ACTION TRANSMITTAL No. 2019-47

DATE:	August 23, 2019
TO:	Technical Advisory Committee
FROM:	TAC Funding & Programming Committee
PREPARED BY:	Joe Barbeau, Senior Planner (651-602-1705)
SUBJECT:	2020 Highway Safety Improvement Program (HSIP) Application: Release for Public Comment
REQUESTED ACTION:	Approval of the 2020 Highway Safety Improvement Program (HSIP) Application for Release for Public Comment
RECOMMENDED MOTION:	That the Technical Advisory Committee recommend to TAB approval of the draft 2020 HSIP application for release for public comment.

BACKGROUND AND PURPOSE OF ACTION: Staff asks that TAB release the Draft 2020 Highway Safety Improvement Program (HSIP) application for review and public comment. The HSIP application will be released for comment on September 23, with comments due November 6. After the public comment period, a revised draft package will be prepared for the TAB's November meeting.

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 22, 2019, meeting, the TAC Funding & Programming Committee voted unanimously to recommend approval of the draft 2020 HSIP application for release for public comment.

ROUTING

TO	ACTION REQUESTED	COMPLETION DATE
TAC Funding & Programming Committee	Review & Recommend	8/22/2019
Technical Advisory Committee	Review & Recommend	
Transportation Advisory Board	Review & Release for Public Comment	
Transportation Advisory Board	Review & Adopt.	
Transportation Committee	Review & Recommend	
Metropolitan Council	Concurrence	

HSIP

Highway Safety Improvement Program

For State Fiscal Years ~~2022~~2024 and ~~2023~~2025

Metro District
Program Criteria

Minnesota Department of Transportation
Metro District Traffic Engineering
~~June 2018~~February 2020

Table of Contents

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~~State Aid eligible ~~Cities~~cities and ~~Towns~~towns within those ~~Counties. Other local or special governmental agencies~~counties. Applicants that ~~do~~are not ~~have~~State Aid cities or counties in the ~~ability to receive and administer federal funds~~eight-county metro area with populations over 5,000 must ~~work with these specified governmental units~~contact the MnDOT Metro State Aid Office prior to submitting their application to ~~develop and submit eligible projects.~~determine if a public agency sponsor is required.

2. ~~This solicitation~~The maximum HSIP federal award is ~~for projects with a total cost up to~~ $2,000,000~~, with a cap of $1,800,000 federal funds.~~ per project. 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. 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. ~~It is anticipated that approximately 70% of the funds will be used for reactive projects and 30% of the funds on proactive 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 ~~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, design, and construction engineering costs are not fundable and shall not be included in the project cost. Please refer to http://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 ~~Regions "Program Year Policy" and the "Scope Change Policy", see links to these policies below:~~Region's "Program Year Policy" and "Scope Change Policy" available at https://metrocouncil.org/Transportation/Planning-2/Transportation-Planning-Process/Transportation-Advisory-Board/TAB-Policies.aspx?source=child.

~~8.~~
~~9. Program year policy link: http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/TAB-Regional-Program-Year-Policy-(PDF-154-KB).aspx~~
~~10.~~
~~11.Scope change policy link: http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/Regional-Scope-Change-Policy.aspx~~

8. ~~HSIP is a federally funded traffic safety program.~~ Projects may apply for both the Regional Solicitation and the Highway Safety Improvement Program (HSIP), but projects cannot be awarded funds from both of the programs.

The amount of funding available for this ~~2018~~2020 Metro District solicitation for State Fiscal Years ~~2022~~2024 and ~~2023~~2025 is up to **$~~22.7~~24 million** for the two~~-~~-year period. ~~Some of the~~Additional funding ~~will~~may be available in State Fiscal Years ~~2019, 2020, and~~ 2021~~.~~

~~The funding will be split up evenly between the two years. Approximately 70% of the funding will be awarded to "Reactive" projects, with the remaining 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.~~

9. ~~The objective of the HSIP program is to identify, implement~~, 2022, and ~~evaluate low cost / high benefit, or smaller stand-alone safety projects focused on reducing fatal and serious injury crashes.~~2023.

