

**ACTION TRANSMITTAL – 2014-55**

**DATE:** August 20, 2014  
**TO:** Transportation Advisory Board  
**FROM:** Technical Advisory Committee  
**PREPARED BY:** Joe Barbeau, Senior Planner (651-602-1705)  
Gayle Gedstad, MnDOT Metro District (651-234-7815)  
**SUBJECT:** 2017-2019 Highway Safety Improvement Program (HSIP)  
Solicitation  
**REQUESTED ACTION:** MnDOT requests that the TAB approve the release of the 2017-2019 HSIP solicitation.  
**RECOMMENDED MOTION:** Recommend that the Transportation Advisory Board approve the 2017-2019 HSIP Solicitation program criteria for the Metro District and the release of the solicitation.

**BACKGROUND AND PURPOSE OF ACTION:** The Highway Safety Improvement Program (HSIP) is a core federal program defined in MAP-21. HSIP is designed to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned public roads and roads on tribal lands. HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. In order to obligate HSIP funds, the state must develop, implement and update a Strategic Highway Safety Plan and produce a program of projects.

MnDOT conducts the solicitation and the proposed projects are evaluated by a selection committee comprised of transportation professionals that includes members of the TAC. With guidance from its technical committees and a recommendation from this selection committee, the TAB's role is to approve the solicitation criteria and select projects to be awarded HSIP funds. The draft district program criteria and schedule are attached for review and comment.

**RELATIONSHIP TO REGIONAL POLICY:** The region's Transportation Policy Plan includes transportation safety policies strategies, and the HSIP solicitation is consistent with that plan.

**COMMITTEE COMMENTS AND ACTION:** At its July 17, 2014, meeting, the Funding and Programming Committee unanimously recommended approval of 2017-2019 HSIP Solicitation program criteria for the Metro District and the release of the solicitation. At its August 6, 2014 meeting, the Technical Advisory Committee unanimously recommended approval of the 2017-2019 HSIP Solicitation program criteria for the Metro District and the release of the solicitation.

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**ROUTING**

<b>TO</b>	<b>ACTION REQUESTED</b>	<b>DATE COMPLETED</b>
TAC Funding & Programming	Review & Recommend	July 17, 2014
Technical Advisory Committee	Review & Recommend	August 6, 2014
Transportation Advisory Board	Review & Approve	
Metropolitan Council	Information	

# HSIP

## *Highway Safety Improvement Program*

### Metro District Program Criteria

Minnesota Department of Transportation  
Metro District Traffic Engineering  
September 2014

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A - MnDOT Metro District Traffic Engineering Contacts

B - HSIP Timeline Flowchart

C - Traffic Signals

D - Guidelines for HSIP-funded narrow shoulder paving in conjunction with resurfacing projects

E - Sample HSIP Benefit / Cost Worksheet

F - Recommended Service Life Criteria

G - Crash and Severity Rate Formulas

HSIP Application (Form 1)

Project Information Sheet (Form 2)

# Introduction

This document explains the requirements, and gives guidance for the Highway Safety Improvement Program (HSIP) to applicants desiring to obtain federal funds under the Federal MAP-21 legislation. In MAP-21, the purpose of HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. Projects submitted should have the greatest potential of achieving this objective.

## General Policies:

1. HSIP funds are available to MnDOT; the counties of Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, and Washington; and the state aid eligible Cities and Towns within those Counties. Other local or special governmental agencies that do not have the ability to receive and administer federal funds must work with these specified governmental units to develop and submit eligible projects.
2. This solicitation is for projects with a total cost up to \$2,000,000, with a cap of \$1,800,000 federal funds. A minimum local match of 10% of the total project cost is required. After a project is selected for federal HSIP funding, if the project costs go above \$2,000,000 the additional costs are the responsibility of the submitting agency. The match must be in “hard dollars”. Soft matches (i.e.; volunteer labor, donated materials, professional services) cannot be included in the match.
3. This solicitation is for both “Proactive” and “Reactive” projects for State fiscal years 2017, 2018 and 2019.
4. Funding is for roadway construction and reconstruction projects designed to decrease the frequency and/or severity of vehicular crashes. These crashes can involve pedestrians, bicycles, and other non-motorized vehicles. The specifics of the improvement must be related to reducing historical vehicular crashes. The project must be a permanent improvement. Right-of-Way (R/W) costs are not fundable and shall not be included in the project cost.

