</tr>
<tr>
<td>(Local Roads use 1/2 State Highway value)</td>
<td></td>
</tr>
<tr>
<td>Cost per Crash Link</td>
<td></td>
</tr>
<tr>
<td>Per Crash Cleanup Cost:</td>
<td>$100.00</td>
</tr>
<tr>
<td>(Default value is $100.00)</td>
<td></td>
</tr>
<tr>
<td>Crash Discount / Interest Rate Percentage:</td>
<td>4.0%</td>
</tr>
<tr>
<td>(Default value is 4.0%)</td>
<td></td>
</tr>
<tr>
<td>Change in Annual Maintenance:</td>
<td>$0</td>
</tr>
</tbody>
</table>

### Additional Comments & Attachments

- **Additional Comments:**
  
  If applicable type any additional comments that reviewers need to know about the application / project.
  
  Example: "A Public Information Meeting on the concept plan was held June 2, 2014. This meeting was attended by approximately 20 citizens. Public comments and the Project Fact Sheet are attached."

- **Attach All Supporting Documentation Here:**
  
  Include:
  
  2. Field Review / Site Visit Pictures
  3. Concept plans
  4. Right of Way Supporting Documentation
  5. Engineering Cost Estimate
  6. Supporting Crash Documentation
  7. Include collision diagram
  8. Crash summary reports
  9. Scanned police reports
  10. Public Hearing Notes

- **Summary of Calculated Fields**

  - Calculated Annualized Crash Cleanup: 1.00
  - Calculated Annualized Maintenance: 10.00
  - Calculated Annualized Improvement: 20.00
  - Calculated Total Annualized Cost: 30.00
  - Calculated Total Improvement Benefit: 40.00
  - Calculated Total Annualized Benefit: 50.00
### Calculated Benefit to Cost Ratio & Net Present Value

- **Calculated Benefit to Cost Ratio:**
- **Calculated Net Present Value:**

### For Official Use Only

<table>
<thead>
<tr>
<th>Project ID Number:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Category:</th>
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<table>
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<tr>
<th>Reviewer Agency:</th>
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</table>

<table>
<thead>
<tr>
<th>Application Status:</th>
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</table>

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https://sharepoint.flddeoliver.com/sites/D7Safety/HSIP/Lists/HSIF%20Application%202015/HSIF%20Application%202014/newifs.aspx?List=bc4d0b2c203b2...
# Off-System Safety Project Application Checklist

This project was reviewed for consistency with the “FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways” and the Plans Preparation Manual. Note: The information listed below must be completed by the local agency and submitted with the Off-System Safety Project Application. Incomplete or missing information may require the application be returned.

## Project Title

**Project Location**

### Date

**Agency Preparer Name**

## Cost Estimate

Itemized costs for drainage, structure widening, pedestrian structures, signal modifications, signing and striping, and special amenities, etc.

<table>
<thead>
<tr>
<th>Included</th>
<th>Not Included</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Cost Effective

Do the proposed improvements require substantial design amenities such as drainage restructuring, wooden structures curb and gutter, gravity walls, etc? (Circle) Yes ☐ No ☐

Does the facility appearance show evidence and support for this type of improvement? (Circle) Yes ☐ No ☐

The intention of the proposed improvements is not to create a roadway reconstruction project.

## Right of Way

Will the existing right-of-way accommodate the proposed improvements? (Circle) Yes ☐ No ☐

Are there any residential or commercial encroachments that may jeopardize the project? (Circle) Yes ☐ No ☐

## Photo Log

Photos of site, intersections, utilities, sidewalks, structures, RR crossings, environmental layout, bridges, etc.

<table>
<thead>
<tr>
<th>Included</th>
<th>Not Included</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Special Design Provisions & Guidelines

Local agency should provide any design criteria and amenities to be included in the preparation of construction plans.

Can the proposed improvements be constructed in compliance with minimum standards? (Circle) Yes ☐ No ☐

Does the overall operation of the facility comply with minimum local street and road standards? (Florida Green Book) (Circle) Yes ☐ No ☐

## Agency Jurisdiction Approval

Documentation of approval of other agencies/departments authorizing project support when project encroaches onto another jurisdiction.

## Maintenance

Is the overall appearance of the facility properly maintained? (Circle) Yes ☐ No ☐

Look at the following elements: roadway surface, shoulder condition, drainage (silted in pipes, evidence of flooding), and overgrown vegetation.
Preliminary Environmental Assessment

Is project within limits of wetlands, contamination, hazardous waste or endangered/threatened species? 