Qualifying Criteria

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

~~Only~~Priority will be given to smaller stand-alone ~~or,~~ low ~~-~~-cost / high ~~-~~-benefit projects ~~will be considered~~. Applicants should submit focused safety projects and not asset replacement projects unless the replacement project by itself increases safety. ~~It is recognized that portions of larger projects have elements that improve the safety of an intersection or section of roadway.~~ See Appendix C for additional traffic signal requirements. Safety features, such as ~~guardrail~~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~~counties, their ~~Road Safety Plans~~road safety plans should be the starting point for selecting projects for this solicitation. For ~~State~~state and ~~County~~county roads, projects that originate from a ~~Road Safety Plan~~road safety plan will be given priority. For ~~City~~local streets, ~~Cities~~a city may propose strategies similar to what is in their ~~County Safety Plan~~county's safety plan if applicable.

The following crash data is provided to assist ~~Cities~~cities in focusing on the types of projects to submit. ~~In the Metro District on~~On local roads (MSAS and ~~City Streets)~~ city streets) in the Metro District over the latest 5 ~~-~~-year period available (~~2011-2015~~2014-2018) there have been ~~508~~1,315 fatal and serious injury crashes:

- ~~160 (31~~458 (35%) involved two or more vehicles colliding
- ~~121 (24~~339 (26%) involved a pedestrian
- ~~57 (11~~118 (9%) involved a bicyclist
- ~~43 (8~~96 (7%) involved hitting a tree or shrub

Seventy-five 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.

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.

~~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 volume 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~~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~~stripEs
Wider striping (6")
Embedded wet reflective striping
Delineation for sharp curves (chevrons)
Cable median barrier
~~Active intersection warning systems~~
Crosswalk enhancements (ex. RRFB's)
Intersection ~~Lighting~~lighting
Corridor lighting (Freeways & Expressways)
Curb extensions (bump-outs)
Sight distance improvements
Remove hazards in clear zones
Pedestrian countdown timers
~~Road Diets~~
Road diets
Construct ped refuge islands & raised medians
Enforcement lights on signals
Turn lanes
~~Reduced Conflict Intersections (RCI's)~~
New guardrail (not replacement)
Frontage roads (with access removals)
Sidewalks or ~~Trails~~trails
Narrow shoulder paving (see Appendix D)
Signal coordination (interconnect)
Pavement messages
Roundabouts
Stop ~~Bars~~bars
Safety ~~Edge~~edge
Friction ~~Treatments~~treatments

FOR REACTIVE PROJECTS:

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

~~Must have Benefit/Cost~~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~~.~~.)

1. ~~Emphasis is given to Fatal or A injury crashes within time frame.~~

*Only crashes contained within the Minnesota Department of Public Safety's database can be used to determine the B/C for project submittals. Crash data must be obtained from MnDOT. 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. A new bicycle and pedestrian safety measure was also added to the scoring.

~~**FOR REACTIVE PROJECTS:**~~

- ~~As in the past solicitations, the Reactive projects will be prioritized using the Benefit/Cost (B/C) ratio and review of the proposed projects by the selection committee relative to the qualifying criteria and meeting the intent of the HSIP.~~

FOR PROACTIVE PROJECTS:

For Proactive projects, priority will be given to projects identified in ~~Road Safety Plans~~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~~proactive projects:

- Connection to the 2014-2019 Minnesota Strategic Highway Safety Plan (SHSP). This Plan can be found at the following link: http://www.dot.state.mn.us/trafficeng/safety/shsp/Minnesota_SHSP_2014.pdf
- Cost~~/mile or Cost/intersection~~ per user exposure
- ~~Is strategy a wide deployment vs a single spot location~~
- ~~Average Daily Traffic (ADT)~~
- ~~Fatal (K) &~~Correctable fatal and serious ~~(A)~~ injury crashes (10 years~~)~~, 2009 - 2018)
- Crash ~~Reduction Factor for the specific strategy~~reduction factor

