

*TRANSPORTATION ADVISORY BOARD
Of the Metropolitan Council*

Notice of a Meeting of the
TECHNICAL ADVISORY COMMITTEE
Wednesday, May 2, 2018
Metropolitan Council
9:00 A.M.

AGENDA

1. **Call to Order**
2. **Approval of Agenda**
3. **Approval of April 4, 2018 Minutes**
4. **TAB Report**
5. **Committee Reports**
 - **Executive Committee** (Lisa Freese, Chair)
 - **Planning Committee** (Jan Lucke, Chair)
 - **Funding & Programming Committee** (Paul Oehme, Chair)
 - a. **2018-31: 2022-2023 Highway Safety Improvement Program Solicitation**
6. **Special Agenda Items**
 - **Update on Arterial Bus Rapid Transit Network** (Charles Carlson or Katie Roth, Metro Transit)
7. **Agency Reports**
8. **Other Business**
9. **Adjournment**

Click here to print all agenda items at once.

Streamlined Amendments going to TAB this month. Contact Joe Barbeau with questions at 651-602-1705.

*Transportation Advisory Board
Of the Metropolitan Council*

**Minutes of a Meeting of the
TECHNICAL ADVISORY COMMITTEE
Wednesday, April 4, 2018
9:00 A.M.**

Members Present: Doug Fischer, Lyndon Robjent, John Sass, Chad Ellos, Ted Schoenecker, Lisa Freese, Jan Lucke, Steve Bot, Steve Peterson, Michael Larson, Adam Harrington, Brian Isaacson, Innocent Eyoh, Bridget Rief, Dave Jacobson, Peter Dahlberg, Danny McCullough, Ken Ashfeld, Anne Kane, Paul Oehme, Michael Thompson, Kim Lindquist, Robert Ellis, Jim Kosluchar, Jen Hager, Jack Byers, Bill Dermody, Paul Kurtz (Excused: none)

1. Call to Order

The meeting was called to order by Lisa Freese at 9:06 a.m.

2. Approval of Agenda

A motion to approve the agenda was moved by Lyndon Robjent and seconded by Paul Oehme. No discussion. Motion passed.

3. Approval of Minutes

A motion to approve the minutes was moved by Bridget Rief and seconded by Brian Isaacson. Motion passed.

4. TAB Report

Lisa Freese reported on the March 21 TAB meeting.

Committee Reports

A. Executive Committee (Lisa Freese, Chair)

Lisa Freese reported on the Executive Committee meeting, which discussed the day's agenda.

B. Planning Committee (Jan Lucke, Chair)

Jan Lucke reported the results of the Planning Committee.

2018-25 Draft Transportation Policy Plan. Jan Lucke introduced the item. There were no questions. Jan Lucke moved and Robert Ellis seconded the recommended motion. Motion passed.

C. Funding and Programming Committee (Paul Oehme, Chair)

2018-25 Scope Change: St. Paul Safe Routes to School. Paul Oehme presented the item. Michael Thompson moved and Lyndon Robjent seconded the recommended motion. Motion passed.

2018-26 Scope Change: MnDOT HSIP. Paul Oehme presented the item. Lyndon Robjent moved that to approve the scope change request with federal funding set at 90% but not to exceed the original federal award of \$972,000. Michael Thompson seconded the motion. Motion passed.

2018-27 TIP Amendment: Safety Performance Measures. Dave Burns presented the item. Paul Oehme moved and Michael Thompson seconded the recommended motion. Motion passed.

6. Special Agenda Items

TPP Update: Regional Mobility. (Steve Peterson, Metropolitan Council) Steve Peterson updated the TAC on the additional mobility money that needs to be allocated in the next TPP. These decisions will be made in April and May, follow Corridors of Commerce awards.

Lyndon Robjent asked why 2022-2023 money has \$0 assigned to it. Steve Peterson responded that that money is allocated to I-94 between the downtowns. Ted Shoenecker asked where the additional \$50 million/year is coming from. Brian Isaacson responded that some is being moved from Greater Minnesota pavement. \$9-25 million in spot mobility is a general fund transfer. This is the source for bonding and COC too. Ted Shoenecker asked if this funding could disappear. Brian Isaacson responded in the affirmative.

Lyndon Robjent remarked that there is a constitutional amendment being considered at the legislature to provide more roadway funding.

Innocent Eyoh asked that if the funding is coming from Greater Minnesota pavement, is the state at risk for having low quality pavement and not meeting performance targets. Brian Isaacson responding that an analysis was conducted to prove that we will continue moving in the correct direction. Doug Fischer commented that some mobility projects have pavement benefits, such as I-35W. Preservation projects are more than just preservation.