Please refer to: <http://safety.fhwa.dot.gov/hsip/>

5. All public roadways are eligible for funding.

6. The amount of federal funds awarded is based upon the original submission. Any increase in scope or costs will be the responsibility of the applicant.

HSIP is a federally funded traffic safety program. The amount of funding available for this 2014 Metro District solicitation for State Fiscal Years 2017, 2018 and 2019 is up to \$25 million for the three year period.

The funding will be split up evenly between the three years. 70% of the funding will be awarded to “Reactive” projects, with the remaining 30% awarded to “Proactive” projects.

The project selection committee may elect to award a larger percent of total funds to either the “Reactive” or “Proactive” projects, depending on the number of projects or quality of the projects submitted in each category.

The object of the HSIP program is to identify, implement, and evaluate cost effective safety projects focused on reducing fatal and serious injury crashes.

# Qualifying Criteria

The objective of the Highway Safety Improvement Program (HSIP) is to identify, implement, and evaluate cost effective construction safety projects with a primary goal of reducing fatal and serious injury crashes on all public roads.

Typically, only stand-alone projects will be considered. It is recognized that portions of larger projects have elements that improve the safety of an intersection or section of roadway. Safety features, such as guardrail, that are routinely provided as part of a broader project should be funded from the same source as the broader project. Proposals should be limited to those that can be considered legitimate stand-alone safety projects. In some instances, narrow shoulder paving in conjunction with resurfacing projects may be allowed. See Appendix D for this exception.

## **FOR PROACTIVE PROJECTS:**

For MnDOT Metro District and the Metro Counties, their Road Safety Plans should be the starting point for selecting projects for this solicitation. For State and County roads, projects that originate from a Road Safety Plan will be given priority. For City streets, Cities may propose strategies similar to what is in their County Safety Plan if applicable, or the following crash data is provided to assist Cities in focusing on the types of projects to submit.

In the Metro District on local roads (MSAS and City Streets) over the last 3 years (2011-2013) there have been 288 fatal and serious injury crashes:

- 80 (28%) involved two or more vehicles colliding
- 65 (23%) involved a pedestrian
- 35 (12%) involved a bicyclist
- 30 (10%) involved hitting a tree or shrub

Seventy-three percent of the fatal and serious injury crashes fall into these four categories listed above, so the focus should be on low cost solutions that are geared toward impacting those types of crashes.

Priority will be given to applications that are making impacts throughout the network (at multiple locations) or a corridor based approach.

Cities are encouraged to provide other levels of support to make their case on why the project is justified. For example, they could cite the high pedestrian volumes or a generator of a high number of non-motorized traffic if they are requesting funds for an improvement in that area.

Signalized intersections in urban areas tend to involve more risk than other types of intersections. A focus on signalized intersections, such as countdown timers, signal retiming, enforcement lights, curb extensions, etc. would have an impact at these target crashes.

The following is a list of example projects that would be considered for funding with this program:

Rumble strips	Construct ped refuge islands & raised medians
Rumble stripEs	Enforcement lights on signals
Wider striping (6")	Turn lanes
Embedded wet reflective striping	Reduced Conflict Intersections (RCI's)
Delineation for sharp curves (chevrons)	New guardrail (not replacement)
Cable median barrier	Frontage roads (with access removals)
Active intersection warning systems	Sidewalks
Intersection Lighting	Bypass lanes
Curb extensions	Narrow shoulder paving (see Appendix D)
Sight distance improvements	Signal coordination (interconnect)
Remove hazards in clear zones	Pavement messages
Pedestrian countdown timers	Stop Bars

### **FOR REACTIVE PROJECTS:**

For this solicitation, proposed projects qualify for the HSIP program by meeting the following criteria:

1. Must have Benefit/Cost (B/C) ratio of 1.0 or greater\*. (Note: The B/C ratio shall exclude right-of-way costs. The cost should be the total project cost not the amount HSIP \$ asking for.)