(Circle) Yes No (If yes, the District EM0 should be notified for review.

If yes, which one? ___________________________________________________________________ Type of documentation ________________________

Is environmental permitting required? (Circle) Yes No

If yes, which one? ___________________________________________________________________ Type of documentation: ________________________

Local Agency Program

Is the Local Agency LAP Certified? Does the Local Agency intend for this to be a LAP project?

(Circle) Yes No (Circle) Yes No

Typical Sections

Include a sketch of the proposed project and include information on slopes, pavement, curbs, gutters, shoulders, drainage items and existing terrain, etc. [ ] [ ] [ ]

Agency Field Review

Was a Local Agency Project Field review completed? [ ] [ ] [ ]

Name: _______________________________ Title: _______________________________ Review date __________________________

Signed Application

Authorized Agency Person: _______________________________ (print name)

Authorized Agency Signature: __________________________________________

Title: _______________________________ Date: ________________________

District 7 Review

Authorized person: _______________________________ Signature: _______________________________

Title: _______________________________ Date: ________________________
Off-System Safety Project Application Information

SHSP
The Florida Strategic Highway Safety Plan (SHSP) focuses funding on problem areas where the greatest reduction in the number of fatal and serious injury crashes exist. The SHSP identifies four Emphasis Areas: Aggressive Driving, Intersections, Lane Departure and Vulnerable Road Users (pedestrians, bicyclists, and motorcyclists). The District Seven Safety Office is responsible for oversight and implementation of the highway safety improvement projects in support of the Florida SHSP. As part of the Florida SHSP, we are requesting candidate projects for the Highway Safety Improvement Program (HSIP).

FUNDING
State and Federal Highway Safety Improvement Program funds are provided to reduce the number of fatal and serious injury crashes on all public roads. Specific site or system-wide improvements that reduce crashes are eligible for funding. Funds may be used to address safety issues independently without completely reconstructing entire roadway segments or intersections to all of the latest policies and standards.

All phases of a safety improvement project are eligible for this program to include preliminary engineering, construction, and Construction, Engineering and Inspection (CEI). Preference will be given to projects that are approaching “ready to go” and those that have the required Benefit Cost ratio of 2.0 or greater. Also, local matching fund types and amounts will need to be specified in the application form. With respect to eligibility of funding, Section 148(a) (3) of title 23 U.S.C. provides a listing of eligible highway safety improvement projects. It is important to note that the most important decision in establishing safety strategies is to determine effectiveness based benefit/cost analysis.

Proposed projects should be submitted thorough the online system to District Seven Safety Office no later than May 15, 2015. Local agencies will be notified of their selection by the district. Questions should be directed to the District Safety Programs Engineer in the District Seven Safety Office at (813) 975-6254.

The initial phase of the project should be ready to utilize funds in FDOT current or next fiscal year. A proposed funding schedule including all phases of the project with anticipated funding shall be included with the application. This will allow the department to effectively program HSIP funds and maximize the selection of safety projects. If a project is selected for funding, the notification letter will indicate for which fiscal year each phase has been approved and have a maximum period of one year thereafter to obligate funds for the initial phase. Information regarding local matching or additional funds should also be provided in the application.
District Seven Highway Safety Improvement Program (HSIP)
The District Seven Highway Safety Improvement Program is funded by federal, state and local dollars to reduce the number of crashes that occur on District Seven’s highways. Highway Safety Improvement Projects (HSIP) correct or improve a hazardous road location or feature, or address an existing highway safety problem and decrease the potential crashes.

Evaluation
Local agencies are expected to cooperate with FDOT in evaluating the effectiveness of selected projects after the project has been completed. The District Seven Safety Office will conduct the detailed evaluation and reporting for selected HSIP projects to the FDOT Central Safety Office and Federal Highway Administration. Proposed projects should be submitted in electronic format email or on a CD to the District Seven Safety Office no later than August 31. Local agencies will be notified of their selection by the district. Questions should be directed to the District Safety Programs Engineer in the District Seven Safety Office at (813) 975-6254.

Samples for Eligible Safety projects
Highway Safety Improvement Projects are eligible for HSIP funding if they meet one or more of the following minimum requirements:

1) Keep vehicles in the proper travel lane and minimize the effects of leaving the travel lanes (i.e. paved shoulder, safety edge, edge lines, rumble strips, high friction pavement, highway signage and pavement marking, speed control measures to reduce run off road crashes, guardrail, attenuators, slope modifications and fixed obstacle removal to reduce the crash severity when a vehicle leaves the road).