Regional Solicitation: Congestion Measure. (Jonathan Ehrlich, MTS) Jonathan Ehrlich presented information that could be used to help measure congestion in regional solicitation applications.

Adam Harrington asked about the time frame for the visualized data set. Jonathan Ehrlich responded that the maps came from July 1 2016-June 30-2017, with information averaged out. This includes construction impacts and other major events, and is only for weekdays. Lisa Freese said that Scott County has looked at similar detail for roadways impacted by the Renaissance Festival and it has been very helpful. Jan Lucke said that the St. Croix bridge crossing has changed conditions on Highway 36 and may not be reflected fully in these maps.

Doug Fischer asked how to evaluate parallel routes in the solicitation. Steve Peterson responded that the nearest arterial can be used for comparison.

Lyndon Robjent asked about extending the one year trial that MnDOT has with StreetLight. Brian Isaacson responded that they are in negotiations. Lyndon Robjent said that a GIS data tool using this information would be very helpful.

7. Agency Reports

Bridget Rief reported that the MSP airport has subscribed to AIRA, a service for the blind and visually impaired.

Brian Isaacson said that there is no COC news yet although it could be expected later this month. Doug Fischer asked when post-2015 safety data will be released by MnDOT. Ted Schoenecker said that MnDOT recently received it from DPS so it should be coming shortly.

Adam Harrington reported that construction of the C Line has begun and will open in June 2019. Additionally, a new limited stop route on East 7th Street in St. Paul will begin operations soon. A 120 day closure of the I-35W ramp into downtown Minneapolis will have significant traffic impacts for buses.

Lisa Freese said that some county wheelage taxes are being misapplied by the state.

8. Other Business and Adjournment

There being no other business, the meeting adjourned at 10:26AM.

Prepared by:

Katie White

ACTION TRANSMITTAL No. 2018-31

DATE: April 25, 2018

TO: Technical Advisory Committee

FROM: TAC Funding and Programming Committee

PREPARED BY: Joe Barbeau, Senior Planner (651-602-1705)
Gayle Gedstad, MnDOT Metro District (651-234-7815)

SUBJECT: 2022-2023 Highway Safety Improvement Program (HSIP)
Solicitation

REQUESTED ACTION: MnDOT requests that the TAB approve the release of the 2022-2023 HSIP solicitation.

RECOMMENDED MOTION: That TAC recommend to TAB approval of the 2022-2023 HSIP Solicitation program criteria for the Metro District and the release of the solicitation.

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

MnDOT conducts the solicitation and the proposed projects are evaluated by a selection committee comprised of transportation professionals that includes members of the TAC. With guidance from its technical committees and a recommendation from this selection committee, the TAB's role is to approve the solicitation criteria and selection of projects to be awarded HSIP funds. The draft district program criteria are attached for review and comment. Note this solicitation encompasses all of MnDOT Metro District, which includes Chisago County. TAB will approve projects selected in the seven-county area.

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

COMMITTEE COMMENTS AND ACTION: At its April 19, 2018 meeting, the Funding & Programming Committee voted unanimously to recommend approval of the 2022-2023 HSIP Solicitation program criteria for the Metro District and the release of the solicitation.

The Committee posed several questions, including whether an HSIP-funded project can be completed along with another project, whether the applicant can use its own funds to pave shoulders beyond the maximum of two feet, and what the rationale is for the \$2 million total project maximum. Staff consulted with MnDOT Metro District's safety engineering staff, which provided the following feedback:

- The two-foot shoulder maximum is part of the rules because there is a diminishing return on safety as the width of a shoulder increases. Additional local funds cannot be used for widening shoulders beyond two feet, as any funding for additional should width would be expected to fund the entire shoulder expansion.
- While HSIP projects tend to be stand-alone projects, when they overlap with another road project introduced later, they can be combined in the interest of efficiency.
- The \$2M maximum total project cost is based on the idea that these are small, stand-alone safety projects. Larger projects tend to encompass more than simply safety benefits, and HSIP funds should not fund projects that are not entirely focused on safety.
- The federal maximum of \$1.8M has increased from \$900,000 since 2007 and is meant to enable funding a large number of strategic projects.

