



HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)

Greater Minnesota
Solicitation for Local Projects

State Fiscal Years 2018, 2019, 2020 and 2021

September 2016

GUIDEBOOK & APPLICATION FORM

HSIP

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INTRODUCTION

The Office of Traffic, Safety and Technology (OTST) in partnership with State Aid for Solicitation (SALT) is soliciting for approximately \$19.4 million over four years (SFY 2018, SFY 2019, SFY 2020 & FY 2021) of local projects for the Highway Safety Improvement Program (HSIP).

See below for approximate funds available by district. Funding in 2021 is estimated based on 2020 levels: more funds may be available during project selection.

District	2018	2019	2020	2021*
1	—	—	—	\$ 1,300,000
2	—	\$ 800,000	\$ 800,000	\$ 800,000
3	\$ 1,308,590	\$ 2,321,000	\$ 1,585,303	\$ 2,600,000
4	—	—	—	\$ 1,100,000
6	—	—	\$ 764,400	\$ 2,100,000
7	—	—	—	\$ 1,400,000
8	\$ 11,594	\$ 352,931	\$ 1,100,000	\$ 1,100,000
Total	\$ 1,320,184	\$ 3,473,931	\$ 4,249,703	\$ 10,400,000

THIS IS THE LAST CHANCE TO PROGRAM SFY 2018 and SFY 2019 HSIP FUNDS.

OTST strongly encourages submitting more projects than the minimum targets listed above as more dollars may become available for quality projects. If 2018 and 2019 funds are left unallocated after this solicitation, then those funds will go to a project outside of this solicitation that can be delivered in the necessary timeframe.

REQUIREMENTS

The Highway Safety Improvement Plan (HSIP) selection committee will evaluate each application, prioritize and determine the best funding source for each. **Independent of the source from which funding will be secured; certain requirements must be met to receive funding.**

1. Applications must be received on or before **November 10, 2016.**
 - Project selections will be made by First Quarter of 2017.
2. **The County Road Safety Plan should be the starting point for selecting projects for this solicitation.**
3. Projects that originate from a road safety plan will be given priority. The higher priority given to the project in the safety plan, the more points that project will receive during the selection process.
4. 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 F](#) for these exceptions.

5. Applicants submitting systemic lane departure or intersection projects identified in a County Road Safety Plan, **need only fill out page 1 of the application and attach the appropriate pages from that plan.** Reactive projects and projects not identified in the County Road Safety Plan need to attach additional documentation as indicated on the application. Page 4 of the application applies only to Reactive/Spot location projects.
 6. Applicants are strongly encouraged to coordinate with other jurisdictions and agencies affected by the project. A letter from each of these agencies is required stating that they are aware of the project and have no objections. These letters do not imply participation in funding. Any projects proposed on or adjacent to state roads should be discussed with District Traffic Engineers before the project is submitted.
 7. Projects must indicate roadway and specify both a beginning and an ending reference point. This is to expedite the environmental review and historical site evaluation process.
 8. Applicants must agree to maintain any selected projects for the life of the project. (See [Appendix C](#) for FHWA Recommended Service Life Criteria.)
 9. Projects **NOT** eligible for funding:
 - road safety audits
 - overlays
 - guardrail updates
 - sign upgrades
 - “Force account” work -all projects must be done by a qualified contractor through the design-bid-build process
 10. Edgeline restriping projects will be considered for 6” edgelines only. These projects will be selected based on risk as identified in the County Road Safety Plans.
 11. New or reconstructed signals will be considered if they meet the criteria contained in [Appendix E](#).
 12. Maximum Federal Funding is 90% of eligible total project costs up to:
 - \$350,000 for individual systemic projects.
 - \$1,000,000 or as much as available by ATP for reactive projects.
 - Agencies are **encouraged** to submit multiple applications as additional funding is available.
- NOTE: There is a minimum 10% local match required.** The match must be made in non-federal “hard dollars”. Soft matches (i.e. volunteer labor, donated materials, professional services) will not be included in the match.
13. Funds are not “capped.” Additional funds may be approved based on bid prices or other unforeseen circumstances. The selection committee must approve any increases in funding.
 14. Funding for the project will be eliminated from the program if it does not meet the deadlines described in [Appendix D](#). **The deadline is April 15 of the year that it is programmed.**
 15. **Before and after summaries and data collection forms must be completed prior to final payment.** (examples for both are available on State Aid for Local Transportation’s (SALT) traffic safety page) www.mndot.gov/stateaid/trafficsafety.html

ELIGIBILITY

The Federal funds listed in the table on page 1, are available to Greater Minnesota counties and agencies within those counties with the ability to receive State Aid. Non-State Aid agencies must be sponsored by their county.