\*Only crashes contained within the Minnesota Department of Public Safety's database can be used to determine the B/C for project submittals. MnDOT Metro District Traffic Office can provide a crash listing, upon request. (See Appendix A)



# Prioritization Criteria

The HSIP committee listed below will determine if the submitted projects have met the intent of the qualifying criteria and HSIP.

## **FOR REACTIVE PROJECTS:**

As in the past solicitations, the Reactive projects will be prioritized using the B/C ratio.

## **FOR PROACTIVE PROJECTS:**

For Proactive projects, priority will be given to projects identified in Road Safety Plans, and projects that have the highest possibility of reducing the chance of fatal and serious injury crashes. The following criteria will be used in ranking Proactive projects:

- Connection to the 2007 Minnesota Strategic Highway Safety Plan (SHSP). This Plan can be found at the following link:

<http://www.dot.state.mn.us/trafficeng/safety/shsp>

Particular attention should be paid to Appendix IV: Crash Data Summary by ATP/District; Priority Strategies by County, page A.4-62. The number of check marks assigned by county to each critical emphasis area can be used for selecting projects for this solicitation.

- Cost/mile or Cost/intersection
- Is strategy a wide deployment vs a single spot location
- Average Daily Traffic (ADT)
- Fatal (K) & serious (A) injury crashes (10 years)
- Crash Reduction Factor for the specific strategy
- Part of a plan (Safety Plan or Road Safety Audit Recommendations) – include a link to or an excerpt from the existing plan

## **EVALUATION PROCESS:**

Project proposals will be reviewed by MnDOT's Metro District Traffic Engineering unit initially to determine if they meet the qualifying criteria. The HSIP committee will use their engineering judgment to finalize a prioritized list of projects to be funded.

The HSIP committee will consist of:

- MnDOT Metro District Traffic Engineer - Program Support
- MnDOT Metro District Traffic Safety Engineer
- Four County/City Engineers who will be determined by the Met Council Technical Advisory Committee (TAC)

# Required Material and Special Instructions

Following, is a list of materials required to submit per project. Failure to provide this information may exclude the submission from consideration:

- HSIP application (Form 1) (See appendix for Form 1)
- Project information sheet (Form 2) (See appendix for Form 2)
- Location map
- Project plan or preliminary layout/scope of work proposed.
- Provide the ADT or an average ADT for your project area.
- Collision diagrams for intersection projects.

## **FOR PROACTIVE PROJECTS:**

- Provide total miles of strategy deployment.
- Provide a reasonable Crash Reduction Factor (CRF) from the FHWA's CMF Clearinghouse (MUST include a printout of the page CRF was taken from) <http://www.cmfclearinghouse.org/>
- Number of fatal and serious ("A") injuries in the past 10 years (2004-2013) that have occurred where you propose to implement a HSIP project. (Projects may be eligible for HSIP even if no fatal or A injuries have occurred in your implementation area.)
- MnDOT and Counties, please attach copy of appropriate page from Highway Safety Plan for projects in Plan submitted.

## **FOR REACTIVE PROJECTS:**

- Crash Data - The crash data shall include crashes from calendar years 2011-2013. Only crashes contained within the Minnesota Department of Public Safety's database can be shown. This is to insure that all project

proposals can be equally compared. A crash listing can be obtained from MnDOT upon request (see Appendix A for contact information).

If an individual crash is not in the DPS crash database, it cannot be included in the analysis or the submittal, unless the agency provides acceptable proof of the existence of the crash. Acceptable proof is a copy of the police or citizen accident report. If a crash report was not written, the crash may not be included. If the crash had no injuries and the minimum dollar amount was not met (“N” in the “\$min” box on a police report), the crash cannot be included.

***Crash data requests to MnDOT should be made before October 31st of the solicitation year (see Appendix B for solicitation time line). Requests made after October 31<sup>st</sup> may be significantly delayed due to limited resources.***

- HSIP B/C Worksheet - A sample HSIP B/C worksheet is included in Appendix E. An Excel version of the HSIP B/C worksheet is available by contacting one of the MnDOT contacts listed in Appendix A.