- Part of a plan (~~Safety Plan or Road Safety Audit Recommendations~~safety plan or road safety audit recommendations) – include a link to or an excerpt from the existing plan

- Pedestrian and bicyclist safety

FOR REACTIVE PROJECTS:

The reactive projects will be prioritized by:

- Benefit/cost ratio
- 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, 2009 - 2018)
- Pedestrian and bicyclist safety

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 ~~Engineer~~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 submitbe 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 ADTAADT or an average ADTAADT for your project area.
- Provide collision diagrams If an intersection project, provide the AADT for the minor road too.
- For intersection projects only, provide collision diagrams. Include crash listing obtained from MnDOT. MnDOT will not provide collision diagrams.
- 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~~, or be substantially working towards, completing~~ a current Americans with Disabilities Act (ADA) self-evaluation ~~(for agencies with less than 50 employees)~~ or transition plan ~~(for agencies with 50 or more employees)~~ that covers the public right of way/transportation, as required under Title II of the ADA. The plan must be completed by the local agency before the application deadline. For the 2022 HSIP 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 completed by governing body and link to plan: _____

☐ The applicant is a public agency that employs 50 or more people and does not have a completed 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.

- 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/

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

- Number of fatal ~~(K)~~ and serious ~~(A)~~ injuries in the past 10 years (~~2006-2015)~~ 2009-2018) that have occurred where you propose to implement ~~a~~an HSIP project. MnDOT will provide this crash data upon request. (Projects may be eligible for HSIP even if no fatal ~~(K)~~ or ~~A~~severe injuries have occurred in your implementation area.)

- Collision diagrams may be submitted but are not required.

- Crash data ~~must~~shall include crashes from calendar years **2016-2018**. Only crashes contained within the Minnesota Department of Public Safety's database can be shown. This is to ensure that all project proposals can be equally compared. A crash listing can be obtained from MnDOT~~. MnDOT Metro District will provide a crash listing~~ upon request~~. See~~ (see Appendix A~~.~~ for contact information). Crash data ~~requests~~ should ~~be made as soon as possible, but before **July 18, 2018**. The applicant is responsible to convert the~~ include all crash ~~listing provided by MnDOT into collision diagrams when applicable.~~ types and severities, including pedestrian and bicycle crashes.

- ~~Provide~~If on a trunk highway, provide signed Intersection Control Evaluation (ICE) report for proposed intersection traffic control changes.

- MnDOT and ~~Counties~~counties, please attach copy of the appropriate page(s) from your ~~Highway Safety Plan~~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 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 bicyclist safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

FOR REACTIVE PROJECTS:

- 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/

  ~~Crash Data –~~**For all applications, the applicant is required to write a brief logical explanation on why they chose a particular CRF.**

- The crash data shall include crashes from calendar years ~~2013-2015~~2016-2018. Only crashes contained within the Minnesota Department of Public Safety's database can be shown. This is to ensure that all project proposals can be equally compared. A crash listing can be obtained from MnDOT 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 ~~July 18th, 208.~~April 1, 2020. Requests made after ~~July 18th~~April 1st 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 (2009-2018) that have occurred where you propose to implement a HSIP project. MnDOT will provide this crash data upon request. (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.
  For the Excel version, click on HSIP Benefit Cost Worksheet

- ~~Approved~~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.

- ~~***Must***~~Discuss how the project will improve safety for pedestrians and bicyclists. Safety countermeasures for pedestrians 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 bicyclist safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

SUBMISSION OF APPLICATION:

Applicants must send ~~2~~two paper ~~copy project submittals~~copies of each project submittal along with an electronic submittal.

