

**ACTION TRANSMITTAL – 2021-36**

**DATE:** September 8, 2021

**TO:** Transportation Advisory Board

**FROM:** Technical Advisory Committee

**PREPARED BY:** Joe Barbeau, Senior Planner ([joseph.barbeau@metc.state.mn.us](mailto:joseph.barbeau@metc.state.mn.us))  
Steve Peterson, Manager of Highway Planning and TAB/TAC Process ([steven.peterson@metc.state.mn.us](mailto:steven.peterson@metc.state.mn.us))  
Elaine Koutsoukos, TAB Coordinator ([elaine.koutsoukos@metc.state.mn.us](mailto:elaine.koutsoukos@metc.state.mn.us))

**SUBJECT:** 2022 Highway Safety Improvement Program (HSIP) Application: Release for Public Comment

**REQUESTED ACTION:** Approval of the draft 2022 Highway Safety Improvement Program (HSIP) application for release for public comment

**RECOMMENDED MOTION:** That TAB the draft 2022 Highway Safety Improvement Program (HSIP) application for release for public comment.

**BACKGROUND AND PURPOSE OF ACTION:** Staff asks that TAB release the draft 2022 Highway Safety Improvement Program (HSIP) application for review and public comment. The HSIP application will be released for comment on September 16, with comments due November 1. After the public comment period, a revised draft package will be prepared for the TAB's November meeting. MnDOT has made several changes for the 2022 HSIP Solicitation, including:

Cover – Updated dates

Table of Contents – Updated numbering

Pg. 2 – Need to finalize the amount of funding for 2022 Metro solicitation for 2026 & 2027. Currently \$23 million. Need to determine if there will be additional funds available in FY 23, 24, & 25.

Pg. 3 – MnDOT Central Office Traffic is updating Fatal and Serious Injury crash statistics for MSAS and local streets to be updated in application.

Pg. 5 – Changes made to crash data requirements. If agency applying has access to MnCMAT, they can provide their own data which will be reviewed by scoring committee.

Pg. 6 – Links to Strategic Highway Safety Plan are updated to newest plan.

Pg. 6, 7, 9, 11, 18, 27, 28 – Updated dates

Pg. 8 – Added Met Council wording about using historic AADT data due to pandemic impacts and updated dates. Changes made to crash data requirements. If agency applying has access

to MnCMAT, they can provide their own data which will be reviewed by committee. Reference to Metropolitan Council CMF list and wording about the option of using the CMFs provided.

Pg. 10 – Updated dates. Changes made to crash data requirements. If agency applying has access to MnCMAT, they can provide their own data which will be reviewed by committee.

Pg. 11 – Crash request date window lengthened and dates updates. HSIP B/C Worksheet links to updated worksheet. Changes made to crash data requirements. If agency applying has access to MnCMAT, they can provide their own data which will be reviewed by committee.

Pg. 12 – Paper copies submitted changed from two to one.

Pg. 13 – Reference to Metropolitan Council CMF list and wording about the option of using the CMFs provided.

Pg. 15 – Crash costs updated. Additional explanation of when full Fatal Crash value can be used in calculating B/C included.

Pg. 16 – Additional explanation of when full Fatal Crash value can be used in calculating B/C included.

Pg. 17 – Contact info updated.

Pg. 23, 24 – Updated to newest version of B/C Worksheet.

Pg. 26 – Placeholder for Metropolitan Council CMF list.

**RELATIONSHIP TO REGIONAL POLICY:** TAB develops and issues a Highway Safety Improvement Program (HSIP) solicitation for federal funding.

**COMMITTEE COMMENTS AND ACTION:** At its August 19, 2021, meeting the TAC Funding and Programming Committee unanimously recommended approval of the draft 2022 Highway Safety Improvement Program (HSIP) application for release for public comment.

At its September 1, 2021, meeting, the Technical Advisory Committee recommended approval of the draft 2022 Highway Safety Improvement Program (HSIP) application for release for public comment as part of the consent agenda.