Must send 2 paper copy project submittals to:  
MnDOT, Traffic Engineering  
Lars Impola  
1500 West County Road B2  
Roseville, MN 55113

Must send an electronic submittal to:  
[Lars.Impola@state.mn.us](mailto:Lars.Impola@state.mn.us)

# Crash Reduction Factors

A Crash Reduction Factor (CRF) is the percentage crash reduction that may be expected after implementing a given countermeasure. A CRF should be regarded as a generic estimate of the effectiveness of a countermeasure. The estimate is a useful guide, but it remains necessary to apply engineering judgment and to consider site-specific environmental, traffic volume, traffic mix, geometric, and operational conditions which will affect the safety impact of a countermeasure.

The proposal should reference the FHWA Crash Modification Factors Clearinghouse which can be found at the following website:

- <http://www.cmfclearinghouse.org>

In the FHWA reference, there are a number of CRFs to choose from for each countermeasure. The project proposer must use a CRF in **bold** if available, and clearly explain why they chose the CRF they did.

**For all applications, the applicant is required to write a brief logical explanation on why they chose to use what they did for a CRF.**

In lieu of relying on crash reduction tables, proposals may contain an estimate of crash reductions based upon logical assumptions. The proposal will have to thoroughly demonstrate in a logical fashion how each improvement will impact each type of crash. The HSIP Committee will review the documentation for accuracy and concurrence with logic.

Some examples of acceptable estimates are listed below:

**Example 1:** A project is proposing closure of a median at an intersection. Logically, all left turning and cross street right angle crashes will be eliminated. (100% reduction in these types of crashes).

**Example 2:** A project is proposing a traffic signal revision including creating a protected left turning phase for the minor leg of the intersection. This project should reduce the amount of minor leg left turn crashes significantly (90% reduction). Additionally, any significant improvement in capacity would reduce rear end collisions slightly (10% reduction for minor capacity improvements, 20% for significant improvements).

**Example 3:** A project is proposing a traffic signal revision including adding left and right turn lanes. Adding turn lanes should reduce rear end collisions and some turning collisions depending on proposed versus existing phasing. (20% reduction in impacted rear end collisions is reasonable).

In most cases, the project initiator should contact a member of the MnDOT review team (see Appendix A), to discuss crash reduction assumptions for each improvement project prior to submittal.

If only one improvement is included in the proposed project, the crash reduction factors from the FHWA CMF Clearinghouse, or a percentage reduction based on an estimated procedure described above, can be entered directly into the HSIP worksheet. If two or more improvements are included in the proposed project, the overall crash reduction should be determined using the “Dual Safety Improvement Crash Reduction Formula” described below. If there are more than two improvements for the proposed project, the two improvements which have the greatest impact on safety (whether positive or negative) should be used. If there are two or more improvements, but only one major improvement as represented by cost and scope, use the crash reduction factor for that improvement only.

### **Dual Safety Improvement Crash Reduction Formula:**

$$CR = 1 - (1 - CR1) \times (1 - CR2)$$

CR equals the overall crash rate reduction expressed as a decimal

CR1 equals the crash rate reduction for the first improvement expressed as a decimal

CR2 equals the crash rate reduction for the second improvement expressed as a decimal

For calculation purposes CR, CR1 and CR2 are decimal equivalents so % change in crash values with the sign changed (a value of -50 from the table is expressed as .50 and a value of +75 from the table is expressed as -.75). A positive CR value would result in an overall crash reduction; while a negative CR value would increase crashes. To input into the HSIP worksheet the CR value should be reconverted to numerical format of the “% change in crashes” by multiplying by 100 and changing the sign.

## Use of Fatal Crashes

Type of Crash	Crash Severity	Cost per Crash
Fatal (F)	K	\$10,400,000
Personal Injury (PI)	A Incapacitating	\$540,000
Personal Injury (PI)	B Non-Incapacitating	\$160,000
Personal Injury (PI)	C Possible	\$80,000
Property Damage (PD)	N	\$3,300

Since fatal crashes are often randomly located, there is considerable debate as to whether they should be treated as personal injury crashes or as fatalities. Furthermore, the value assigned is subject to many considerations. With the above in mind, the following criteria shall be used when computing expected crash reduction benefits:

1. Cost benefits assigned to a fatal crash may be used if there are two or more “correctable” fatal crashes within a three-year period (correctable is defined as the type of crash that the improvement is designed to correct).

