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Preface

The Highway Safety Improvement Program (HSIP) is administered by ODOT and emphasizes safety in all phases of highway development by identifying and studying sites with potential for safety improvement, developing solutions, establishing priorities, implementing countermeasures and evaluating improvements on any public roadway. This manual is for use by ODOT personnel, consultants and local jurisdictions requesting funding from ODOT’s Highway Safety Improvement Program. This document describes the operating practices of the Ohio Highway Safety Improvement Program and the steps that shall be completed each year by each ODOT District office.

This document is intended to supplement the official guidance by providing additional details for the Procedures to apply for HSIP funding.

For information regarding the completion of a Safety Study, see the safety study guidelines maintained by the Office of Systems Planning and Program Management.
HSIP Program Procedure

1.1 Background
The Highway Safety Improvement Program is administered by ODOT and emphasizes safety in all phases of highway development by identifying and studying sites with potential for safety improvement, developing solutions, establishing priorities, implementing countermeasures and evaluating improvements on any public roadway. This document establishes the procedures for project evaluation and statewide prioritization and development of the Highway Safety Improvement Program based on uniform and objective criteria to improve safety by reducing the severity and frequency of crashes.

Each year, ODOT staff reviews the top safety locations in Ohio. In 2011, Ohio became one of the first states in the country to fully implement AASHOTOWare Safety Analyst and use it to prioritize safety locations across Ohio. Safety Analyst uses state-of-the-art statistical methodologies to identify roadway locations and safety improvements with the highest potential for reducing crashes based on information contained in the Highway Safety Manual (HSM) Part B. The software system flags spot locations and road segments that have higher-than-predicted crash frequencies. It also flags locations for review based on crash severity. This methodology is efficient, cost effective and allows the department to study locations with the greatest potential to improve safety.

To ensure ODOT address both rural and urban safety concerns, we have developed six (6) priority lists based on roadway type and are as follows:

- Rural Intersection
- Rural Non-Freeway Segments
- Rural Freeway Segments
- Urban Intersection
- Urban Non-Freeway Segments
- Urban Freeway Segments

Each District Office is required to study and address (whenever possible) any location within the Top 50 of the safety priority list for each emphasis area. The selected locations become part of the Department’s Safety Annual Work Plan. Many local governments also identify and study high-crash or serious injury crash locations within their own jurisdiction, which can also be studied through the methods described in this safety study process.

1.2 HSIP Safety Studies and Funding Application Process
To determine the best solutions for addressing these locations, each District Office or local government typically conducts an engineering analysis that includes a review of existing roadway conditions and crash reports. A safety study is a type of engineering study (OMUTCD Section 1A.13) that provides an analysis of roadway and traffic-related data to determine the contributing factors of an identified crash pattern at an intersection or highway section. The study also identifies potential alternative countermeasure(s) meant to reduce crash frequency or severity at the studied site.

Studying and understanding the crash experience can aid with: locating high-crash locations, evaluating design features, and effectively prioritizing and developing roadway improvement projects. Safety studies (Crash Analysis) are completed during the Planning Phase of the Project Development Process (PDP) and are used in the Preliminary Engineering Phase, if needed, to aid in the selection of alternatives. Safety studies provide supporting data for the Feasibility Study and/or Alternative Evaluation report, when warranted.
Project sponsors are encouraged to examine a full range of options from short-term, low-cost strategies, such as new signs, pavement markings and drainage improvements to mid-cost, mid-term strategies such as new traffic signals, turn lanes and realignments. District Offices or local governments may pay for these improvements through their annual budget or they can seek money through ODOT's Highway Safety Improvement Program.

A multi-disciplinary committee at ODOT Central Office reviews all applications and supporting safety studies. The committee can approve a proposal, select a different safety strategy or request further study before allocating money. Once funding is secured, safety projects are scheduled for construction. How quickly projects proceed to construction depends on the available funding and complexity of the project. Short-term, low-cost projects can be implemented within a few weeks or months. Other projects that require environmental mitigation, complex engineering design and/or utility and right of way relocation may take several years. In all cases, ODOT encourages sponsors to act as quickly as possible. Upon project completion, the department monitors locations to make sure the improvements are reducing crashes as designed.

1.3 Locally-Sponsored Safety Study Process

Local Public Agencies should begin coordination with ODOT as early as possible during the Safety Study Process for projects within their jurisdiction. If an agency is considering seeking ODOT funds to support the planning, design, or construction of the project, the LPA should contact the District Safety Coordinator to verify the level of effort and schedule for submitting a study and application.

All studies and applications must be reviewed and approved by the District DSRT committee before they can be submitted to Central Office for consideration at one of the biannual (April 30th and September 30th) safety funding application reviews. At a minimum, studies should be received by the District at least three months prior to the application deadline. While ODOT cannot guarantee that any study/application submitted per this requirement will be included, this will typically provide enough time for review, changes, and approval in advance of the next funding application review cycle.

1.4 Procedural Outline

1.4.1 Analysis

1.4.1.1 District Safety Review Team

1. Each District Deputy Director (DDD) shall appoint a District Safety Review Team (DSRT) based on the Highway Safety Improvement Program Guidance Document.