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### ROUTING

TO	ACTION REQUESTED	DATE SCHEDULED / COMPLETED
TAC Funding & Programming Committee	Review & Recommend	8/19/2021
Technical Advisory Committee	Review & Recommend	9/1/2021
Transportation Advisory Board	Review & Adopt	9/15/2021

# HSIP

## *Highway Safety Improvement Program*

For State Fiscal Years 2026 and 2027

### Metro District Program Criteria

Minnesota Department of Transportation  
Metro District Traffic Engineering  
February 2022

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

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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 FAST Act legislation. In FAST Act, 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. See Appendix B for a timeline flowchart of the HSIP solicitation, application and evaluation process.

## 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. Applicants that are not State Aid cities or counties in the eight-county metro area with populations over 5,000 must contact the MnDOT Metro State Aid Office prior to submitting their application to determine if a public agency sponsor is required.
2. The maximum HSIP federal award is \$2,000,000 per project. A minimum local match of 10% of the total project cost is required. The match must be in “hard dollars.” Soft matches (i.e.; volunteer labor, donated materials, professional services) cannot be included in the match.
3. HSIP funding cannot be used as a “payback” source of funding, whereby local agencies construct a project and anticipate future reimbursement monies from HSIP funds.
4. This solicitation is for both “Proactive” and “Reactive” projects. Distribution of funds between these two project types will depend on a number of factors including the dollar amount and number of projects submitted in each category, types of projects submitted and geographic balance of projects throughout the Metro District.
5. Funding is for roadway construction and reconstruction projects designed to decrease the frequency and/or severity of crashes. These crashes can involve pedestrians, bicycles, and other non-motorized vehicles. The project must be a permanent improvement. Right-of-way, design, and construction engineering costs are not fundable and shall not be included in the project cost. Please refer to <https://safety.fhwa.dot.gov/hsip/>
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.

7. Projects awarded funding through the regional HSIP solicitation are subject to the Region's "Program Year Policy" and "Scope Change Policy" available at <https://metro council.org/Transportation/Planning-2/Transportation-Planning-Process.aspx?source=child>
8. Applicants may apply for both the Regional Solicitation and the Highway Safety Improvement Program (HSIP), but projects can only be awarded funds from one of the two federally funded programs.
9. The amount of funding available for this 2022 Metro District solicitation for State Fiscal Years 2026 and 2027 is approximately **\$22 million** for the two-year period. Additional funding may be available in State Fiscal Year 2023, 2024, or 2025.

# Qualifying Criteria

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

Priority will be given to smaller stand-alone, low-cost / high-benefit projects. Applicants should submit focused safety projects and not asset replacement projects unless the replacement project by itself increases safety. See Appendix C for additional traffic signal requirements. Safety features, such as guardrails, that are routinely provided as part of a broader project should be funded from the same source as the broader project. 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 local streets, a city may propose strategies similar to what is in their county's safety plan if applicable.

The following crash data is provided to assist cities in focusing on the types of projects to submit. On local roads (MSAS and city streets) in the Metro District over the latest 5 year period available (2014-2018) there have been 1,315 fatal and serious injury crashes: 458 (35%) involved two or more vehicles colliding

- 339 (26%) involved a pedestrian
- 118 (9%) involved a bicyclist
- 96 (7%) involved hitting a tree or shrub

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

Reactive projects should propose safety improvements that directly address the types of crashes experienced within the project area.

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

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 on these target crashes.

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

- Reduced-conflict intersections (RCI's)
- Rumble strips
- Rumble stripEs
- Wider striping (6")
- Embedded wet reflective striping
- Delineation for sharp curves (chevrons)
- Cable median barrier
- Crosswalk enhancements (ex. RRFB's)
- Intersection lighting
- Corridor lighting
- Curb extensions (bump-outs)
- Sight distance improvements
- Remove hazards in clear zones
- Pedestrian countdown timers

- Construct ped refuge islands & raised medians
- Enforcement lights on signals
- Turn lanes
- New guardrail (not replacement)
- Frontage roads (with access removals)
- Sidewalks or trails
- Narrow shoulder paving (see Appendix D)
- Signal coordination (interconnect)
- Pavement messages
- Roundabouts
- Stop bars
- Safety edge
- Friction treatments
- Road diets



## **FOR REACTIVE PROJECTS:**

For this solicitation, proposed projects qualify for the HSIP program by having a benefit/cost (B/C) ratio of 1.0 or greater\*. (Note: The B/C ratio shall exclude right-of-way costs. The cost used should be the total project cost, not the amount of requested HSIP dollars.)