OR

2. The cost benefit per fatal crash may be used when there is at least one correctable fatal crash **and** two or more type “A” injury crashes within a three-year period.

If the above criteria are not satisfied, the correctable fatal crash shall be treated as two type “A” personal injury crashes ( $K = 2 \times A$ ) when computing the benefit-cost ratio. To do this, enter the correctable fatal crash as two type “A” personal injury crashes in the “A” category on the HSIP B/C worksheet.

# Appendix A

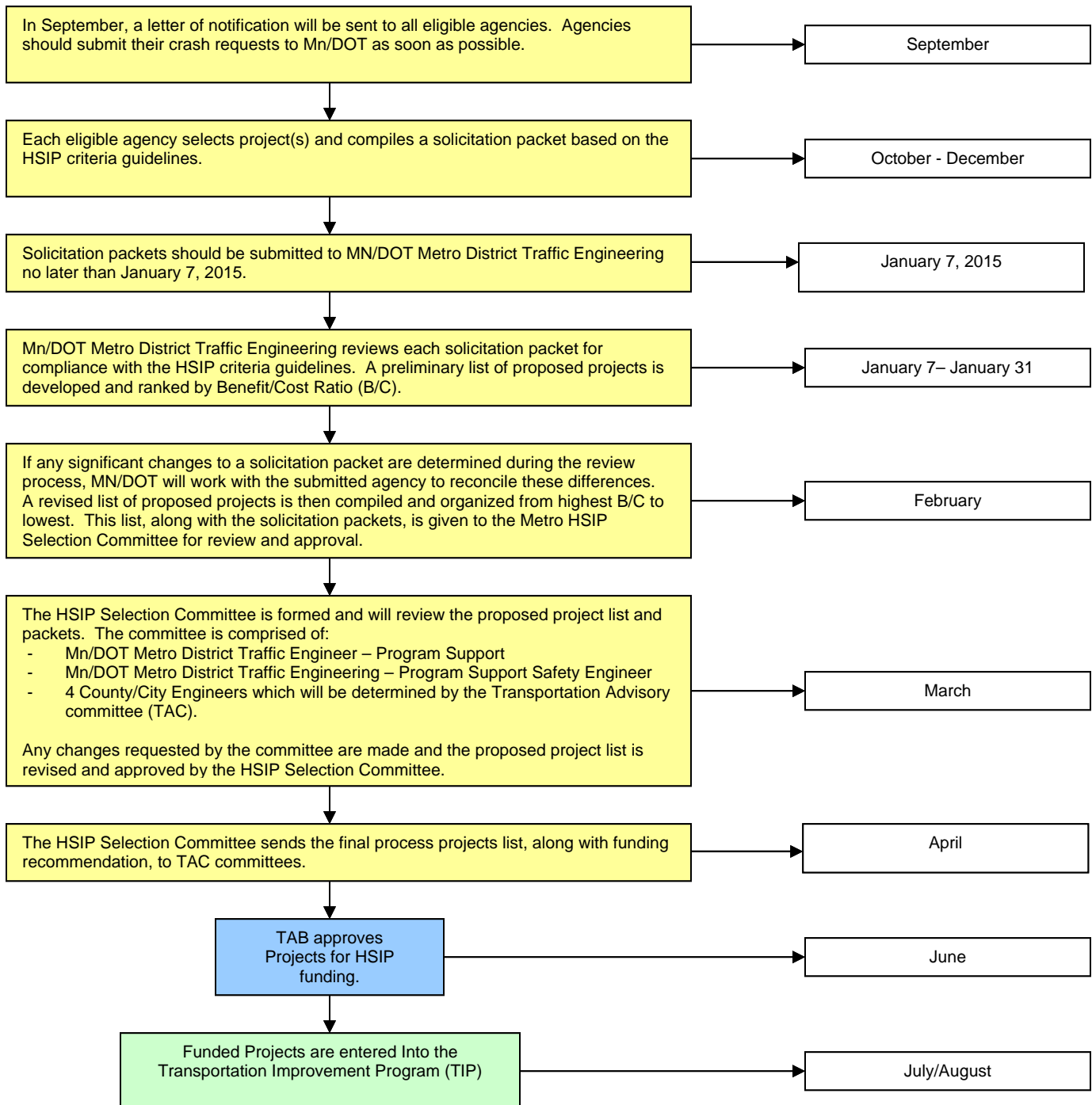
## MnDOT Metro District Traffic Engineering Program Support Contacts