Paper copies to:
MnDOT, Traffic Engineering
Attn: Lars Impola
1500 West County Road B2
Roseville, MN 55113
~~Must send an electronic~~
Electronic submittal to: 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) 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~~benefit/cost (B/C) worksheet. If two ~~or more~~ improvements are included in the proposed project, the overall crash reduction factor should be determined using the "~~Multiple Safety Improvement Crash Reduction Formula~~multiple safety improvement crash reduction formula" described below.

Multiple Safety Improvement Crash Reduction Formula:

- **CRF = 1 – [(1 – CRF1) x (1 – CRF2~~) x …~~])]**

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~~, and so on~~.

- **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).**
- ~~**Submit all**~~**All individual B/C worksheets ~~for documentation purposes~~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 ~~project~~ crash type and location will be allowed.**

Use of Fatal Crashes

Type of Crash	Crash Severity	Cost per Crash
Fatal (F)	~~K~~1 Fatal Crash	$~~11,000~~12,300,000
Personal Injury (PI)	~~A Incapacitating~~2 Serious Injury	$~~590~~680,000
Personal Injury (PI)	~~B Non-Incapacitating~~3 Minor Injury	$~~170~~210,000
Personal Injury (PI)	~~C~~4 Possible Injury	$~~87~~110,000
Property Damage (PD)	~~N~~5 Property Damage Only	$~~7,800~~12,000

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 within a three-year period (correctable is defined as the type of crash that the improvement is designed to correct).

OR

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

If the above criteria are not satisfied, the correctable fatal crash shall be treated as two "Serious Injury" type ~~"A" personal injury~~ crashes (~~K~~Fatal Crash = 2 x ~~A~~Serious Injury) when computing the benefit-cost ratio. To do this, enter the correctable fatal crash as two ~~type "A" personal injury~~"Serious Injury" crashes in the "~~A~~2" category on the HSIP B/C worksheet.