2) Improve the safety of intersections (i.e., signal modifications/installations, turn lanes, signing, lighting, traffic calming to reduce frequency and severity of intersection crashes).

3) Improve access management and conflict point control (i.e., add raised median to replace 2-way left turn median, close median openings, improve curb openings at driveways (right turn in/right turn out), modify median openings to eliminate hazardous vehicle movements, remove redundant driveway accesses, directional signing, no U turn signs, designated U turn signals, etc.).

4) Improve pedestrian and bicycle safety (i.e., add pedestrian and bike facilities, pedestrian signals and crosswalks at signalized intersections, mid-block pedestrian crossings, median pedestrian refuge islands, traffic calming, signing to alert drivers of high pedestrian/bike traffic areas).

5) Other Hazard Elimination Benefit/Cost justified projects

6) Skid Hazard Reduction project
7) Systemic safety improvements using proven counter-measurements (i.e., high emphasis crosswalks, sign upgrading, audible markings, delineation, etc).

In addition, local agencies should use the following Preliminary Criteria Checklist in completing the application form to classify their candidate(s) project(s).

**Preliminary Criteria Checklist for Intersection, Lane Departure or Pedestrian**

- Project will reduce the number or potential number of serious injuries or fatalities.
- Project can be completed within the existing right-of-way.
- Project has sufficient agency and public support and can survive a challenge.
- Existing crash data shows a favorable B/C of 2 or more.
- Project is not anticipated to have utility or environmental delays.
- Project is not anticipated to have permitting delays.
- A construction cost estimate has been provided (LAP projects require an itemized or engineer cost estimate and for Design Build Push Button a proposed concept cost estimate should be provided).

See Section 4 for the Off-System Safety Project Application form and go to http://www.tampabaytrafficsafety.com/SitePages/Home.aspx to download or print the latest form or use the online forms available to input data and submit directly to the District Seven Safety Office.
5. Calculating the B/C & NPV Ratio’s and Comparing Projects

To be eligible for federal-aid funding, local projects must have a favorable Benefit Cost Ratio (B/C). Safety practitioners should consider the expected Benefit to Cost (B/C) ratio of the proposed candidate projects. This is an importance step in a proactive safety analysis process because it provides two key pieces of information: It defines the cost effectiveness of the proposed projects and gives the safety practitioner a means to prioritize their safety projects both inside the agency’s traffic safety projects and against other proposed operational and maintenance projects competing for funding.

One of FDOT District Seven’s primary goals for the development of this Guide is to improve District Seven’s overall data-driven approach to district-wide project selection of safety projects and to maximize the long-term safety improvements throughout District Seven. With this in mind, FDOT District Seven will require all highway safety improvement project applications to include a B/C ratio calculated based on the guidance in this section. District Seven will use this B/C ratio as a consideration for its scoring and ranking of applications. Note: The Benefit/Cost ratio requirement is 2.0 or greater and is MANDATORY. Each candidate project submitted to the District Seven Safety Office must use the District Seven Safety Office Annual Benefit Cost Analysis Form. Go to http://www.tampabaytrafficsafety.com/SitePages/Home.aspx to download or print the latest form or use the online forms available to input data and submit directly to the District Seven Safety Office.

5.1 Estimating the Benefit of Implementing Proposed Improvements

After completing processes outlined in Sections 2 through 3, the safety practitioner should have all the information to calculate the expected ‘Benefit’ of the proposed safety projects. The resulting expected benefit value is derived by applying the proposed countermeasures and corresponding CMFs to the expected crashes. It is of critical importance for the practitioner to understand that misapplication of a CMF will lead to misinformed decisions. Three main factors need to be considered when applying countermeasures and CMFs: (1) how to estimate the number of expected crashes without treatment, (2) how to apply CMFs by type and severity, and (3) how to apply multiple CMFs if multiple treatments are to be included in the same project. Note: The following text explains these factors affecting the expected benefit value in more detail even though FDOT requires the B/C ratio (2.0 or greater), including the expected benefit, for all highway safety improvement calls-for-project applications to be completed using the same process. This process in described separately in Section 5.3.