2. Within 60 days of the availability of the annual Highway Safety Improvement Program Prioritized Location Listing, the DSRT shall compile and approve the District’s Safety Annual Work Plan (SAWP). Local priority projects submitted by an LPA and approved by the DSRT for project application processing must be incorporated into the SAWP. Copies of the SAWP will be provided electronically to the Office of Systems Planning and Program Management and to the Highway Safety Improvement Program Manager.

3. The DSRT may request the Office of Systems Planning and Program Management revise the SAWP. Upon revision, the updated plan will be made available electronically.

4. At a minimum, the SAWP should be reviewed and updated on a quarterly basis by the DSRT.

5. Each District is to develop a plan for investigating all of the identified prioritized locations into the District’s Safety Annual Work Plan (SAWP).

6. The DSRT reviews the safety study of the prioritized locations. The DSRT shall also provide a copy of the safety study and request comments from local transportation officials, law enforcement and MPO staff when applicable.
7. The DSRT shall provide a copy (electronic only) of the completed safety study to the Office of Systems Planning and Program Management.

8. The DSRT Chairperson shall enter all activities, recommendations and implementation status (including dates) for locations on the SAWP Tracking System.

9. By July 31 of each year, the Office of Systems Planning and Program Management will use the tracking system to generate a year-end summary of each District SAWP indicating the activity, recommendations and implementation status of the locations listed.

1.4.1.2 Local Highway Safety Project Analysis

1. Each DSRT shall, before considering an LPA safety analysis report with the intent of applying for funding for construction, encourage the LPA to submit a project application which includes a prioritized list of the safety locations within the LPA’s jurisdiction. A copy of the safety study or crash analysis shall be prepared and submitted by the LPA to the District DSRT.

2. LPA locations which have fewer than 10 observed crashes in the most recent and consecutive three-year period should be considered on a case-by-case basis for HSIP funding, but are typically not eligible for funding.

3. Approval by the DSRT is required to incorporate the LPA project into the SAWP and to submit the project for the safety project application process.

1.4.2 Safety Project Application Process

A. In order for sponsors to apply for safety funding, a proposed project shall meet the following criteria

1. For state projects the location is on a state, U.S. or interstate highway or for local projects, the location is on a public street or highway system.

2. Projects which have fewer than 10 observed crashes in the most recent and consecutive three-year period will be considered on a case-by-case basis for HSIP funding, but are typically not eligible for funding.

B. The decision to apply for Highway Safety Improvement Program funding is determined by the DSRT or LPA once a crash analysis or safety study is completed and a recommendation of the proposed countermeasures is developed. At that time, the sponsoring agency shall complete the Safety Project Application with all required documentation and submit the application to the District office for processing. LPAs may request assistance from the Highway Safety Improvement Program in conducting crash analysis, safety studies or preliminary engineering.

C. Local agencies submitting projects for safety funds should provide the necessary information to the DSRT in advance of the application deadline. Local agencies should contact the DSRT to establish sufficient time for reviewing and processing the information prior to the deadline.

D. The countermeasures specified for a given project shall be recommended and approved by the DSRT.

E. The District shall submit the safety project application to the Highway Safety Improvement Program Manager for review and ranking by the HSIP Committee. The DSRT submits the application on behalf of the LPA. Affirmative signatures from a majority of the DSRT members are required with the safety project application submittal.

F. The Highway Safety Improvement Program Manager will designate April 30 and September 30 as the deadlines for project application submittals to Central Office.

1.4.3 Safety Selection Criteria and Scoring

Applications received by the deadline will be scored and evaluated for funding. The selection criteria will be based on the data for the most recent consecutive three-year period in the completed safety study or crash analysis. Safety Study Guidelines, which contains the scoring criteria, will be posted on the Office of Systems Planning and Program Management Website. This document will be maintained
by the Office of Systems Planning and Program Management with input from the District Safety Review Teams.

1.4.4 Project Approval

A. The Highway Safety Improvement Program Committee will evaluate the applications and project scoring to establish and publish a list of approved Safety projects for funding.

B. All funded projects shall be programmed in Ellis by the Districts within 30 days of project approval and included in the next Statewide Transportation Improvement Program amendment.

C. At least once per quarter, the Highway Safety Improvement Program Manager will update the approved listing of safety projects for revisions to cost and schedules and provide this information electronically. This list will assist Central Office and the Districts in planning future safety projects and will aid in evaluating future safety funding needs.

D. Projects not selected for funding may be resubmitted during the following application cycle or funded from alternate sources. Project re-submittals shall use current traffic data and study analyses and will be evaluated as a new project submission.

1.4.5 Improvement Evaluation

A. The Office of Systems Planning and Program Management will conduct an evaluation of the safety improvements after implementation of the countermeasures.