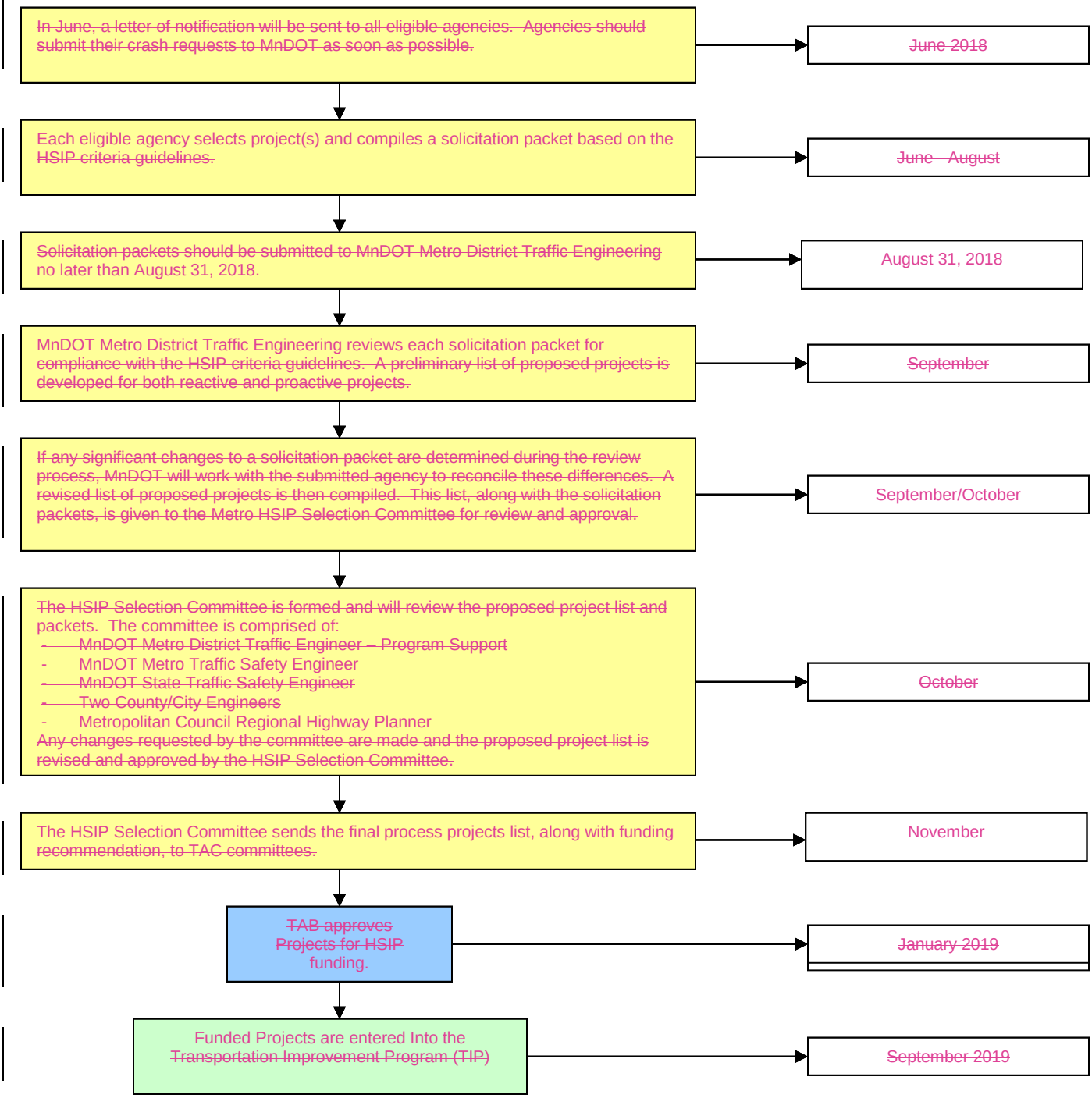
Appendix A

MnDOT Metro District Traffic Engineering
Program Support Contacts

Information	Contact	E-Mail	Phone Number
Proposal Content	~~Gayle~~ ~~Gedstad~~Kaare Festvog	~~gayle.gedstad~~kaare.festvog@state.mn.us	651/234-~~7815~~7814
Proposal Content	Lars Impola	lars.impola@state.mn.us	651/234-7820
Crash Information	Cherzon Riley	cherzon.riley@state.mn.us	651/234-7836

Appendix B

Highway Safety ~~Improvement~~Improvement Program (HSIP)
Metro District Process Timeline (~~2018~~2020)



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. ~~Specifically, "5 or more reported crashes,~~FHWA's Interim Approval for Optional Use of ~~the types susceptible to correction by a traffic control signal, have occurred within a 12-month period."~~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, ~~Reduce Conflict Intersections~~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 ~~may be~~are not eligible for HSIP funds~~ (to be approved by the HSIP project evaluation committee).~~.

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~~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 can not 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)

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
						1/1/2016	12/31/2018

Description of Proposed Work

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	Pedestrian and Bicycle	6, 90, 99 Other	Total
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B									
		C									
	Property Damage	PD									
% Change in Crashes (*Use Desktop Reference for Crash Reduction Factors)	Fatal	F									
	PI	A									
		B									
		C									
	Property Damage	PD									
Change in Crashes = No. of crashes x % change in crashes	Fatal	F									
	PI	A									
		B									
		C									
	Property Damage	PD									

Year (Safety Improvement Construction)

		Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
Project Cost (exclude Right of Way)		F			$ 1,360,000	
Right of Way Costs (optional)		A			$ 680,000	
Traffic Growth Factor	0.5%	B			$ 210,000	
Capital Recovery		C			$ 110,000	
1. Discount Rate	1.2%	PD			$ 12,000	
2. Project Service Life (n)		Total				$ -

B/C=

Using present worth values,

B= $ -

C= $ -

See "Calculations" sheet for amortization.