ROUTING

TO	ACTION REQUESTED	DATE COMPLETED
TAC Funding & Programming Committee	Review & Recommend	-
Technical Advisory Committee	Review & Recommend	-
Transportation Advisory Board	Review & Approve	-

HSIP

Highway Safety Improvement Program

For State Fiscal Years 2022 and 2023

Metro District Program Criteria

Minnesota Department of Transportation
Metro District Traffic Engineering
June 2018

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Appendix:

A - MnDOT Metro District Traffic Engineering Contacts

B - HSIP Timeline Flowchart

C - Traffic Signals

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

E - Sample HSIP Benefit / Cost Worksheet

F - Recommended Service Life Criteria

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.

General Policies:

1. HSIP funds are available to MnDOT; the counties of Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott, and Washington; and the state aid eligible Cities and Towns within those Counties. Other local or special governmental agencies that do not have the ability to receive and administer federal funds must work with these specified governmental units to develop and submit eligible projects.
2. This solicitation is for projects with a total cost up to **\$2,000,000**, with a cap of \$1,800,000 federal funds. A minimum local match of 10% of the total project cost is required. After a project is selected for federal HSIP funding, if the project costs go above \$2,000,000 the additional costs are the responsibility of the submitting agency. The match must be in “hard dollars”. Soft matches (i.e.; volunteer labor, donated materials, professional services) cannot be included in the match.
3. 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.
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:

Program year policy link: [http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/TAB-Regional-Program-Year-Policy-\(PDF-154-KB\).aspx](http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/TAB-Regional-Program-Year-Policy-(PDF-154-KB).aspx)

Scope change policy link: <http://www.metrocouncil.org/Transportation/Planning-2/Transportation-Funding/Regional-Solicitation/Regional-Scope-Change-Policy.aspx>

HSIP is a federally funded traffic safety program. The amount of funding available for this 2018 Metro District solicitation for State Fiscal Years 2022 and 2023 is up to **\$22.7 million** for the two year period. Some of the funding will 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.

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

Qualifying Criteria

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

Only 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. Safety features, such as guardrail, that are routinely provided as part of a broader project should be funded from the same source as the broader project. In some instances, narrow shoulder paving in conjunction with resurfacing projects may be allowed. See Appendix D for this exception.

FOR PROACTIVE PROJECTS:

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

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

- 160 (31%) involved two or more vehicles colliding
- 121 (24%) involved a pedestrian
- 57 (11%) involved a bicyclist
- 43 (8%) 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 impacts throughout the network (at multiple locations) or a corridor based approach.

Cities are encouraged to provide other levels of support to make their case on why the project is justified. For example, they could cite the high pedestrian volumes or a generator of a high 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 these target crashes.

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

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

FOR REACTIVE PROJECTS:

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

1. Must have Benefit/Cost (B/C) ratio of 1.0 or greater*. (Note: The B/C ratio shall exclude right-of-way costs. The cost used should be the total project cost, not the amount of requested HSIP dollars.
2. 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.

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, and projects that have the highest possibility of reducing the chance of fatal and serious injury crashes. The following criteria will be used in ranking Proactive projects:

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

EVALUATION PROCESS:

Project proposals will be reviewed by MnDOT's Metro District Traffic Engineering unit initially to determine if they meet the qualifying criteria. The HSIP committee will 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
- 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 submit per project. Failure to provide this information may exclude the submission from consideration:

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

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/>

- Number of fatal ("K") and serious ("A") injuries in the past 10 years (2006-2015) 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 K or A injuries have occurred in your implementation area.)
- Collision diagrams may be submitted but are not required.
- Crash data must be obtained from MnDOT. MnDOT Metro District will provide a crash listing upon request. See Appendix A. Crash data requests should be made as soon as possible, but before **July 18, 2018**. The applicant is responsible to convert the crash listing provided by MnDOT into collision diagrams when applicable.
- Provide signed Intersection Control Evaluation (ICE) report for proposed intersection traffic control changes.
- MnDOT and Counties, please attach copy of appropriate page from your Highway Safety Plan for projects submitted that are referenced in your Plan.

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 - The crash data shall include crashes from calendar years **2013-2015**. 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).

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, 2018. Requests made after July 18th may be significantly delayed due to limited resources. MnDOT will not provide collision diagrams.

- HSIP B/C Worksheet - A sample HSIP B/C worksheet is included in Appendix E. An Excel version of the HSIP B/C worksheet is available: http://www.dot.state.mn.us/metro/trafficeng/files/BENEFIT_COST_WORKSHEET.xls Refer to Appendix F for recommended service life criteria.
- Approved Intersection Control Evaluation (ICE) report for intersection traffic control changes.
- Proposed roundabouts must address mini-roundabouts as an option

Must send 2 paper copy project submittals to:

MnDOT, Traffic Engineering

Attn: Lars Impola

1500 West County Road B2

Roseville, MN 55113

Must send an 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 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 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” described below.