\*Only crashes contained within the Minnesota Department of Public Safety's database can be used to determine the B/C for project submittals. If the agency submitting application has access to MnCMAT, crash data from that system can be used as part of submittal. MnCMAT data will be reviewed by the HSIP committee to ensure accuracy. Crash data can also be obtained from MnDOT if an agency does not have access to MnCMAT. MnDOT Metro District Traffic Office will provide a crash listing, upon request.

(See Appendix A)

# Prioritization Criteria

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

Pedestrian and bicycle crashes are a focus area in the Minnesota Strategic Highway Safety Plan. Additional consideration will be given to projects which address pedestrian and bicycle safety. To account for the greater proportion of severe injuries of bike and pedestrian crashes each bike and pedestrian crash should be enter as two on the B/C worksheet.

## **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:

- Cost per user exposure
- Connection to the 2020-2024 Minnesota Strategic Highway Safety Plan (SHSP). This Plan can be found at the following link:  
<http://www.dot.state.mn.us/trafficeng/safety/shsp/mn-shsp-2020-24.pdf>
- Correctable fatal and serious injury crashes (10 years, 2011 - 2020)
- 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
- Pedestrian and bicycle safety elements

## **FOR REACTIVE PROJECTS:**

The reactive projects will be prioritized by:

- Highest B/C ratio, based on crash data from 2018-2020.
- The scoring committee will review the projects to determine how well they meet the qualifying criteria and intent of the HSIP program, to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. In addition to crash history the existence of risk factors and experience with crash types that are risk factors for more severe crashes are relevant here.
- Correctable fatal and serious injury crashes (10 years, 2011 - 2020)
- Pedestrian and bicycle safety elements

## **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 finalize a prioritized list of projects to be funded.

The HSIP committee will consist of:

- MnDOT Metro District Traffic Engineer - Program Support
- MnDOT Metro Traffic Safety Specialist
- MnDOT State Traffic Safety Engineer
- Two County/City Engineers
- Metropolitan Council Regional Highway Planner

# Required Material and Special Instructions

Following is a list of materials required to be submitted 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
- A photograph showing the existing conditions within the project area. If awarded funds, this photograph will be utilized in the Metropolitan Council's online mapping tool to show a before-and-after comparison of the improvement. By submitting the application, the applicant is agreeing to allow the Metropolitan Council to use this photograph.
- Project plan or preliminary layout/scope of work proposed
- Provide the AADT or an average AADT for your project area. If an intersection project, provide the AADT for the minor road too. Due to the potential timing issues with when a traffic count was taken relative to the COVID-19 pandemic (and resulting drop in traffic volumes), applicants may also use a historic AADT volume from the MnDOT Traffic Mapping Application (instructions under the Help Document).
- For intersection projects only, provide collision diagrams. MnDOT will not provide collision diagrams.
- Include crash listings (2018-2020) obtained from MnDOT or MnCMAT.
- As part of the Regional Solicitation Before & After Study, Phase 2 (2021), a list of commonly used crash modification factors was created. Applicants have the option to use these crash modification factors (included in Appendix G) or find a more appropriate one on FHWA's Clearinghouse.
- For applications where a CMF is not chosen from the list, the applicant will provide a reasonable Crash Reduction Factor (CRF) from the FHWA's CMF

Clearinghouse (MUST include a printout of the CRF reference page)

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

**The applicant is required to write a brief logical explanation on why they chose a particular CRF.**

- The applicant must include a letter of support from the agency that owns/operates the facility (if different from the applicant) indicating that it is aware of and understands the project being submitted, and that it commits to operate and maintain the facility for its design life.
- The project applicant must send written notification regarding the proposed project to all affected state and local units of government prior to submitting the application.
- Projects on MSAS and CSAH roadways must meet state aid standards.
- The project must comply with the Americans with Disabilities Act (ADA).
- In order for a selected project to be included in the Transportation Improvement Program (TIP) and approved by USDOT, the public agency sponsor must either have a current Americans with Disabilities Act (ADA) self-evaluation or transition plan that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be adopted by the local agency before the application deadline. For the 2024 funding cycle, this requirement may include that the plan is updated within the past five years. Please document which of these apply:
  - The applicant is a public agency that employs 50 or more people and has an adopted ADA transition plan that covers the public right of way/transportation. Date plan adopted by governing body and link to plan: \_\_\_\_\_
  - The applicant is a public agency that employs 50 or more people and does not have an adopted ADA transition plan that covers the public right of way/transportation.
  - The applicant is a public agency that employs fewer than 50 people and has a completed ADA self-evaluation that covers the public rights of way/transportation. Date self-evaluation completed and link to plan: \_\_\_\_\_
  - The applicant is a public agency that employs fewer than 50 people and does not have a completed ADA self-evaluation that covers the public rights of way/transportation.