Office of Traffic Engineering
August 2019

Appendix F

Recommended Service Life Criteria

Description	Service Life (years)
Intersection & Traffic Control	
Construct Turning Lanes	20
Provide Traffic Channelization	20
Improve Sight Distance	20
Install Traffic Signs	10
Install Pavement Marking	2
Install Delineators	10
Install Illumination	20
Upgrade Traffic Signals	20
Install New Traffic Signals	20
Retime Coordinated System	5
Construct Roundabout	20
Pedestrian & Bicycle Safety	
Construct Sidewalk	20
Construct Pedestrian & Bicycle Overpass/Underpass	30
Install Fencing & Pedestrian Barrier	10
Construct Bikeway	20
Curb extensions and medians	20
Structures	
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

Description	Service Life (years)
Roadway & Roadside	
Widen Traveled Way (no lanes added)	20
Add Lane(s) to Traveled Way	20
Construct Median for Traffic Separation	20
Wide or Improve Shoulder	20
Realign Roadway (except at railroads)	20
Overlay for Skid Treatment	10
Groove Pavement for Skid Treatment	10
Install Breakaway Sign Supports	10
Install Breakaway Utility Poles	10
Relocate Utility Poles	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

Source: Federal Highway Administration (FHWA)

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 PMpm or postmarked on August 31, 2018...*by June 1, 2020.*Be sure to complete and attach thethe 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 implementfund 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:

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

****NOTE: If funding should become available in 2019, 2020, or 2021, 2022, or 2023 would this project be able to be advanced to meet this schedule? Which years would work?**

12. PROJECT TOTAL: $	15. REQUESTED PROGRAM YEAR(S) : SEE NOTE BELOW** ☐ ~~2022~~2024 ☐ ~~2023~~2025 ☐ Either 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 should become available in ~~2019, 2020, or~~ 2021, 2022, or 2023 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: 1st 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)

HSIP

Highway Safety Improvement Program

For State Fiscal Years 2024 and 2025

Scoring Guidance for Proactive and Reactive Projects

Minnesota Department of Transportation
Metro District Traffic Engineering
February 2020

SCORING GUIDANCE FOR PROACTIVE PROJECTS:

Proactive Project Scoring:

Criteria and Measures	Points	% of Total Points
1. Connection to 2014-19 MN Strategic Highway Safety Plan (SHSP)	100	10%
2. Cost per user exposure	300	30%
3. Correctable fatal and serious injury crashes (10 years, 2009-2018)	100	10%
4. Crash reduction factor	200	20%
5. Part of a plan	200	20%
6. Pedestrian and bicyclist safety	100	10%
Total	**1,000**	**100%**

1. Connection to 2014-19 Minnesota Strategic Highway Safety Plan (SHSP) (100 Points) – The Minnesota Strategic Highway Safety Plan provides insight and direction on how to reduce traffic-related crashes that involve motor vehicles on Minnesota's roads. The plan has 20 focus-area priorities and associated strategies identified for Minnesota. This measure rewards project applications that help to further strategies (shown as bullet points below) in this plan. The pertinent infrastructure-based focus areas and strategies include the following:

    1. Lane Departure
        - Install shoulder and centerline rumble strips
        - Install enhanced pavement markings and edge line rumble strips on roads with narrow or no paved shoulders
        - Provide buffer space between opposite travel directions
        - Provider wider shoulders, enhanced pavement markings and chevrons for high-risk curves
        - Eliminate shoulder drop-offs, provide safety edges and widen or pave shoulders

    2. Intersections
        - Use indirect left-turn treatments and access management to minimize conflicts at divided highway intersections
        - Provide dynamic warning signs to alert drivers of conflicts at stop-controlled intersections
        - Improve intersection visibility by providing enhanced signing, delineation and lighting
        - Provide roundabouts at appropriate locations
        - Optimize signal operations with phasing, timing, coordination and clearance intervals
        - Supplement conventional red-light running enforcement with traffic signal confirmation lights and other technology enhancements that support enforcement efforts

    3. Inattentive Driving
        - Install edge and centerline rumble strips on at-risk rural roads to alert drivers of possible lane departure