Multiple Safety Improvement Crash Reduction Formula:

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

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 B/C worksheets for documentation purposes.**
- **No more than two CRF’s per project will be allowed.**

Use of Fatal Crashes

Type of Crash	Crash Severity	Cost per Crash
Fatal (F)	K	\$11,000,000
Personal Injury (PI)	A Incapacitating	\$590,000
Personal Injury (PI)	B Non-Incapacitating	\$170,000
Personal Injury (PI)	C Possible	\$87,000
Property Damage (PD)	N	\$7,800

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” injury crashes within a three-year period.

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

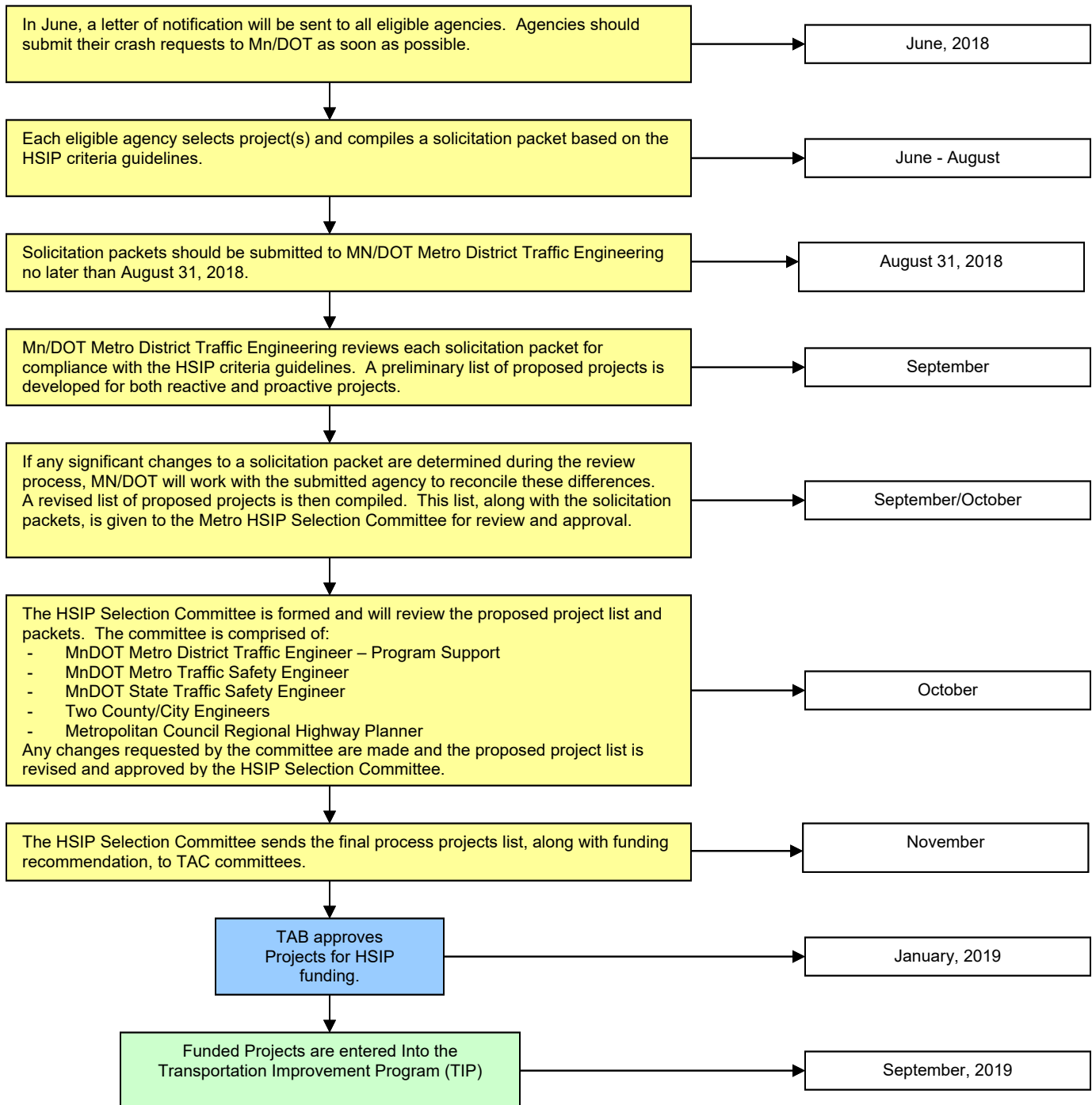
Appendix A

MnDOT Metro District Traffic Engineering Program Support Contacts

<u>Information</u>	<u>Contact</u>	<u>E-Mail</u>	<u>Phone Number</u>
Proposal Content	Gayle Gedstad	gayle.gedstad@state.mn.us	651/234-7815
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 Program (HSIP) Metro District Process Timeline (2018)