## **FOR PROACTIVE PROJECTS:**

- Provide total miles of strategy deployment
- Number of fatal and serious injuries in the past 10 years (2011-2020) that have occurred where you propose to implement an HSIP project. If the agency submitting application has access to MnCMAT, crash data from that system can be used as part of submittal. MnCMAT data will be reviewed by the HSIP committee to ensure accuracy. Crash data can also be obtained from MnDOT if an agency does not have access to MnCMAT. MnDOT Metro District Traffic Office will provide a crash listing, upon request. (see Appendix A for contact information). Crash data should include all crash types and severities, including pedestrian and bicycle crashes. (Projects may be eligible for HSIP even if no fatal or severe injuries have occurred in your implementation area.)
- Collision diagrams may be submitted but are not required.
- If on a trunk highway, provide signed Intersection Control Evaluation (ICE) report for proposed intersection traffic control changes.
- MnDOT and counties, please attach copy of the appropriate page(s) from your highway safety plan for projects submitted that are referenced in your Plan.
- Discuss how the project will improve safety for pedestrians and bicyclists. Safety countermeasures for pedestrians and bicyclists can include those identified by the FHWA as part of its Safe Transportation for Every Pedestrian program or others in its Proven Safety Countermeasures (e.g., pedestrian refuge islands, raised crosswalks, pedestrian hybrid beacons, leading pedestrian intervals). More information about pedestrian and bicycle safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

## **FOR REACTIVE PROJECTS:**

- The crash data shall include crashes from calendar years **2018-2020**. Only crashes contained within the Minnesota Department of Public Safety's database can be included. This is to ensure that all project proposals can be equally compared. If the agency submitting application has access to MnCMAT, crash data from that system can be used as part of submittal.

MnCMAT data will be reviewed by the HSIP committee to ensure accuracy. Crash data can also be obtained from MnDOT if an agency does not have access to MnCMAT. MnDOT Metro District Traffic Office will provide a crash listing, upon request. (see Appendix A for contact information). Crash data should include all crash types and severities, including pedestrian and bicycle crashes.

- 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 as soon as possible but before March 15, 2022. Requests made after March 15<sup>th</sup> may be significantly delayed due to limited resources. MnDOT will not provide collision diagrams.***

- Number of fatal and serious injuries in the past 10 years (2011-2020) that have occurred where you propose to implement a HSIP project. See explanation above for acceptable methods and sources of crash data. (Projects may be eligible for HSIP even if no fatal or severe injuries have occurred in your implementation area.)
- HSIP B/C Worksheet – A sample HSIP B/C worksheet is included in Appendix E. Refer to Appendix F for recommended service life criteria.

You can find an Excel version of a [HSIP Benefit Cost Worksheet](#) on this web page under Reference Material.

- If on a trunk highway, provide signed Intersection Control Evaluation (ICE) report for proposed intersection traffic control changes.
- Description of how the project meets the intent of the HSIP program (i.e. reduce fatal and serious injury crashes within the proposed project area)
- Proposed roundabouts must address mini-roundabouts as an option
- Discuss how the project will improve safety for pedestrians and bicyclists. Safety countermeasures for pedestrians and bicyclists can include those identified by the FHWA as part of its Safe Transportation for Every

Pedestrian program or others in its Proven Safety Countermeasures (e.g., pedestrian refuge islands, raised crosswalks, pedestrian hybrid beacons, leading pedestrian intervals). More information about pedestrian and bicycle safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

**SUBMISSION OF APPLICATION:**

Applicants must send one paper copy of each project submittal along with an electronic submittal.

**Paper copy to:**

MnDOT, Traffic Engineering  
Attn: Lars Impola  
1500 West County Road B2  
Roseville, MN 55113

**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 (CMF) identified in the Regional Solicitation Before & After Study, Phase 2 (2021) list of commonly used crash modification factors (included in Appendix G) or find a more appropriate one on FHWA's Clearinghouse. Clearinghouse, which can be found at the following website <http://www.cmfclearinghouse.org/>.