- Install lighting and dynamic warnings at rural intersections to improve visibility of other vehicles and roadway user

4. Speed
   - Install dynamic speed feedback signs at rural/urban transitions, school zones and work zones
   - Incorporate curbs, sidewalks, lighting and other design elements to indicate lower speeds in transition areas

5. Pedestrians
   - Strategies aimed specifically at improving safety for pedestrians

6. Bicyclists
   - Strategies aimed specifically at improving safety for bicyclists

7. Trains
   - Strategies aimed specifically at improving safety at train crossings

SCORING GUIDANCE

Projects will be awarded between 0 and 5 points based on the ability of the project to implement one or more of the strategies identified in the Minnesota Strategic Highway Safety Plan. Applicants could be awarded full points for either proposing a project that strongly advances one of the Plan's strategies or for a project that implements multiple strategies.

Scorers will respond to the following statement:
The project implements one or more of the strategies listed in the Minnesota Strategic Highway Safety Plan.

Strongly disagree: 0 points
Disagree: 1 point
Neutral: 2 points
Slightly Agree: 3 points
Agree: 4 points
Strongly agree: 5 points

Multiple projects can receive 5 points in this scoring measure. Points awarded (0-5) will be multiplied by 20 to get a final score out of 100 points possible.

2. Cost Per User Exposure (300 Points) – This criterion will assess cost effectiveness of the infrastructure being proposed. Each application for a linear project will be scored on its total million vehicle miles (MVM) while each application at an intersection will be scored on its total million entering vehicles (MEV).

LINEAR PROJECTS

- Total project cost:_____
- Project MVM: _____
- Cost effectiveness (project MVM / project cost): ____

INTERSECTION PROJECTS

- Total project cost:_____
- MEV: _____
- Cost effectiveness (project MEV / project cost): ____

SCORING GUIDANCE

The linear project application with the highest cost effectiveness will be awarded full points. Remaining applications will receive a proportionate share of the full points. Similarly, the intersection project with the highest cost effectiveness will be awarded full points with remaining applicants receiving a proportionate share. For example if the linear application being scored was 0.089 MVM per cost and the highest-rated project was 0.110 MVM per cost, the application would receive (0.089/0.110)*300 points or 243 points.

Note: Because of the two different scales, two projects will be awarded the full 300 points.

3. Correctable Fatal and Serious Injury Crashes (100 Points) – This criterion measures the history of fatal and serious injury crashes from 2009 to 2018 that have occurred along the proposed project. Total fatal and serious injury crashes for 2009-2018 will be tallied with each fatal crash being worth two times the number of each serious injury crash.

- Total crashes = 2* “Fatal” crashes + “Serious Injury” crashes

SCORING GUIDANCE

Correctable crashes are those that the treatment being proposed is anticipated to mitigate. The applicant with the highest number of correctable fatal and serious injury crashes will receive the full points for the measure. Remaining projects will receive a proportionate share of the points. For example, if the application being scored had 10 total crashes and the top application had 30 crashes, this application would receive (10/30)*100 points, or 33 points.

4. **Crash Reduction Factor (200 Points)** – This criterion awards points based on the crash reduction factor (CRF). Applicants must provide a reasonable crash reduction factor (CRF) via printout from the Crash Modification Factor Clearinghouse.

The score will be based on the aggregate of up to the maximum of two CRFs.

SCORING GUIDANCE
The applicant with the highest CRF for the proposed improvement will be awarded full points. Remaining applications will receive a proportionate share of the full points. For example, if the application being scored has a CRF of 36 and the highest-rated project has a CRF of 48, the application would receive (36/48) * 200 points or 150 points.