Appendix C

Traffic Signals:

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

1. New Signals:

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

2. Existing Signals:

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

3. Retiming of Signal Systems:

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

Appendix E

(B/C Worksheet Example)

B/C worksheet		Control Section	T.H. / Roadway	Location			Beginning Ref. Pt.	Ending Ref. Pt.	State, County, City or Township	Study Period Begins	Study Period Ends
		Description of Proposed Work									
Accident Diagram Codes		1	2	3	5	4, 7	8, 9	Pedestrian		6, 90, 98, 99	Total
Study Period: Number of Crashes	Fatal	F									
	Personal Injury (PI)	A									
		B									
		C									
Property Damage	PD										
	% Change in Crashes	Fatal	F								
		PI	A								
			B								
C											
Property Damage	PD										
	Change in Crashes <small>= No. of crashes X % change in crashes</small>	Fatal	F								
		PI	A								
			B								
C											
Property Damage	PD										
	Year (Safety Improvement Construction)										
	Project Cost (exclude Right of Way)										
	Right of Way Costs (optional)										
Traffic Growth Factor 3.0%											
Capital Recovery											
1. Discount Rate 1.3%											
2. Project Service Life (n) See Appendix F											
Total											

Type of Crash	Study Period: Change in Crashes	Annual Change in Crashes	Cost per Crash	Annual Benefit
F			\$ 1,180,000	
A			\$ 590,000	
B			\$ 170,000	
C			\$ 87,000	
PD			\$ 7,800	
Total			\$	-

B/C=

Using present worth values,

B= #VALUE!

C= \$ -

See "Calculations" sheet for amortization.

Appendix F

Recommended Service Life Criteria

<u>Description</u>	<u>Service Life (years)</u>	<u>Description</u>	<u>Service Life (years)</u>
<u>Intersection & Traffic Control</u>		<u>Roadway & Roadside</u>	
Construct Turning Lanes	20	Widen Traveled Way (no lanes added)	20
Provide Traffic Channelization	20	Add Lane(s) to Traveled Way	20
Improve Sight Distance	20	Construct Median for Traffic Separation	20
Install Traffic Signs	10	Wide or Improve Shoulder	20
Install Pavement Marking	2	Realign Roadway (except at railroads)	20
Install Delineators	10	Overlay for Skid Treatment	10
Install Illumination	20	Groove Pavement for Skid Treatment	10
Upgrade Traffic Signals	20	Install Breakaway Sign Supports	10
Install New Traffic Signals	20	Install Breakaway Utility Poles	10
Retime Coordinated System	5	Relocate Utility Poles	20
Construct Roundabout	20	Install Guardrail End Treatment	10
		Upgrade Guardrail	10
		Upgrade or Install Concrete Median Barrier	20
<u>Pedestrian & Bicycle Safety</u>		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	Remove Obstacles	20
		Install Edge Treatments	7
<u>Structures</u>		Install Centerline Rumble Strips	7
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		

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 PM or postmarked on August 31, 2018. *Be sure to complete and attach the Project Information form. (Form 2)**

Office Use Only

I. GENERAL INFORMATION

1. APPLICANT:

2. JURISDICTIONAL AGENCY (IF DIFFERENT):

3. MAILING ADDRESS:

CITY:

STATE:

ZIP CODE:

4. COUNTY:

5. CONTACT PERSON:

TITLE:

PHONE NO.
()

CONTACT E-MAIL ADDRESS:

II. PROJECT INFORMATION

6. PROJECT NAME:

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

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

Proactive

Reactive

III. PROJECT FUNDING

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

10. FEDERAL AMOUNT: \$

13. MATCH % OF PROJECT TOTAL:

11. MATCH AMOUNT: \$

14. SOURCE OF MATCH FUNDS:

12. PROJECT TOTAL: \$

15. REQUESTED PROGRAM YEAR(S) : SEE NOTE BELOW

2022 2023 Either year

16. SIGNATURE:

17. TITLE:

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

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)