Estimating expected crashes without treatment: Before applying CMFs, local safety practitioners first need to select countermeasures and CMFs. The CMF is applied to the expected safety performance (expected crashes) without any treatment in order to estimate the expected crashes with treatment. The reduction in expected crashes multiplied by the expected costs per each crash gives the practitioner the expected benefit.
Applying CMFs by type and severity: Section 3 discusses that the applicability of a specific CMF depends on how closely the CMF represents the situation to which it will be applied, and safety practitioners need to choose the most appropriate CMFs for their specific project. In many circumstances, estimating the change in crashes by type and severity is useful; however, local safety practitioners only can use this approach when CMFs exist for the specific crash types and total crashes in question. For example, roundabouts are expected to reduce fatal and injury crashes because they eliminate crossing-path collisions; however, there is the potential for an increase in property-damage-only crashes (such as rear-end and sideswipe crashes). If safety practitioners choose to use a CMF outside the range of applicability, the safety effect may be over- or underestimated.

Applying multiple CMFs: In real-world scenarios, transportation agencies commonly install more than one countermeasure as part of their safety improvement projects. This leads to the questions, "What is the safety effect of the combined countermeasures?" One common practice is to assume that CMFs are multiplicative. In other words, each successive countermeasure will achieve the full additional benefit when implemented in combination with other countermeasures. However, this is unlikely when two countermeasures address the same crash types. The multiplicative method is presented in the HSM and in the CMF Clearinghouse. However, transportation agencies are also using other methods including: applying the CMF for the single countermeasure expected to achieve the greatest reduction, applying CMFs separately by crash type and summing them to get a project-level effect, and applying engineering judgment based on a review of crash patterns. Regardless of the method employed, engineering judgment is required when combining multiple CMFs and it is important to apply the method consistently throughout the agency’s analysis to ensure a fair comparison of projects.

5.2 Estimating the Cost of Implementing Proposed Improvements

After calculating the expected ‘Benefit’ of the proposed safety projects, the next step for the safety practitioner is to develop an estimate of the ‘Total Project Cost.’ These costs need to include both the construction costs and the project development and administration costs. The most common approach to estimating construction costs is through an “Engineer’s Cost Estimate.” When calculating the administration costs for a project, the complexity of the improvements must be accounted for: Low-cost countermeasures typically used in the Systemic Approach, often have no environmental and right-of-way impacts and require minimal design effort. In contrast, many medium to high cost improvements may have impacts to environmental, right-of-way, public and require significant design efforts. It’s crucial to account for these differences to accurately determine the B/C of the projects and prioritize them correctly.

When an agency is initially evaluating several potential locations and/or countermeasures as part of their Proactive Safety Analysis or FDOT’s Call for Projects, they should consider first using rough ‘ballpark’ cost estimates. Ballpark cost estimates can allow the safety practitioner to quickly establish B/C ratios for all of their potential projects and to identify the projects with high cost effectiveness and with a reasonable chance of receiving federal funding in a FDOT call for projects.
**Recommended Action:** Prepare ‘Total Project Cost’ estimates for the proposed projects being evaluated.

### 5.3 Calculating the B/C Ratio

After completing **Section 5.1 and 5.2**, the B/C ratio can be established. There are several methods, formulas and input-factors available for calculating a project’s B/C ratios with the final B/C varying significantly based on the choices made. For this reason, local safety practitioners are encouraged to establish their locally preferred method and are cautioned to seek outside expertise as needed.

Based on FDOT’s need for a consistent, data-driven, district-wide project selection process for HSIP call for projects, FDOT District Seven requires the B/C ratio for all of these applications to be completed using the same process. Applicants for these programs must utilize the Safety Office Annual Benefit Cost Analyses Form. Go to [http://www.tampabaytrafficsafety.com/SitePages/Home.aspx](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx) to download or print the latest form or use the online forms available to input data and submit directly to the District Seven Safety Office. The specific details and formulas included in the B/C Calculator used for the Florida HSIP program are included in this Guide. Note: The B/C MUST be 2 or greater to be considered for HSIP funding.

### 5.4 Compare B/C Ratios and Consider the Need to Reevaluate Project Elements

By implementing a comprehensive proactive safety analysis approach, agencies will likely identify many more potential safety projects than they can fund and deliver. It will be important for an agency to prioritize its projects internally before funding is sought. It is not uncommon for projects to have a B/C ratio as low as 0.1 or as high as 100. Once the relative cost effectiveness of an agency’s potential projects has been established, the projects with low to mid-ranged B/C ratios should be reassessed. Projects with very low initial B/C ratios may be dropped while projects with low to mid ranged B/C ratios may be redefined by changing the limits of the proposed improvements and/or by incorporating lower-cost countermeasures.

At the conclusion of this step, the local agency should have a list of potential safety projects ready to move into the project development and construction phases.