<u>Information</u>	<u>Contact</u>	<u>E-Mail</u>	<u>Phone Number</u>
Proposal Content	Gayle Gedstad	<a href="mailto:gayle.gedstad@state.mn.us">gayle.gedstad@state.mn.us</a>	651/234-7815
Proposal Content	Lars Impola	<a href="mailto:lars.impola@state.mn.us">lars.impola@state.mn.us</a>	651/234-7820
Crash Information	Chad Erickson	<a href="mailto:chad.erickson@state.mn.us">chad.erickson@state.mn.us</a>	651/234-7806



# Appendix B

## Highway Safety Improvement Program (HSIP) Metro District Process Timeline (2014)



# Appendix C

## Traffic Signals:

In most cases, traffic signals are not safety control devices. They assign right of way for vehicles and are necessary for operational purposes. However, in some cases they can improve safety. The objective for the Highway Safety Improvement Program is to “reduce the occurrence of and the potential for fatalities and serious injuries resulting from crashes on all public roads” (23 CRF 924.5). Signal projects will be considered for funding provided they meet the following criteria.

### 1. New Signals:

- Warrant 7, Crash Experience from the MMUTCD must be met. Specifically, “5 or more reported crashes, of the types susceptible to correction by a traffic control signal, have occurred within a 12-month period.” Exceptions to meeting this warrant may be made if an adequate case is made on how the new signal will “reduce the number of, or potential for, fatalities and serious injuries” as required by MAP-21.
- All new signals shall meet current MnDOT design standards. If exceptions to incorporating these standards are necessary due to site specific conditions, explanation should be included with the application.
- Installation of red light running (enforcement) lights is strongly encouraged. Installation costs are low when installed with new signals and they provide the benefit of red light running enforcement to be accomplished by one law enforcement officer, instead of two.
- Documentation should be provided confirming that other intersection types were considered but are not feasible. Those considered should include intersection types that reduce the probability of severe right-angle crashes. Roundabouts, Reduce Conflict Intersections (RCI) and some alternative intersection types fall into this category.

## 2. Existing Signals:

- Rebuilding an existing signal system may be eligible for HSIP funding if it is necessary for implementation of a geometric improvement, where the signal system cost is incidental to the primary geometric safety improvement on the project.
- Rebuilding an existing signal system without geometric improvements may be eligible for HSIP funding if additional safety devices are included, such as: adding mast arms, adding signal heads, interconnect with other signals, etc.

## 3. Retiming of Signal Systems:

- The development and implementation of new signal timing plans for a series of signals, a corridor or the entire system is eligible.

# Appendix D






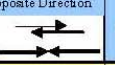
## **Guidelines for HSIP-funded narrow shoulder paving in conjunction with resurfacing projects:**

If narrow shoulder paving projects are funded through HSIP, it makes sense under certain circumstances to do the work in conjunction with a resurfacing project, rather than as a separate, stand-alone project. Work involving the paving of existing aggregate or turf shoulders with 1 to 2 feet of pavement may be allowed within the following guidelines:

- Narrow shoulder paving can be done in conjunction with resurfacing if the project is along one of the segments specifically identified in the CRSP for this type of work.
- The project can be at a different location than those identified in the CRSP if it is along a higher-risk segment, as identified in the CRSP. The CRSP assigns a risk rating to highway segments based on the following criteria: traffic volume, rate and density of road departure crashes, curve density and edge assessment. The risk rating ranges from 0 (lower risk) to 5 (higher risk). **If the proposed project is along a highway segment with a rating of 4 or 5, then it can be done in conjunction with a resurfacing project.** This process ensures that narrow shoulder paving is being done at locations of higher risk rather than being driven by the schedule of pavement rehabilitation projects.
- The shoulder paving must include a safety edge and either shoulder or edgeline rumble strips.
- The applicant should use regular construction dollars to upgrade guardrail and other safety hardware as part of the resurfacing project.