**For all applications, the applicant is required to write a brief logical explanation on why they chose a particular 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).

The project initiator may 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 benefit/cost (B/C) worksheet. If two improvements are included in the proposed project, the overall crash reduction factor should be determined using the “multiple safety improvement crash reduction formula” described below.

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

- **$CRF = 1 - [(1 - CRF1) \times (1 - CRF2)]$**

CRF is the overall crash reduction factor expressed as a decimal (to two significant digits) to be used on the B/C worksheet

CRF1 is the crash reduction factor for the first improvement expressed as a decimal

CRF2 is the crash reduction factor for the second improvement expressed as a decimal.

- **Each crash may only be used on one B/C worksheet.**
- **Use the total cost of the project in the denominator on the B/C worksheet(s).**
- **All individual B/C worksheets must be submitted, and the application must include an overall B/C calculation.**
- **If using multiple CRF's providing your calculation is required.**
- **No more than two CRF's per crash type and location will be allowed.**

## Use of Fatal Crashes

Type of Crash	Crash Severity	Cost per Crash
Fatal (F)	1 Fatal Crash	\$12,800,000
Personal Injury (PI)	2 Serious Injury	\$720,000
Personal Injury (PI)	3 Minor Injury	\$220,000
Personal Injury (PI)	4 Possible Injury	\$120,000
Property Damage (PD)	5 Property Damage Only	\$13,000

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. The cost assigned to a fatal crash may be used if there are two or more correctable fatal crashes being addressed by the same proposed improvement, within the three-year period.

OR

2. The cost for a fatal crash may be used when there is at least one correctable fatal crash **and** two or more correctable serious injury crashes being addressed by the same proposed improvement, within the three-year period.

If the above criteria are not satisfied, a correctable fatal crash shall be treated as two serious injury type crashes, when computing the benefit-cost ratio. To do this, enter the correctable fatal crash as two serious injury crashes on the HSIP B/C worksheet.

For example, if there is a project with two fatal crashes within the project limits, both being at an intersection that is being modified by a roundabout project that would address both crashes, it would be acceptable to count two fatal crashes at the fatal crash cost.

Alternatively, if one of two fatal crashes within the project limits was a right-angle crash that occurred at an intersection being modified by a roundabout project, and the other fatal crash was a run-off-road hitting a tree within the rumble strip installation portion of the same project, the use of a fatal crash cost in the B/C worksheet would not be allowed.

If there are questions about using the full fatal value or the 2 x serious injury crash value, please contact Kaare Festvog or Lars Impola to discuss the issue.