**Recommended Action:** Compare and reevaluate the potential safety projects. Consider changing the project limits to maximize the number of fatal and serious injury crashes within the limits. Consider lower cost countermeasures in areas where high and medium cost countermeasures resulted in low B/C ratios.
The following Safety Office Annual Benefit Cost Analyses Form should help you through the calculation process. The form is available at http://www.tampabaytrafficsafety.com/SitePages/Home.aspx to download or print the latest form or use the online forms available to input data and submit directly to the District Seven Safety Office.

**Note:** The B/C form also requires a NPV calculation. The NPV is the annual monetary value of the benefits (B) minus the annual monetary value of the cost (C). Equation for NPV is B-C. The net present value (NPV) should be greater than 0. Projects not meeting NPV requirements but have supporting documentation to warrant the project as a potential safety project will be evaluated on a case by case basis.
### State of Florida Department of Transportation

#### Safety Office Annual Benefit Cost Analysis

<table>
<thead>
<tr>
<th>1. Submitted by:</th>
<th>WPA No.:</th>
<th>S.N.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Date Submitted:</td>
<td>SKID (I.D.):</td>
<td>SPEED: mph</td>
</tr>
<tr>
<td>3. FM Project No.:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Alternative No.:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. District 7 County:</td>
<td>SECTION:</td>
<td></td>
</tr>
<tr>
<td>7. Beginning Mile Post:</td>
<td>END M.P.:</td>
<td>LGTH: 0.000 NODE:</td>
</tr>
</tbody>
</table>

#### Description of Location/Facility Type:

#### Cause of Crash Problems (List and Discuss):

#### Proposed Improvements (List and Discuss):

#### Comments/Crash Reduction Method:

#### High Crash Listings:

### 11. Crash Types

<table>
<thead>
<tr>
<th>Type</th>
<th>No. of Crashes</th>
<th>CRF %</th>
<th>Total to Be Prevented</th>
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<tbody>
<tr>
<td>A. Fatal and Serious</td>
<td>2011 2012 2013</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>B. Minor Injury Crashes</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. All Other Crash Types</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 14. Crash Information for Facility

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost per Crash:</th>
<th>CRF %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fatal and Serious</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>B. Minor Injury Crashes</td>
<td></td>
<td>4.0%</td>
</tr>
</tbody>
</table>

#### 15. Annual Cost of

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<tr>
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<th>Cost</th>
<th>Life (Yr)</th>
<th>CRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. RO.W.</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. P.E.C.E.I.</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Structure</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Roadway</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Pavement</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Signal</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 16. Benefit/Cost:

<table>
<thead>
<tr>
<th>Type</th>
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<th>CRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Current Year</td>
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<td>0</td>
</tr>
<tr>
<td>B. Project Completion</td>
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<td>0</td>
</tr>
</tbody>
</table>

#### 17. Net Present Value

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<tr>
<th>Type</th>
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<th>CRF</th>
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</thead>
<tbody>
<tr>
<td>A. Current Year</td>
<td>0.00</td>
<td>0</td>
</tr>
</tbody>
</table>

#### 13. Benefit

<table>
<thead>
<tr>
<th>Type</th>
<th>Benefit</th>
<th>CRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total Crash Benefit</td>
<td>$ -</td>
<td>Prepared By: Date:</td>
</tr>
<tr>
<td>B. Total Annual Benefit</td>
<td>$ -</td>
<td>Approved By: Date:</td>
</tr>
</tbody>
</table>
Figure 3
Benefit Cost Calculation Flowchart

**Benefit Calculation**
- Identify analysis type (Intersection or segment)
- Identify facility type (# lanes, median type, div, undiv, (Facility type, urban, rural)
- Obtain crash data (CDMS)
- Tabulate 3 yrs (minimum) of consecutive crash history
- Identify crash type(s) to be reduced
- Calculate average crash rate for analysis period
- Identify and apply “Crash Modification Factor”
- Apply “cost per crash” from FDOT “Cost per Crash” Table for facility type (CPC)
- Calculate Cost Benefit (B) \[
\frac{(CPC)}{2} \times \frac{AVG \ CRASH/YR \ REDUCED}{2}
\]

**Cost Calculation**
- Develop Preliminary Construction Cost estimate for safety improvement (C)
- Calculate Preliminary B/C \( \geq 2 \)
- Perform site review and assess conditions. Develop Construction Cost to bring site up to “Green Book” standards. Add to Preliminary cost.
- Re-Calculate B/C \( \geq 2 \)

- NO: Unlikely candidate
- YES: Likely candidate
6. Identifying Funding and Construct Improvements

Funding strategies for implementing safety projects need to vary as widely as local agency’s roadway types, project costs, and proposed improvements. At this point in the proactive safety analysis process, local agencies should have a list of potential safety projects ready to move into the project development and construction phases. There are likely a wide range of ‘approaches’ to fund each of these projects. This section discusses some of the most common approaches.

