

Approved:

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Director

HIGHWAY SAFETY PROGRAM

POLICY STATEMENT:

This policy establishes a Highway Safety Program (HSP) within the Ohio Department of Transportation (ODOT). The Highway Safety Program is administered by the Ohio Department of Transportation and emphasizes safety in all phases of highway development by identifying and studying safety problems, developing solutions, establishing priorities, implementing countermeasures and evaluating improvements.

This policy establishes the procedures for project evaluation and statewide prioritization and development of the Highway Safety Program based on uniform and objective criteria to improve safety by reducing the severity and frequency of crashes.

AUTHORITY:

23 United States Code, section 152

REFERENCES:

AASHTO, Policy on Geometric Design of Highways and Streets
ODOT Transportation Development Process Manual
ODOT Design Manuals
Ohio Manual of Uniform Traffic Control Devices (OMUTCD).
Highway Safety Engineering Studies - FHWA - 3/91

SCOPE:

This policy is applicable to all ODOT Districts, Divisions, and Offices of the Department and Local Public Agencies that are responsible for or otherwise involved in the analysis, selection, and development of countermeasures to improve identified safety deficiencies.

BACKGROUND:

The Ohio Department of Transportation has established the Highway Safety Program to create a process which emphasizes safety of the traveling public by analyzing the crash statistics on Ohio's state and local highway system. The Department utilizes the Highway Safety Program "High Crash Location Identification System" to identify intersections and highway sections with high incidents of crashes on the rural state highway system. Each of the twelve District Safety Review Teams (DSRT) develop a safety annual work plan (SAWP). In addition, the Districts perform engineering studies to determine the cause of crashes at locations. The DSRT strives to identify safety deficiencies and recommend countermeasures to reduce the severity, frequency and rate of crashes.

Safety projects are not limited to the state highway system. Proposed local projects on public roads are also evaluated and prioritized to improve safety through better operation of the existing highway facilities as outlined in the application and selection process.

Upon recommendation from the District Safety Review Teams, eligible projects are evaluated and priorities are established based on uniform and objective criteria. Projects which contribute most to improving safety and reducing the severity, frequency and rate of crashes are considered for funding and further development. Annually, a listing of all newly approved safety projects is produced.

The Highway Safety Program historically receives approximately \$30 million annually. The funding is used to implement countermeasures addressing identified crash problems on Ohio's highways to ensure safety is the primary consideration in the design, development, and operation of this program.

DEFINITIONS:

Countermeasure

A highway safety treatment or corrective activity designed to alleviate a safety problem or a potentially hazardous situation.

District Safety Review Team (DSRT)

The District Safety Review Team (DSRT) develops and adopts an SAWP, considers analysis, and recommends countermeasures. The DSRT shall have a minimum of 5 ODOT multi-disciplinary representatives, appointed by the District Deputy Director (DDD). The DDD shall also appoint one ODOT committee member as chairperson to coordinate and steer the committee's efforts. Additional representation from FHWA is encouraged on the DSRT. Only ODOT and FHWA representatives may be voting members.

Economic Analysis

A method of determining a specific project's costs and benefits for the purpose of assisting in determining the projects eligibility for funding and for prioritizing multiple projects.

Highway Safety Program Prioritized Location Listing

The Office of Systems Planning will annually prepare and distribute to the Districts a prioritized listing of locations on the rural state highway system for the Highway Safety Program (HSP). The prioritized listing will utilize criteria established by ODOT and crash data provided by the Ohio Department of Public Safety.

Local Public Agency (LPA)

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.

Safety Annual Work Plan (SAWP)

A listing which consists of all locations within the top 350 of the HSP Prioritized Location Listing and such other locations as deemed desirable by the District to organize the District's Highway Safety needs. Local priority projects submitted by an LPA and approved by the DSRT shall be incorporated into the listing.

Safety Problem

A failure in the roadway-driver-vehicle system evidenced by abnormal crash experiences, trends, or patterns.

Safety Engineering Study

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

Safety Program Committee

The designated committee that reviews all project applications and documentation to select projects which will be funded through the Highway Safety Program.