CRITERIA FOR SYSTEMIC PROJECT FUNDING

A **minimum** of 70% of the projects awarded to each ATP will be systemic. The criteria that will be used to select these projects are detailed in this section of the document.

Proposed projects qualify for the **Systemic** Program by the following criteria:

- Agency agrees to maintain for the life of the project – see [Appendix C](#)
- Letter from other agencies involved in the project
 - E.g. +Otter Tail County submits an application for County-wide lighting improvements at CSAH/TH intersections. They need to include a letter from Mn/DOT District 4, stating that the District is aware of the project and has no objections.

PRIORITIZATION

Projects will be prioritized using the following criteria:

- Part of a longer range plan (Road Safety Plan or Road Safety Audit Recommendations) – include an excerpt from the existing plan
 - **Higher priority projects from the Road Safety Plan will receive more points during the selection process than lower priority projects.**
- Cost/mile or Cost/intersection

CRITERIA FOR REACTIVE PROJECT FUNDING

A **maximum** of 30% of the projects awarded to each ATP will be reactive. Reactive projects must have a B/C greater than 1 to be considered for funding. The criteria that will be used to select these projects are detailed in this section of the document.

Proposed projects qualify for the **Reactive** Program by the following criteria:

- Locations must have a significant crash history that includes a fatal or serious injury crashes. Significant crash history can be determined in a number of ways, it is suggested that critical crash rates be used to assess significance. Details on calculating critical rates can be found in [APPENDIX A](#). Contact OTST regarding the average crash rate by intersection type (see also [Traffic Safety Fundamentals Handbook](#) page B-8). Contact OTST if you are going to consider using another metric to address/quantify significant crash history

www.mndot.gov/trafficeng/publ/fundamentals/2015-mndot-safety-handbook-reduced.pdf

- Must have a benefit/cost (B/C) ratio of 1.0 or greater.* (Note: The B/C ratio shall exclude right-of-way costs.)

***Only crashes contained within the Minnesota Department of Transportation database can be used to determine the B/C for project submittals. If it is found that crashes have been omitted from MnDOT's database, you will need to provide the crash report to have those crashes entered into the system.**

- Agency agrees to maintain for the life of the project – see [Appendix C](#).

REQUIRED MATERIAL & SPECIAL INSTRUCTIONS FOR REACTIVE PROJECTS

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

- Project plan or preliminary layout/scope of work proposed
- Calculations demonstrating a significant crash history (see [Appendix B](#))
- HSIP Worksheet – A sample worksheet is included in [Appendix A](#). An Excel version of the HSIP Worksheet is available at: www.mndot.gov/trafficeng/safety/index.html
- Crash data; include all crashes from calendar years 2011-2013. Only crashes contained within the Minnesota Department of Transportation's database can be shown. This is to insure that all project proposals can be equally compared. All crash data must be obtained from MnCMAT.

Each submission should also include the following:

- Cover Letter – include submitting agency, project manager, and description of project, Federal funds requested, local match and source.
- Location map.

Letter from other entities involved in the project stating their awareness of the project and that they have no objections.

SUBMITTAL INSTRUCTIONS

Applications should be submitted **electronically** to the OTST office. Applications must be received in the office no later than the specified deadline.

Applications for **all ATP's** are due in the OTST office on or before **November 10, 2015**.

An electronic version of this application can be found at: www.mndot.gov/trafficeng/safety/hsip.html

Electronic submittals must be in a pdf formatted document and be formatted to print no larger than 11x17. Each completed application and its supporting documents should be in **ONE** pdf file. IE: If you are submitting three applications, you will have 3 pdf files.

Email electronic submittals to: SafetyProject.DOT@state.mn.us

If electronic submittal is not possible, then applicants may submit a paper application:

Paper applications must include six (6) copies and should be mailed or delivered to the following address on or before the application deadline:

Eric DeVoe
Mn/DOT
1500 West County Road B2, MS 725
Roseville, MN 55113

Contacts

Applicants having questions or requiring assistance with this application should contact:

Eric DeVoe, OTST
651-234-7016
Eric.DeVoe@state.mn.us

Mark Vizecky, State Aid
651-366-3839
Mark.Vizecky@state.mn.us

Brad Estochen, OTST
651-234-7011
Bradley.Estochen@state.mn.us

Sulmaan Khan, State Aid
651-366-3829
Sulmaan.Khan@state.mn.us

Appendix A

Sample HSIP Worksheet

HSIP worksheet		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
		Description of Proposed Work		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 				
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B									
		C		5							5
Property Damage	PD		7	3						10	
% Change in Crashes	Fatal	F									
	PI	A									
		B									
		C		-25%							
Property Damage	PD		-25%	-25%							
Change in Crashes = No. of crashes X % change in crashes	Fatal	F									
	PI	A									
		B									
		C		-1.25							-1.25
Property Damage	PD		-1.75	-0.75						-2.50	
Year (Safety Improvement Construction)		2013									
Project Cost (exclude Right of Way)		\$	600,000	Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit	B/C= 1.63		
Right of Way Costs (optional)				F			\$ 1,100,000				
Traffic Growth Factor			3%	A			\$ 550,000		<i>Using present worth values,</i> B= \$ 979,538 C= \$ 600,000		
Capital Recovery				B			\$ 160,000				
1. Discount Rate			4.5%	C	-1.25	-0.42	\$ 81,000	\$ 33,781	<i>See "Calculations" sheet for amortization.</i>		
2. Project Service Life (n)			30	PD	-2.50	-0.83	\$ 7,400	\$ 6,172			
				Total			\$ 39,953	Office of Traffic, Safety and Technology February 2015			

Data for Calculating Benefit/Cost Ratio

The Recommended % Change in Crashes should be taken from the Crash Reduction Factors Clearinghouse published by the Federal Highway Administration (FHWA). The clearinghouse available online at www.cmfclearinghouse.org

Include documentation on how the appropriate crash reduction factor was determined.

The proposal will have to demonstrate in logical fashion how each improvement will impact each type of crash. The Mn/DOT Selection Committee will review the documentation and estimates for accuracy. 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 adding right turn lanes at a signal on two approaches. The clearinghouse (www.cmfclearinghouse.org) shows a 9% reduction (EB analysis) in all crashes. 9% should be used.

The applicant can contact Eric DeVoe, 651-234-7016, to discuss crash reduction assumptions for each improvement project prior to submittal.

The most beneficial improvement included in the proposed project should be used to determine the crash reduction factor and the recommended service life ([Appendix C](#)).

In the interest of standardizing the calculation of an annual cost associated with a given type of highway safety improvement, the following inputs are used in all calculations for HSIP submissions:

- ✓ Discount = 4.5%
- ✓ Traffic Growth = 3% (The default value of 3% is a conservative statewide average. The use can input a different value with documentation.)
- ✓ Salvage Value of Right of Way and change in maintenance costs are negligible.

Type of Crash	Crash Severity	Crash Cost
Fatal	K	\$ 1,140,000
Personal Injury	A – incapacitating	\$ 570,000
	B – non-incapacitating	\$ 170,000
	C – possible	\$84,000
Property Damage	PDO or N	\$ 7,600

MnDOT – Transportation System Management, www.mndot.gov/planning/program/appendix_a.html

Appendix B

Critical Crash Rates

Every year in Minnesota, there are around 75,000 crashes involving motor vehicles. The vast majorities of these crashes (98%) are minor injury or only result in property damage. When looking at all crashes, there is rarely a location or segment that has not had some kind of crash within a given window of time (typically 3, 5 or 10 years of data). Knowing this, it has been difficult to assign where an at-risk location is using solely crash data. Since nearly all segments and intersections have some crashes, it has been possible to establish average crash rates for a given type of intersection or segment. Due to the random nature of crashes, OTST has decided to use a statistical evaluation to determine which locations are below the average crash rate, performing near the average crash rate, those that are above the average crash rate, and those that are statistically significant (i.e. critical) above the crash rate. Using a critical crash helps to ensure that locations being selected are actually having something significant happening, and are not just a result of the random nature of crashes. The Critical Crash Rate helps to filter out areas with low Average Daily Traffic, or evaluated over a short time period.

For more information, see Traffic Engineering Manual (www.mndot.gov/trafficeng/publ/tem/index.html) online.

Calculating the Critical Crash Rate

The Office of Traffic, Safety, and Technology (OTST) evaluates crash data on a routine basis to help monitor trends, track crashes, and establish average crash rates. This data is collected, organized and released in the yearly Toolkit. A new feature to the 2011 Toolkit is the use of the critical crash rate index.

This index is calculated by taking the existing crash rate, and dividing it by the critical crash rate. Any index with a number greater than 1.0 will be considered as having a critical crash rate.