6.1 Existing Funding for Low-cost Countermeasures

Projects that utilize low-cost countermeasures may have a total project cost low enough that the agency can construct the project using its existing roadway funding by utilizing the ongoing activities of their roadway maintenance staff and equipment. Other low-cost projects (delineation, signing, and striping projects) may be more important to incorporate into larger projects. It is common for agencies to have 1-, 5-, and 10-year plans for making these standard maintenance improvements. With upfront planning and coordination, the low-cost safety projects identified through the safety analysis can be incorporated with minimal costs to an agency’s program. Maximizing the cost effectiveness of the program may even allow the transportation managers to justify increasing the funding for their overall roadway program.

In addition to their maintenance program, transportation managers should also strategically seek out planned capital improvement and development projects that can incorporate low and medium cost countermeasures identified in their safety analysis.

**Recommended Action:** Survey planned maintenance, developer, and capital projects to determine whether they overlap any of the proposed safety projects. Where projects overlap, leverage the existing funding sources to install safety improvements.

6.2 Additional Funding Through HSIP Program

Local agencies may also pursue funding through the District Seven Highway Safety Improvement Program. For additional information about these safety programs and other FDOT administered funding programs, contact the District Seven Safety Office. The web site is at: http://http://www.tampabaytrafficsafety.com/SitePages/Home.aspx.

**Recommended Action:** Consider the HSIP program for funding opportunities.

6.3 Project Development and Construction Considerations

In general, roadway safety projects don’t garner the same level of attention from decision makers, the media, elected officials, and the general public that large operational and development driven projects
As a result, local safety practitioners and project sponsors often find that their projects have difficulty in competing for the agencies’ limited project delivery resources. Establishing and implementing a comprehensive safety analysis process can assist safety practitioners in delivering their safety programs in many ways, including:

- Credibility and awareness to individual projects and delivery schedules
- Increased stakeholders tracking and delivery of a project when low-cost improvements are incorporated into ongoing maintenance and capital projects
- An increased focus on low-cost countermeasures typically corresponds to projects with less environmental, right-of-way and other impacts, resulting in projects that have streamlined project delivery processes and short construction schedules

**Recommended Action:** Safety practitioners should follow their safety projects entirely through the project delivery and construction process. In addition, they should establish a safety program delivery plan that brings awareness and support to the expedited delivery of safety projects.

### 6.4 Project Delivery Methods Construction or Equipment Acquisition

There are three basic approaches to obtain funding for safety project construction or equipment acquisition to improve local road safety:

- Equipment Request
- FDOT Seven Design Build Push Button Contract
- LAP Process
- Force Account

Each of these approaches relies on different requirements.

**Equipment Requests**

Of the three methods, this is the most simple. There are several types of equipment which have been documented to have safety benefits. The District Seven office has determined that these countermeasures (equipment) have proven to be cost effective when properly installed. Therefore, the local agency does not need to conduct a B/C calculation. A written justification (email can be used) should include the safety issues and countermeasures must be provided to receive consideration by the district.

- Back plates with retro reflective borders for signals
- Bright sticks to be fit to sign posts (typically for curves and rural T-intersections)
- Thermoplastic for markings
- Signs
- Delineators
FDOT District Seven Design Build Push Button Contract (Subject to Federal Requirements)

The second method is also second in terms of complexity. Under the DBPB contract, District Seven’s contractor is approved to work on off-system roadways. The contractor has a specific list of countermeasures that may be used. These projects are usually of about medium complexity. If the request is to use the DBPB contractor, the local agency needs to provide verification that the ROW exists for the full improvement (keep in mind the project’s countermeasures must be designed in accordance with applicable standards).

There should be minimal impacts to utilities and drainage. Examples include:
- Add paved shoulder to existing roadway
- High emphasis crosswalk
- Special emphasis pavement markings
- Safety Edge
- Enhanced signing, marking & delineation
- Guardrail
- Traffic Signals
- Pedestrian Islands
- Channelization
- Skid resistance pavement
- Signs
- Delineators

LAP Process

The LAP process is used for projects that do not fit into the other methods of funding and requires a lengthy process to develop a project. Under this process, District Seven can also provide design services for the improvement through the CTST Design Contract. Careful consideration needs to be given to any projects that are already funded in the local program. Going through the LAP process will federalize an entire project and make it subject to federal requirements. Note: Any use of federal-aid funds “federalizes” the project. Therefore, locals should consider the implications of federalizing a project they already have programmed to any degree or a project that overlaps with other planned work. All federal projects must receive authorization prior to starting any phase of the project.