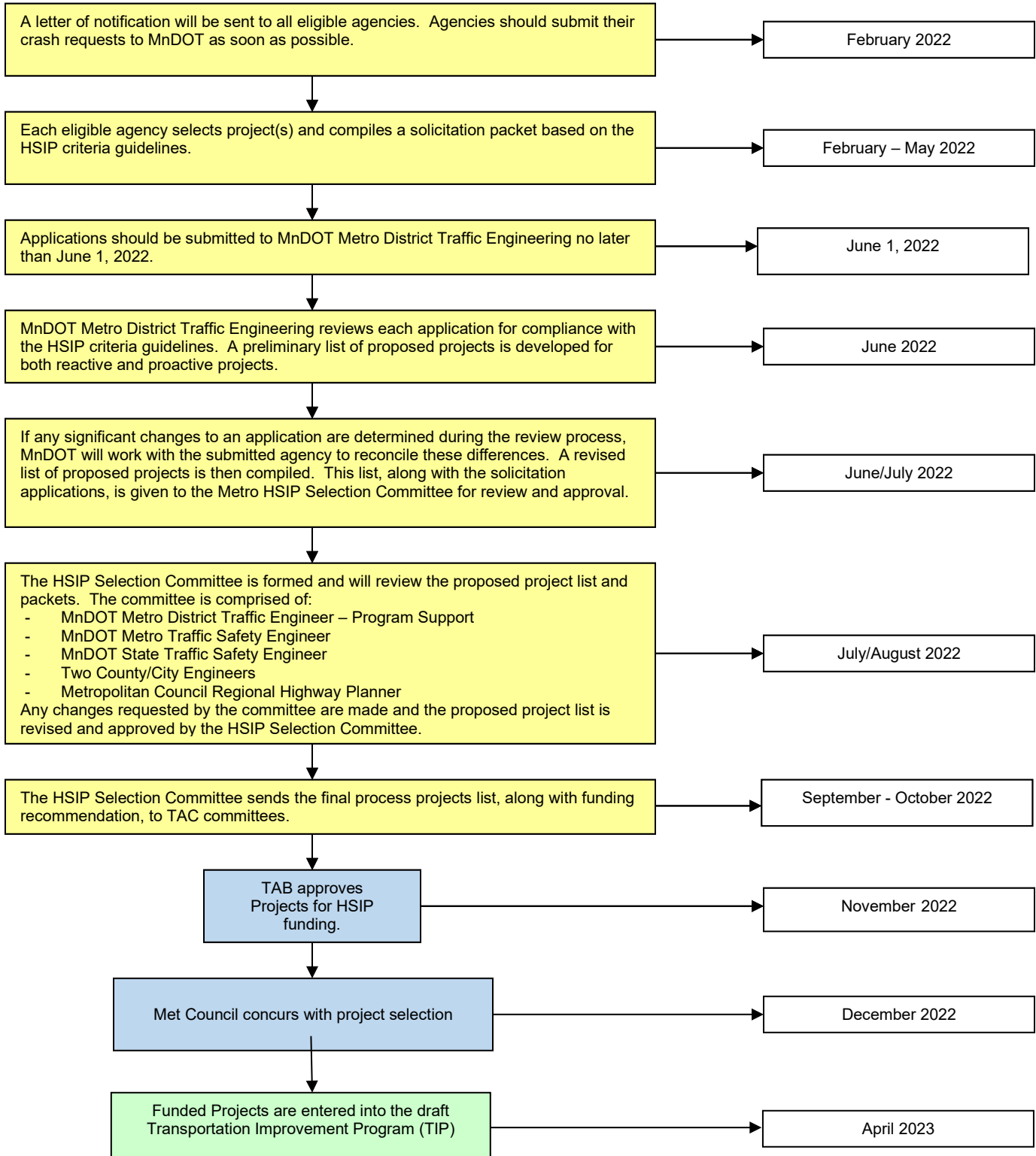
# Appendix A

## MnDOT Metro District Traffic Engineering Program Support Contacts

<u>Information</u>	<u>Contact</u>	<u>E-Mail</u>	<u>Phone Number</u>
Proposal Content	Kaare Festvog	<a href="mailto:kaare.festvog@state.mn.us">kaare.festvog@state.mn.us</a>	651/234-7814
Proposal Content	Lars Impola	<a href="mailto:lars.impola@state.mn.us">lars.impola@state.mn.us</a>	651/440-4117
Crash Information	Cherzon Riley	<a href="mailto:cherzon.riley@state.mn.us">cherzon.riley@state.mn.us</a>	612/322-1080

# Appendix B

## **Highway Safety Improvement Program (HSIP) Metro District Process Timeline (2022)**



# 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 Minnesota Manual on Uniform Traffic Control Devices (MMUTCD) must be met. FHWA’s Interim Approval for Optional Use of an Alternative Signal Warrant 7 – Crash Experience (IA-19) should be followed. 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 FAST Act.
- All new signals on a trunk highway 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, reduced 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 are not eligible for HSIP funds.



# 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 County Road Safety Plan 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 or mumble strips.
- If a project is required to construct more than 2 foot shoulders per State Aid standards, or if the applicant plans for more than 2 foot shoulders, HSIP funding cannot be used for any additional width beyond 2 feet (local funds may be used for the additional width).
- 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 see following 2 pages

## Traffic Safety Benefit-Cost Calculation

Highway Safety Improvement Program (HSIP) Reactive Project



A. Roadway Description		
Route _____	District _____	County _____
Begin RP _____	End RP _____	Miles _____
Locatio _____		

B. Project Description		
Proposed Work _____		
Project Cost* _____	Installation Year _____	
Project Service L _____	Traffic Growth F: _____	
<i>*exclude Right of Way from Project Cost</i>		