Safety Program Manager

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

PROCEDURE STATEMENT:

I. Analysis

A. District Safety Review Team

1. Each District Deputy Director (DDD) shall appoint a District Safety Review Team (DSRT).
2. Within 60 days of the availability of the annual Highway Safety Program Prioritized Location Listing, the DSRT shall compile and approve the District's Safety Annual Work Plan (SAWP) consisting of all locations within the top 350 of the HSP Prioritized Location Listing and such other locations as deemed desirable by the District. Local priority projects submitted by a local sponsoring agency and approved by the DSRT for project application processing shall be incorporated into the SAWP. Informational copies of the SAWP are to be forwarded to the Office of Systems Planning and to the Safety Program Manager.
3. The DSRT may revise the SAWP by consensus of its members. Upon revision, an informational copy of the current SAWP is to be forwarded to the Office of Systems Planning and the Safety Program Manager.

4. At a minimum, the SAWP should be reviewed and updated on a quarterly basis by the DSRT.
5. Each District is to assign first priority for analysis to locations found on the Highway Safety Program Prioritized Location Listing with a ranking in the top 350.
6. The DSRT reviews the safety engineering study of the prioritized locations.
7. By July 15th of each year, a year end summary of the District SAWP is to be submitted to the Office of Systems Planning and the Safety Program Manager indicating the activity, recommendations and implementation status of the locations listed.

B. Local Highway Safety Project Analysis

1. Each District Safety Review Team (DSRT) shall, before considering an LPA safety engineering report with the intent of applying for HSP funding for construction, require the LPA to submit a project application which includes a prioritized list of the high crash locations within the LPA's jurisdiction. This list shall include the number and type of crashes and severity breakdown (PDO, Injury, Fatal) at each location and shall be prioritized based upon, but not limited to, frequency, rate or severity and as determined by the LPA. A copy of the safety engineering study shall be prepared and submitted by the LPA to the District (DSRT).
2. The DSRT shall accept for review only reports concerning locations at or near the top of the LPA list except that lower priority locations may be acceptable when all higher priority locations are scheduled for improvements, ineligible for the program or otherwise resolved.
3. Regardless of LPA assigned priority, the DSRT shall not accept reports concerning locations which it feels are not high crash locations. LPA locations which have fewer than ten crashes in the most recent and consecutive three year period and an annual rate less than 1.0 accidents per million vehicle miles (acc/MVM) or accidents per million entering vehicles (acc/MEV) should not be considered for HSP funding.
4. All safety engineering studies and reports shall be accomplished by the LPA without ODOT or HSP funding participation and be fully completed prior to application for HSP funding. A copy of the safety engineering study shall be prepared and submitted by the LPA to the DSRT.

5. 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.

II. Safety Project Application Process

- A. In order to apply for safety funding a proposed project shall meet the following criteria
 1. Be on the District's Safety Annual Work Plan
 2. 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.
- B. Projects which have fewer than ten crashes in the most recent and consecutive three year period and an annual rate less than 1.0 accidents per million vehicle miles (acc/MVM) or accidents per million entering vehicles (acc/MEV) will not be considered for HSP funding.
- C. The decision to apply for Safety Program funding is determined by the DSRT or LPA once a 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
- D. The countermeasure specified for a given project shall be recommended by the DSRT.
- E. The District office shall submit the safety project application to the Safety Program Manager for review and ranking by the Safety Program Committee. The DSRT submits the application on behalf of the LPA for proposed local highway safety projects. Affirmative signatures from a majority of the DSRT members is required with the safety project application submittal.
- F. Annually, the Safety Program Manager will establish an end of April deadline for project application submittals to Central Office.
- G. Projects estimated to cost less than \$50,000 and force account projects are not eligible for safety program funding.

III. Safety Selection Criteria and Scoring

After the deadline for project application submittals, the following criteria will be used to rank all proposed projects:

The selection criteria will be based on the data for the most recent consecutive three year period in the completed safety engineering study.

A. Crash Frequency/Density

- Crash Frequency - Number of crashes occurring at an intersection
- Density - Number of crashes per mile occurring along a section of highway (minimum length of .4 mile)

The threshold for the project site is given a maximum of 10 points and represents the number of crashes during the three year period.