If ROW is needed, the locals should provide assurance that the ROW acquisition process is underway and in accordance with federal requirements and will be completed in time for construction. All projects that involve ROW must be cleared by FDOT District Seven before any construction is authorized. Several similar federally funded projects can be grouped under one LAP agreement. For instance, four new traffic signal installations may be lumped under one LAP agreement.
Examples of LAP safety projects include:

- Projects that will impact drainage
- Super elevation modification projects
- Corridor projects requiring modification to curb/gutter
- Any project that cannot be constructed with materials from the DBPB list

**Force Account**

For some projects, due to their nature, size, or special considerations, it may be desirable for the Local Agency to use its own resources rather than a contractor. Under this project delivery method abbreviated plans and specifications may be used. Only Local Agencies operating under Local Agency Program Certification may construct a Federal-aid project using Local Agency forces. Before a Local Agency can do this, the District LAP Administrator must approve a finding of cost effectiveness.

Cost effectiveness is defined as efficient use of labor, equipment, materials and supplies to assure the lowest overall cost. This is has to be approved by FDOT.

Local Agencies should work with the appropriate District LAP Staff to enter into this delivery method.
7. Evaluations

Evaluation of the effectiveness of safety improvements following installation should be used to guide future funding decisions. In addition, field observations should be conducted shortly after the project is completed to ensure the project is operating as intended.

Records of crash history and countermeasure installation forms are the foundation for assessing how well implemented strategies have performed. An important database to maintain is a current list of installed countermeasures with documented “when/where/why/who/how” information. Periodic assessments will provide the necessary information to make informed decisions on whether each countermeasure contributed to an increase in safety, whether the countermeasure could or should be installed at other locations, and which factors may have contributed to each countermeasure’s success.

In order to perform the evaluation, it is necessary to collect the required information for a certain period after strategies have been deployed at the locations. The time period varies, but should be no less than one full year (with 2-3 years preferred). The information required may consist of public input and complaints, police reports, observations from maintenance crews, and local and state crash data.

It is important to keep the list of strategy installations up-to-date since it will serve as a record of countermeasure deployment history (see table before for an example.) By using this type of system, assessment dates can be scheduled to review crashes and other pertinent information on segments where roadway countermeasures have been installed.

<table>
<thead>
<tr>
<th>Location</th>
<th>Type of Countermeasure Installed</th>
<th>Date Installed</th>
<th>Crashes Before (Duration and Severity)</th>
<th>Crashes After (Duration and Severity)</th>
<th>Comments</th>
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<tr>
<td></td>
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**Recommended Action:** Develop a spreadsheet to track future safety project installations and record 3 years of “before” crash information at those locations. Once safety countermeasures are constructed, schedule and track assessment dates for each.

In the future, the CDMS website may provide an evaluation tool that will calculate a “Before” and “After” safety index for a stretch of road. The safety practitioner needs to highlight the section of the road and input date(s) for when the improvements were completed and the before and after analysis period.
8. **District Seven Processing of Submitted Applications**

**2015 HSIP PROCESS**

January – May (applications due to District Seven Safety Office – May 15th) – **actions to be done by local agencies**

- Review Crash Data (see HSIP Guide [Section 2](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx))
- Calculate NPV
- Select Candidate Project(s)
- Forward B/C & HSIP/HRRRP Application forms & supporting doc. to District Seven Safety Office
- Send Design Exception form if applicable for submitted project(s) – Florida Greenbook ([http://www.tampabaytrafficsafety.com/SitePages/Home.aspx](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx))
- Send letter indicating utilities will be coordinated and that ROW is clear and is not an issue for project.
- Send Project Checklist Form – signed ([http://www.tampabaytrafficsafety.com/SitePages/Home.aspx](http://www.tampabaytrafficsafety.com/SitePages/Home.aspx))

May 16th – July 10th (**actions to be done by FDOT District Seven Safety Office**)