# Appendix E

## (B/C Worksheet Example)

<b>B/C worksheet</b>		Control Section	T.H./ Roadway	Location	Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends	
			I-494	Portland Ave to Nicollet Ave	3+00.848	4+00.357	Hennepin Co.	1/1/2005	12/31/2007	
		<b>Description of Proposed Work</b>								
		Construct Westbound auxiliary lane between Portland and Nicollet								
Accident Diagram Codes		1 Rear End	2 Sideswipe Same Direction	3 Left Turn Main Line	5 Right Angle	4,7 Ran off Road	8,9 Head On/ Sideswipe - Opposite Direction	6, 90, 99		
										
							Pedestrian	Other	Total	
<b>Study Period: Number of Crashes</b>	Fatal	F								
	Personal Injury (PI)	A								
		B								
		C		3						3
Property Damage	PD		7	3					10	
<b>% Change in Crashes</b>	Fatal	F								
	PI	A								
		B								
		C		-25%						
	Property Damage	PD		-25%	-25%					
†Use Desktop Reference for Crash Reduction Factors										
<b>Change in Crashes</b>	Fatal	F								
	PI	A								
		B								
		C		-0.75						-0.75
	Property Damage	PD		-1.75	-0.75					-2.50
		= No. of crashes X % change in crashes								
<b>Year (Safety Improvement Construction)</b>			2013							
				Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit		
<b>Project Cost (exclude Right of Way)</b>		\$ 600,000								
<b>Right of Way Costs (optional)</b>				F			\$ 6,800,000			
<b>Traffic Growth Factor</b>		3%		A			\$ 390,000			
<b>Capital Recovery</b>				B			\$ 121,000			
<b>1. Discount Rate</b>		4.5%		C	-0.75	-0.25	\$ 75,000	\$ 18,767		
<b>2. Project Service Life (n)</b>		30		PD	-2.50	-0.83	\$ 12,000	\$ 10,009		
				<b>Total</b>				\$ 28,776		

B/C= 1.18

*Using present worth values,*

**B= \$ 705,513**

**C= \$ 600,000**

*See "Calculations" sheet for amortization.*

# Appendix F

## Recommended Service Life Criteria

<u>Description</u>	<u>Service Life</u> <u>(years)</u>	<u>Description</u>	<u>Service Life</u> <u>(years)</u>
<b><u>Intersection &amp; Traffic Control</u></b>		<b><u>Roadway &amp; Roadside</u></b>	
Construct Turning Lanes	20	Widen Traveled Way (no lanes added)	20
Provide Traffic Channelization	20	Add Lane(s) to Traveled Way	20
Improve Sight Distance	20	Construct Median for Traffic Separation	20
Install Traffic Signs	10	Wide or Improve Shoulder	20
Install Pavement Marking	2	Realign Roadway (except at railroads)	20
Install Delineators	10	Overlay for Skid Treatment	10
Install Illumination	20	Groove Pavement for Skid Treatment	10
Upgrade Traffic Signals	20	Install Breakaway Sign Supports	10
Install New Traffic Signals	20	Install Breakaway Utility Poles	10
Retime Coordinated System	5	Relocate Utility Poles	20
Construct Roundabout	20	Install Guardrail End Treatment	10
		Upgrade Guardrail	10
		Upgrade or Install Concrete Median Barrier	20
		Upgrade or Install Cable Median Barrier	10
		Install Impact Attenuators	10
		Flatten or Re-grade Side Slopes	20
		Install Bridge Approach Guardrail	
		Transition	10
		Remove Obstacles	20
		Install Edge Treatments	7
		Install Centerline Rumble Strips	7
<b><u>Structures</u></b>			
Widen or Modify Bridge for Safety	20		
Replace Bridge for Safety	30		
Construct New Bridge for Safety	30		
Replace/Improve Minor Structure for Safety	20		
Upgrade Bridge Rail	20		

# Appendix G

## Crash Rate

The formula to compute actual crash rates for locations where there were clusters of crashes during the study period:

$$\text{Section:} \quad \frac{1,000,000 \times \text{CRASHES}}{\text{ADT} \times \text{Length} \times \text{DAYS}}$$

$$\text{Intersection/Spots:} \quad \frac{1,000,000 \times \text{CRASHES}}{\text{ADT} \times \text{DAYS}}$$