C. Crash Modification Factor		
_____ Fatal (K) Crashes	Referenc _____	
_____ Serious Injury (A) Crashes		
_____ Moderate Injury (B) Crashes	Crash Ty _____	
_____ Possible Injury (C) Crashes		
_____ Property Damage Only Cras		<a href="http://www.CMFclearinghouse.org">www.CMFclearinghouse.org</a>

D. Crash Modification Factor (optional second CMF)		
_____ Fatal (K) Crashes	Referenc _____	
_____ Serious Injury (A) Crashes		
_____ Moderate Injury (B) Crashes	Crash Ty _____	
_____ Possible Injury (C) Crashes		
_____ Property Damage Only Cras		<a href="http://www.CMFclearinghouse.org">www.CMFclearinghouse.org</a>

E. Crash Data			
Begin Date	mm/dd/yyyy	End Date	mm/dd/yyyy
Data Source			0 years
<b>Crash Severity</b>	<b>&lt; enter target crashes &gt;</b>	<b>&lt; optional 2nd CMF &gt;</b>	
K crashes			
A crashes			
B crashes			
C crashes			
PDO crashes			

F. Benefit-Cost Calculation		
\$0	Benefit (present v	B/C Ratio = N/A
\$0	Cost	

F. Analysis Assumptions			
Crash Severity	Crash Cost		
K crashes	\$1,440,000	Link:	<a href="http://mndot.gov/planning/program/appendix_a.html">mndot.gov/planning/program/appendix_a.html</a>
A crashes	\$720,000		
B crashes	\$220,000	Real Discount Ra	1.2%
C crashes	\$120,000	Traffic Growth R	0.5%
PDO crashes	\$13,000	Project Service L	10 years

G. Annual Benefit			
Crash Severity	Crash Reduction	Annual Deduction	Annual Benefit
K crashes	0.00	#DIV/0!	#DIV/0!
A crashes	0.00	#DIV/0!	#DIV/0!
B crashes	0.00	#DIV/0!	#DIV/0!
C crashes	0.00	#DIV/0!	#DIV/0!
PDO crashes	0.00	#DIV/0!	#DIV/0!
			<b>\$0</b>

H. Amortized Benefit			
Year	Crash Benefit	Present Value	
1	\$1	\$1	Total = \$0
2	\$1	\$1	
3	\$1	\$1	
4	\$1	\$1	
5	\$1	\$1	
6	\$1	\$1	
7	\$1	\$1	
8	\$1	\$1	
9	\$1	\$1	
10	\$1	\$1	
11	\$1	\$1	
12	\$1	\$1	
13	\$1	\$1	
14	\$1	\$1	
15	\$1	\$1	
16	\$1	\$1	
17	\$1	\$1	
18	\$1	\$1	
19	\$1	\$1	
20	\$1	\$1	

# 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
<b><u>Pedestrian &amp; Bicycle Safety</u></b>		Upgrade or Install Cable Median Barrier	10
Construct Sidewalk	20	Install Impact Attenuators	10
Construct Pedestrian & Bicycle		Flatten or Re-grade Side Slopes	20
Overpass/Underpass	30	Install Bridge Approach Guardrail	
Install Fencing & Pedestrian Barrier	10	Transition	10
Construct Bikeway	20		
Curb extensions and medians	20		
		Remove Obstacles	20
<b><u>Structures</u></b>		Install Edge Treatments	7
Widen or Modify Bridge for Safety	20	Install Centerline Rumble Strips	7
Replace Bridge for Safety	30		
Construct New Bridge for Safety	30		
Replace/Improve Minor Structure for Safety	20		
Upgrade Bridge Rail	20		

Source: Federal Highway Administration (FHWA)

# Appendix G

Metropolitan Council CMF List

## 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 June 1, 2022.\*Be sure to complete and attach the Project Information form. (Form 2)**

### 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 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 fund 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) : SEE NOTE BELOW\*\*

2025    2026    2027    Any year

16. SIGNATURE:

17. TITLE:

**\*Would you accept a federal award that covers 80% of the total project cost if non-HSIP federal funds were awarded? \_\_\_\_\_**

**\*\*NOTE: If funding becomes available in 2023, 2024 or 2025 would this project be able to be advanced to meet this schedule? \_\_\_\_\_ Which years would work? \_\_\_\_\_**

## 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 \_\_\_\_\_

\_\_\_\_\_  
(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)