B. The evaluations will compare crashes after implementation to crashes before implementation of the countermeasures. As a result of the evaluation, information pertinent to determining the effectiveness of the countermeasure will be assessed and the results published by the Office of Systems Planning and Program Management.
Definitions

**Countermeasure**- a roadway-based strategy intended to reduce the crash frequency or severity, or both at a site

**Crash Frequency**- the basic measure of crashes in the HSM, number of crashes occurring at a particular site, facility, or network per year (expressed for a location/site or per mile depending on the context)

**District Safety Review Team (DSRT)** develops and adopts a Safety Annual Work Plan, reviews safety studies for locations included in the work plan, and recommends countermeasures. The DSRT also reviews local safety studies and funding requests. The DSRT shall have a minimum of the following ODOT multi-disciplinary representatives or equivalents for the district, including:

- Planning and Engineering Administrator
- Highway Management Administrator
- Design Engineer
- Planning Manager
- Traffic Engineer

The DSRT should also consult with the District Real Estate Administrator and Environmental Coordinator to ensure that safety projects are properly scoped to address real estate and environmental issues that can significantly increase costs and cause delays.

The District Deputy Director shall appoint one ODOT DSRT member as chairperson to coordinate and steer the team’s efforts. Each District is also required to invite the Highway Safety Improvement Program Manager and a representative from Federal Highway Administration. The local Ohio State Highway Patrol, local law enforcement and Metropolitan Planning Organization may also be invited. LPA representatives shall be invited when the DSRT is reviewing an LPA safety study. Only ODOT representatives may be voting members.

**Expected Average Crash Frequency**- the estimate of long-term expected average crash frequency of a site, facility, or network under a given set of geometric conditions and traffic volumes (AADT) in a given period of years.

**Expected Excess Crashes**- the difference between the expected average crash frequency and the predicted average crash frequency; estimates how much the long-term crash frequency could be reduced at a particular site. This is also known as the ‘potential for safety improvement.’

**Highway Safety Improvement Program Committee**- A multi-disciplinary committee at ODOT Central Office representing the Highway Safety Improvement Program, Roadway Engineering, Office of Traffic, and other active safety participants that reviews all safety project applications and documentation to select projects that will be funded through the Highway Safety Improvement Program.

**Highway Safety Improvement Program Manager**- The individual responsible for administering the statewide policies and program selection criteria for the purpose of developing a multi-year program of priority projects. The program manager ensures the project delivery adheres to the schedule and maintains a fiscally balanced program.

**Highway Safety Improvement Program Prioritized Location Listing**- The Office of Systems Planning and Program Management will annually prepare and distribute to the Districts a prioritized listing of locations on the state highway system for the Highway Safety Improvement Program. The prioritized listing will utilize criteria established by ODOT and crash data provided by the Ohio Department of Public Safety.
Local Public Agency (LPA)- LPA’s can include any other state agency, local political subdivision, board, commission, or other governmental entity identified under paragraph C of Section 5501.03 of the Ohio Revised Code as being eligible for assuming administrative responsibilities for ODOT improvement projects.

Observed crash frequency- The actual number of crashes that have occurred at a particular site, facility, or network per year that have been investigated and reported by law enforcement agencies.

Potential For Safety Improvement (PSI)- see Expected Excess Crashes

Predicted Average Crash Frequency- the estimate of long-term average crash frequency which is forecast to occur at a site using a predictive model found in Part C of the HSM. The predictive models in the HSM involve the use of regression models, known as Safety Performance Functions, in combination with Crash Modification Factors and calibration factors to adjust the model to site-specific and local conditions.

Rural Area- Rural areas are those outside the boundaries of urban areas. Functional classification is divided into urban and rural categories. Alternatively, ODOT’s area type code can be used to identify rural areas.

Safety Annual Work Plan (SAWP)- Each year ODOT will study the designated number of priority locations produced by AASHTOWare Safety Analyst and reviewed and accepted by the districts. These locations shall consist of a combination of rural and urban locations as well as freeway, non-freeway and at-grade intersection locations. A priority location will be studied only once in a three-year period, even though it will likely continue to appear in the priority list. This will increase the number of safety locations reviewed across the state.

The Districts may also include other locations they deem appropriate to include in their review of the District’s highway safety needs. Local priority projects submitted by an LPA and approved by the DSRT must also be incorporated into the District Safety Annual Work Plan tracking system.

Safety Study- A Safety Study involves analysis of roadway, traffic and crash-related data to determine the probable cause of an identified crash pattern at an intersection or highway section. The safety study also provides alternative countermeasures meant to mitigate predominate crash pattern(s).

Urban Area- Urban areas are comprised of: (1) places with a population of 5,000 or more, that are incorporated as cities, villages, and towns but excluding the rural portions of extended cities; (2) census designated places with 5,000 or more persons; and (3) other territory, incorporated or unincorporated, included in urbanized areas. Extended cities are those cities whose boundaries include territory that is essentially rural in character (e.g., uncurbed pavement with open drainage, where a rural typical section would be more consistent with the existing roadway). Urbanized areas consist of one or more places (central places) and the adjacent densely populated surrounding territory (urban fringe) that together have a minimum population of 50,000. The urban fringe generally consists of contiguous territory having a density of at least 1,000 persons per square mile. Functional classification is divided into urban and rural categories. Alternatively, ODOT’s area type code can be used to identify urban areas.