- Safety Office reviews all project forms submitted
- Once applications reviewed they are sent for “Project Feasibility Review”
- Projects reviewed for preliminary information and preliminary estimate
- Safety Office notified if projects met the feasibility review requirements
- Applications are then reviewed by the “Safety Team”
- Projects are selected by “Safety Team” and final information is gathered
- Final project selection
- Projects programmed in the FDOT Work Program
October 15th – actions to be done by local agencies & FDOT Safety Office

- Notification (letter) to local agency on project selection
- Local agency accepts and then implements project development by direction of the District Seven Safety Office
  - Equipment Purchase
  - Design Build Push Button Contract
  - LAP process

Forms Required for Submittal to District Seven Safety Office

1. Off System Safety Project Online Application
2. Off System Safety Project Application Checklist
3. Safety Office Annual Benefit Cost Analysis & Net Present Value Analysis

Remember, District Seven Safety Office staff, the LAP Program Administrator and the Safety Ambassadors are available to assist in advancing your projects and completing the Off-System Safety Project Online Application Process. Use the HSIP Online Application Process for your safety projects. For the 2014 HSIP Funding cycle the online process was expanded to consolidate the applications into a single online form. Note that although the form was designed with capital improvement constructions projects in mind, the application of materials request, study support and other alternate safety efforts can be submitted through this online form by utilizing applicable fields. This new online application will be the normal process for local agencies to submit their safety projects and supporting data for 2015. Each District 7 Local Agency should work with their respective District 7 Safety Ambassadors to receive your Agency Access ID & Password to give you access to the HSIP Application Online Process. If your agency does not have an access ID or password please contact Anthony Chaumont at achaumont@tindaleoliver.com or call 813.224.8862.

Note: While the form is still available for manual input using the online process will be more beneficial for the local agencies. Go to http://www.tampabaytrafficsafety.com/SitePages/Home.aspx to download or print the latest form or use the online application available to input data and submit directly to the District Seven Safety Office.
**Local Agency Safety Funding Guide for Off-System Roadways**

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<tr>
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<td>Attend Safety Summit <em>(06/10/15)</em></td>
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<td>Discuss HSIP Funding</td>
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<td>Local agencies notified of request for additional information on submitted projects.</td>
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<td>Locals work on applications - applications are due: Due May 15th</td>
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<td>Selection of projects by Safety Team by <em>(06/30/15)</em></td>
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<td>Send selected projects to FDOT HQ Safety Office for funding approval &amp; FHWA for approval by <em>(07/15/15)</em></td>
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<td>Approved HSIP Projects are entered into FDOT D7 Work Program by <em>(08/01/15)</em></td>
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<td>FDOT HQ Safety Office sends approved projects to D7 to be programmed in the FDOT D7 Work Program by <em>(08/14/15)</em></td>
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<td>Notification letters sent to local agencies for approved projects by <em>(10/31/15)</em></td>
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<td>Selected projects programmed in FDOT D7 Work Program under final <em>&quot;Hard&quot;</em> lock down 1st week of January.</td>
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</table>

* Candidate projects submitted past due date will be considered for the following funding cycle. FDOT Fiscal Year July 1 - June 30

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**Contact Information**

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(813) 962-4607
Appendix A: Additional Resources & References

- FHWA Highway Safety Improvement Program
- FHWA Local and Rural Road Safety Program
- FHWA Roadway Departure Safety: A Manual for Local Rural Road Owners
  - [http://safety.fhwa.dot.gov/local-rural-training/fhwasa1109](http://safety.fhwa.dot.gov/local-rural-training/fhwasa1109)
- FHWA Roadway Safety Information Analysis: A Manual for Local Rural Road Owners
- FHWA Roadway Intersection Safety: A Manual for Local Rural Road Owners
- FHWA Roadway Developing Safety Plans: A Manual for Local Rural Road Owners
- FHWA Proven Countermeasures
- Highway Safety Manual
- FHWA Roadway Departure
- FHWA Pedestrian Safety
- FHWA Intersection Safety
- Road Safety Assessment
  - [http://safety.fhwa.dot.gov/rsa](http://safety.fhwa.dot.gov/rsa)
- Manual on Uniform Traffic Control Devices
- Local Technical Assistance Program
  - [http://t2ct.ce.uf.edu](http://t2ct.ce.uf.edu)
- Florida’s Strategic Highway Safety Plan (SHSP) is a state wide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. Florida developed the SHSP in a cooperative process with local, State, Federal, and private sector safety stakeholders. The SHSP is a data-driven, comprehensive plan that establishes district-wide goals, objectives, and key Challenge Areas and integrates the four E’s of safety—engineering, education, enforcement and emergency medical services.