Critical Rate Equation:

$$R_C = R_A + K * (R_A/m)^{1/2} + 0.5/m$$

R_C = Critical Crash Rate

R_A = System Wide Average Crash Rate

K = Confidence Interval

OTST has established the following confidence intervals for each type of crash rate:

- Crash Rate will be 99.5% Confidence; $K = 2.756$
- Severity Rate will be 99.5% Confidence; $K = 2.756$
- Fatal Rate will be 90% Confidence; $K = 1.282$
- Fatal and Serious (A) Rate will be 90% Confidence; $K = 1.282$

m = Vehicle Exposure (for sections this is Vehicle Miles Traveled (VMT), for intersections this is Entering Vehicles)

Appendix C:

Recommended Service Life Criteria

<u>Description</u>	<u>Service Life</u> (years)	<u>Description</u>	<u>Service Life</u> (years)
<u>Intersection & Traffic Control</u>		<u>Roadway & Roadside</u>	
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
<u>Pedestrian & Bicycle Safety</u>		Install Impact Attenuators	10
Construct sidewalk	20	Flatten or Re-grade Side Slopes	20
Construct Pedestrian & Bicycle		Install Bridge Approach Guardrail Transition	10
Overpass/Underpass	30	Remove Obstacles	20
Install Fencing & Pedestrian Barrier	10	Install Edge Treatments	7
Construct Bikeway	20	Install Centerline Rumble Strips	7
<u>Structures</u>			
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 D:

Delegated Service Life Criteria

A brief overview of the Delegated Contract Process (DCP) has been provided below. The outlined criteria must be completed to meet the April 15th deadline requirement for all selected projects:

1. Environmental document prepared by sponsoring agency and **approved** by DSAE and SALT.
2. Right of way certificate approved or condemnation proceedings have been formally initiated*.
3. District State Aid Engineer (DSAE) approval of plans and a satisfactory review by State Aid that project plans are complete and reflect the project that was selected.
4. Engineer's Estimate and working days estimate including how working days were computed*.
5. Special provision information*.
6. Utility relocation certificate*.
7. Request for Lab Services form*.
8. Permits received or NPDES permit application filled out by sponsoring agency*.
9. SALT requests DBE goal.
10. Plans reviewed and approved by SALT.
11. SALT requests authorization for HSIP or HRRRP projects.
12. Bid opening can be set after authorization by SALT and sponsoring agency.
13. Sponsoring agency prepares proposal, sells project documents and advertises per State Statute (required ad language provided by SALT).
14. Bid opening should be within 90 days of authorization.
15. DBE clearance must be given by Mn/DOT Office of Civil Rights before project is awarded by sponsoring agency (if applicable).
16. Submit above information for all projects that will be included in the construction contract.
Above Federal requirements will apply to all work included in the construction contract.

*These items are all submitted to SALT along with DSAE approved plan set.

Additional Resources:

For detailed information about the FEDERAL (DCP) process, please visit our website:
www.mndot.gov/stateaid/projectdelivery/pdp/dcp/dcp-checklist.pdf

If you have any questions about the Federal Aid process, please contact your DSAE or Merry Daher with SALT at Merry.Daher@state.mn.us or (651) 366-3821.

Appendix E:

HSIP and Signals (Revised 10/10/2012)

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 of the Highway Safety Improvement Program (HSIP) 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.

Section 4 of the Minnesota Manual on Uniform Traffic Control Devices can be found at the link below:

www.mndot.gov/trafficeng/publ/mutcd/mnmutcd2014/mnmutcd-4.pdf

1. New Signals

- Warrant 7, Crash Experience from the MMUTCD must be met. Specifically, “Five 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.
- All new signals shall meet current Mn/DOT 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 restricted crossing u-turn (RCUT) intersections, and some other alternative intersection types fall into this category.

2. Existing Signals

- Rebuilding an existing signal system is only eligible for HSIP funding if it is necessary for implementation of a geometric improvement (constructing new lanes). The signal system is incidental to the primary safety improvement on these projects, which is geometric.

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 F

Narrow Shoulder Paving Guidelines

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

The HSIP steering committee agrees that when narrow shoulder paving projects have been 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. The steering committee is proposing revised guidelines on this issue that will affect future project selection.

The County Road Safety Plans (CRSPs) are identifying **6 miles per county per year** for narrow shoulder paving. This work involves the paving of existing aggregate or turf shoulders with 1 to 2 feet of pavement and the addition of a safety edge and a shoulder rumble strip or edgeline rumble stripe. The following guidelines are proposed for the selection of future HSIP projects on the local system:

- 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 County should use regular construction dollars to upgrade guardrail and other safety hardware as part of the resurfacing project.

At this time, all other HSIP-funded project types on the local system will continue to be funded as separate, stand-alone projects.