CRASHES = Total Number of crashes  
DAYS = Number of days for the study  
ADT = Average Daily Traffic  
Length = Length of Section of road

## Severity Rate

The severity rate is calculated as:

$$\text{Section:} \quad \frac{1,000,000 \times 5(\text{FAT})+4(\text{A})+3(\text{B})+2(\text{C})+\text{N}}{\text{ADT} \times \text{Length} \times \text{DAYS}}$$

$$\text{Intersection/Spots:} \quad \frac{1,000,000 \times 5(\text{FAT})+4(\text{A})+3(\text{B})+2(\text{C})+\text{N}}{\text{ADT} \times \text{DAYS}}$$

FAT = Number of Fatal crashes  
A = Number of A injury crashes  
B = Number of B injury crashes  
C = Number of C injury crashes  
N = Number of property damage only crashes  
DAYS = Number of days for the study  
ADT = Average Daily Traffic  
Length = Length of Section of road

## Federal HSIP Funding Application (Form 1)

**INSTRUCTIONS:** Complete and return completed application to Lars Impola, MnDOT, Metro District, 1500 West County Road B2, Roseville, Minnesota 55113. (651) 234-7820. **Applications must be received by 4:30 PM or postmarked on January 7, 2015.** \*Be sure to complete and attach the Project Information form. (Form 2)

Office Use Only

### I. GENERAL INFORMATION

1. APPLICANT:

2. JURISDICTIONAL AGENCY (IF DIFFERENT):

3. MAILING ADDRESS:

CITY:

STATE:

ZIP CODE:

4. COUNTY:

5. CONTACT PERSON:

TITLE:

PHONE NO.  
(     )

CONTACT E-MAIL ADDRESS:

### II. PROJECT INFORMATION

6. PROJECT NAME:

7. BRIEF PROJECT DESCRIPTION (Include location, road name, type of improvement, etc... A more complete description can be submitted separately):

8. HSIP PROJECT CATEGORY – Circle which project grouping in which you wish your project to be scored.

Proactive

Reactive

### III. PROJECT FUNDING

9. Are you applying or have you applied for funds from another source(s) to implement this project?  
Yes  No  If yes, please identify the source(s):

10. FEDERAL AMOUNT: \$

13. MATCH % OF PROJECT TOTAL:

11. MATCH AMOUNT: \$

14. SOURCE OF MATCH FUNDS:

12. PROJECT TOTAL: \$

15. REQUESTED PROGRAM YEAR(S) :

2017    2018    2019    Any year

16. SIGNATURE:

17. TITLE:



## PROJECT INFORMATION (Form 2)

(To be used to assign State Project Number after project is selected)

Please fill in the following information as it pertains to your proposed project. Items that do not apply to your project, please label N/A. **Do not send this form to the State Aid Office. For project solicitation package only.**

COUNTY, CITY, or LEAD AGENCY \_\_\_\_\_

FUNCTIONAL CLASS OF ROAD \_\_\_\_\_

ROAD SYSTEM \_\_\_\_\_ (TH, CSAH, MSAS, CO. RD., TWP. RD., CITY STREET)

NAME OF ROAD \_\_\_\_\_ (Example: 1<sup>st</sup> Street, Main Avenue)

ZIP CODE WHERE MAJORITY OF WORK IS BEING PERFORMED \_\_\_\_\_

APPROXIMATE BEGIN CONSTRUCTION DATE (MO/YR) \_\_\_\_\_

APPROXIMATE END CONSTRUCTION DATE (MO/YR) \_\_\_\_\_

LOCATION: From: \_\_\_\_\_

To: \_\_\_\_\_

(DO NOT INCLUDE LEGAL DESCRIPTION)

TYPE OF WORK \_\_\_\_\_

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(Examples: GRADE, AGG BASE, BIT BASE, BIT SURF, SIDEWALK, CURB AND GUTTER, STORM SEWER, SIGNALS, LIGHTING, GUARDRAIL, BIKE PATH, PED RAMPS, BRIDGE, PARK AND RIDE, ETC)