5. **Part of a Plan (200 Points)** – The project or the transportation problem/need that the project addresses must be in a planning or programming document. Reference the name of the appropriate safety plan, road safety audit, Safe Routes to School plan, corridor study document, or other official plan or program of the applicant agency that the project is included in and/or a transportation problem/need that the project addresses. Studies on a trunk highway must be supported by the Minnesota Department of Transportation and the Metropolitan Council. Applicants should include a link to a plan or plan excerpt and list the applicable:

SCORING GUIDANCE
Projects will be awarded points as follows: 200 pts – if the project is specifically listed or addresses a specific transportation need that is included in a standalone SAFETY plan such as a County Safety Plan, District Safety Plan, Road Safety Audit, Road Safety Analysis, etc. 100 pts – If the project addresses a transportation need that is part of a safety discussion in a larger broader plan such as a City Comprehensive Plan, etc. 0 pts – the project is not included in nor addresses a safety need in a plan.

6. **Pedestrian and Bicyclist Safety (100 Points)** – Discuss how the project will improve safety for pedestrians and bicyclists. Safety countermeasures for pedestrians 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 bicyclist safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

SCORING GUIDANCE
The project that will provide the most improvement to pedestrian and bicyclist safety will receive full points. Remaining projects will receive a share of the full points at the scorer's discretion.

SCORING GUIDANCE FOR REACTIVE PROJECTS:

Reactive Project Scoring:

Criteria and Measures	Points	% of Total Points
1. Benefit/cost ratio	600	60%
2. Meets intent of the HSIP program	200	20%
3. Correctable fatal and serious injury crashes (10 years, 2009-2018)	100	10%
4. Pedestrian and bicycle safety	100	10%
Total	**1,000**	**100%**

1. Benefit/Cost Ratio (600 Points) – Only projects with a B/C ratio of 1.0 or greater can be funded. Projects with a higher B/C ratio will receive more points.

SCORING GUIDANCE:
The applicant with highest B/C ratio will receive the full points for the measure. Remaining projects will receive a proportionate share of the full points. For example, if the application being scored had a B/C ratio of 7.5 and the top project had a B/C ratio of 11.0, this applicant would receive (7.5/11.0) * 600 points or 409 points. The scoring committee may reduce the points awarded if the methodology or data provided by the applicant is not reasonable.

2. Meets Intent of the HSIP Program (200 Points) – Projects will be scored based on their ability to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

SCORING GUIDANCE
Projects will be awarded between 0 and 5 points based on the ability of the project to reduce fatal and serious injuries crashes. Scorers will assess the types of crashes that have occurred in the project area and the potential for the proposed solution to reduce the fatal and serious injury crash risk that has been documented.

Scorers will respond to the following statement:

The proposed project meets the intent of the HSIP program.

Strongly disagree: 0 points
Disagree: 1 point
Neutral: 2 points
Slightly Agree: 3 points
Agree: 4 points
Strongly agree: 5 points

Multiple projects can receive 5 points in this scoring measure. Points awarded (0-5) will be multiplied by 40 to get a final score out of 200 points possible.

3. **Correctable Fatal and Serious Injury Crashes (100 Points)** – This criterion measures the history of fatal and serious injury crashes from 2009 to 2018 that have occurred along the proposed project. Total correctable fatal and serious crashes for 2009-2018 will be tallied with each fatal crash being worth two times the number of each serious injury crash.

- Total crashes = 2* "Fatal" Crashes + "Serious Injury" Crashes

SCORING GUIDANCE

Correctable crashes are those that the treatment being proposed is anticipated to mitigate. The applicant with the highest number of fatal and serious injury crashes will receive the full points for the measure. Remaining projects will receive a proportionate share of the points. For example, if the application being scored had 10 total crashes and the top application had 30 crashes, this application would receive (10/30)*100 points, or 33 points.

4. **Pedestrian and Bicyclist Safety (100 Points)** – Discuss how the project will improve safety for pedestrians and bicyclists. Safety countermeasures for pedestrians 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 bicyclist safety best practices is also available in MnDOT's Best Practices for Pedestrian/Bicycle Safety.

SCORING GUIDANCE

The project that will provide the most improvement to pedestrian and bicyclist safety will receive full points. Remaining projects will receive a share of the full points at the scorer's discretion.