Crash Freq./Dens	Frequency/Density	Points
.	>100	10
	91 -100	9
	81 - 90	8
	71 - 80	7
	61 - 70	6
	51 - 60	5
	41 - 50	4
	31 - 40	3
	21 - 30	2
	11 - 20	1
	0 - 10	0

B. Crash Rate

Intersection - Number of intersection and related crashes per million vehicles
Section- Number of section (minimum length of .4 mile) crashes per million
vehicle miles

This threshold is given a maximum of 10 points. The crash rate takes into
consideration traffic volumes which recognizes exposure.

Crash Rate	Crash Rate	# Point
	>5.50	10
	5.01-5.50	9
	4.51-5.00	8
	4.01-4.50	7
	3.51-4.00	6
	3.01-3.50	5
	2.51-3.00	4
	2.01-2.50	3
	1.51-2.00	2
	1.01-1.50	1
	<-1.00	0

C. Relative Severity Index (RSI)

The Relative Severity Index (RSI) represents the relative cost to society of a specific type of crash (head on, rear end, angle accident, etc.) and is given a maximum of 15 points. The RSI is the sum of the relative costs per crash divided by the total number of crashes. This threshold is given the highest weighting because it best represents the potential severity of crashes occurring at a site.

RSI	RSI	#POINTS
	->2600	15
	2494-2599	14
	2387-2493	13
	2280-2386	12
	2174-2279	11
	2067-2173	10
	1962-2066	9
	1855-1961	8
	1750-1854	7
	1644-1749	6
	1538-1643	5
	1432-1537	4
	1326-1431	3
	1220-1325	2
	1001-1219	1
	<1000	0

D. Equivalent Property Damage Only Rate (EPDO Rate)

The EPDO value is calculated by weighting crashes as follows:

- 1) Number of crashes which were property damage only multiplied by 1
- 2) Number of crashes with injury multiplied by 6.9
- 3) Number of crashes with a fatal multiplied by 292.9

The results are then summed to give the EPDO value.

The EPDO Rate is then calculated as follows:

Intersection - EPDO value per million vehicles
 Section (minimum length .4 mile) - EPDO value per million vehicle miles

This threshold is given 5 points.

EPDO RATE	EPDO Rate	#POINT
	>40	5
	31 - 40	4
	21 - 30	3
	11 - 20	2
	6 - 10	1
	0 - 5	0

E. Percent Trucks

Truck ADT divided by Total ADT

This threshold is given 5 points to address concerns that truck traffic and involvement in crashes increases the severity of crashes.

% TRUCKS	% TRUCKS	POINTS
	->25%	5
	20%-24%	4
	15%-19%	3
	10%-14%	2
	5%-9%	1
	0%- 5%	0

F. Rate of Return

The anticipated return on the investment. The investment is the cost of the improvement plus cost of maintenance for the life of the improvement. The return is the savings in crash costs, property damage, injuries, and fatalities.

RATE OF RETURN	ROR	POINTS
	> 25%	5
	20%-24.9%	4
	15%-19.9%	3
	10%-14.9%	2
	5%-9.9%	1
	< 5%	0

IV. Project Approval

- A. The Safety Program Committee will evaluate the applications and project scoring to establish and publish an annual listing of approved Safety projects for funding from the safety program.
- B. All funded projects shall be programmed and included in the STIP.
- C. Once per quarter, the Safety Program Manager will update the approved listing of safety projects for revisions to cost and schedules and provide this information to all Districts. This list will assist 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 the following year during the application process or addressed from alternate funding sources. Project re-submittals shall provide current data and study analyses and will be evaluated as a new project submission.

V. Improvement Evaluation

- A. An evaluation of the safety improvements will be completed after implementation of the countermeasures. This evaluation will be performed by the Office of Systems Planning three years following project completion.
- 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.

TRAINING:

- A. Familiarity with the legal and procedural requirements relating to traffic engineering and highway safety is necessary.
- B. Ability to utilize computer programs applicable to the analysis of the safety engineering studies is necessary.
- C. Ability to effectively use equipment and accepted procedures to conduct safety studies is necessary.

Fiscal Analysis:

Implementation of this policy will have no additional fiscal impact to ODOT.