

Traffic Safety Improvement Program

STUDIES, RESEARCH, PUBLIC INFORMATION INITIATIVES Applications FY 2018



Received by August 15, 2016

**STUDIES, RESEARCH, PUBLIC INFORMATION INITIATIVES
FY 2018**

Applications listed in order received.

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			Project	Request
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9	Iowa DOT – Traffic and Safety	Feasibility/Applicability of an Active School Bus Stop Ahead Warning Sign	25,000	25,000
11	Iowa DOT – Traffic and Safety	Statewide Multi-Disciplinary Safety Team (MDST) Facilitator Program	80,000	80,000
13	Iowa DOT – Traffic and Safety	Local Roads Safety Liaison Program	85,000	85,000
16	Iowa DOT – Traffic and Safety	Iowa Safety Circuit Rider Program	75,000	20,000
18	Iowa DOT – Traffic and Safety	Synthesis on Multi-Lane Roundabouts State of the Practice	40,000	40,000
20	Iowa DOT – Traffic and Safety	Work Zone Sign Package Program	50,000	50,000
22	Iowa DOT – Traffic and Safety	Motor Grader Operator Maintenance of Granular Surfaced Roads	25,000	25,000
24	Iowa DOT – Traffic and Safety	Work Zone Safety Training	100,000	30,000
26	Iowa DOT – Traffic and Safety	Relationships between weather and roadway safety	50,000	50,000
28	Iowa DOT – Traffic and Safety	Development of Additional CMFs	80,000	80,000
30	Iowa DOT – Traffic and Safety	Young Driver Study	80,000	80,000
33	Iowa DOT – Systems Planning	Non-motorized traffic monitoring: Phase 1	75,000	50,000
38	Iowa DOT – Traffic and Safety	Iowa Traffic Safety Data Service (ITSDS)	250,000	50,000

**STUDIES, RESEARCH, PUBLIC INFORMATION INITIATIVES
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			Project	Request
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42	Iowa DOT – Traffic and Safety	Automating near-miss crash detection using existing traffic cameras	60,000	60,000
44	Iowa DOT – Traffic and Safety	Iowa SPF Development	75,000	75,000
46	Iowa DOT – Traffic and Safety	Motorcycle Safety Course Coupons	75,000	75,000
48	Iowa DOT – Design	In Service Evaluation of Culvert Extensions	60,000	60,000
50	Iowa DOT – Design	In Service Evaluation of Current Clear Zone Guidelines	120,000	120,000
52	Iowa DOT – Design	In Service Evaluation of Railroad Signal and Stop Arm Pole Protection	60,000	60,000
55	Iowa DOT – Design	In Service Evaluation of Roadway Safety Features	100,000	100,000
57	Iowa DOT – Traffic and Safety	Guidance on the Design and Application of Alternate Intersections	100,000	100,000
59	Iowa DOT – Traffic and Safety	Safety Issues at Low-Volume Intersections	75,000	75,000
	Totals	24 Projects	\$ 1,825,000	\$ 1,420,000



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: 7/29/16

Location / Title of Project Rail Crossing Safety Education Support

Applicant Iowa DOT Office of Rail Transportation

Contact Person Phillip Meraz Title Regulation and Analysis Project Coordinator

Complete Mailing Address Iowa Department of Transportation; Office of Rail Transportation

800 Lincoln Way, Ames IA 50010

Phone (515)239-1420 E-Mail phillip.meraz@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

- Site Specific
- Traffic Control Device
- Safety Study

Funding Amount

Total Safety Cost \$ 60,000

Total Project Cost \$ 60,000

Safety Funds Requested \$ 25,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain Part of the State of Iowa Highway-Rail Grade Crossing Safety Action Plan (2012)

No

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Iowa Department of Transportation; Office of Rail Transportation

Signed:  7/29/16
Signature Date Signed

Phillip Meraz
Typed Name

Attest:  7/29/2016
Signature Date Signed

Diane McCauley
Typed Name

A

In 2010, the Federal Railroad Administration (FRA) identified Iowa to be among the top ten states for the number of railroad crossing collisions. Due to this fact, federal legislation 49 CFR part 234 mandated that the state of Iowa research and create a rail crossing safety action plan. The plan prepared by the department's Office of Rail Transportation was approved by the FRA in 2012 and can be found at: <http://www.iowadot.gov/iowarail/safety/crudeoilbiofuels.htm>

B

The *State of Iowa Highway-Rail Grade Crossing Safety Action Plan* recognizes "education" as one of the four action categories. The main component of the department's educational effort is a working partnership with Iowa Operation Lifesaver (OL); a non-profit education and awareness program dedicated to ending tragic collisions, fatalities, and injuries at highway, rail grade crossings and on railroad right-of-way.

Historically, OL has conducted free presentations for small groups such as driver's education classes and civic organizations. These programs, conducted by certified volunteers, are the "public face" for railroad crossing safety and an integral part of the educational efforts in Iowa. However, the majority of the funding is used for presentation materials and handouts leaving inadequate resources for advertising and building the program.

To broaden the reach of their message, the OL board has modified their approach to add a focus for larger venues such as the Iowa State Fair and the Farm Progress Show. This past year they have grown their presence on social media, have a standing morning announcement on Iowa Public Radio, added the Thresher's Reunion as a large venue event, and participated in a week-long "community safety blitz" in Council Bluffs. In the upcoming years they would like to add a television commercial spot during in-state rivalry college football games.

Using this strategy they have drastically increased the number of people contacted each year from thousands to tens of thousands. These more informal educational contacts have also increased the number of formal small group program opportunities.

Because of the implementation of other action items the reduction of deaths that can be attributed to these programs is not easily quantifiable. However, OL is accepted by the FRA as a *significant* contributing factor for the downward trend in rail crossing collisions over the past 30 years.

The objective for the use of this requested funding is to better support the department's partnership with OL by:

- Purchasing needed presentation materials and equipment for dozens of volunteers
- Providing vendor fees for large-scale events
- Increasing their visibility and media campaign

Railroad Crossing Safety Education Support

- Funding community “blitzes” in areas that demonstrate high-risk driving behavior or have imminent events near railroad right-of-way

It is anticipated that continuing these educational initiatives will increase the number of lowans being educated and raise awareness of the safety issues at railroad crossings.

C

As a non-profit organization, the amount of funding currently being used for OL operations changes from year to year. All funding comes from contributions. Last year’s funding was approximately:

\$28,000	provided by \$7/crossing request from the railroads operating in Iowa
\$2,000	provided by the Iowa Association of Railroad Passengers
\$5,000	provided by private corporate donation
\$0	provided by Iowa DOT TSIP (\$15,000 is provided for FY 2017)
<u>\$0</u>	The National OL organization no longer contributes to the states due to federal cutbacks
\$35,000	

These Funds have been used for operations, displays, and materials for presentations by volunteer labor in an organization with one staff member employed one-quarter time. The estimated costs for usage of the requested funds are:

\$5,000	presentation materials and equipment
\$6,000	vendor fees
\$3,000	marketing and transportation costs for community blitzes
<u>\$11,000</u>	production and on-air time during in-state rivalry football games
\$25,000	

D

These funds will be used throughout a 12-month period beginning July 1, 2017 and ending June 30, 2018.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/2/2016

 Location / Title of Project Study of the Feasibility/Applicability of an Active School Bus Stop Ahead Warning Sign

 Applicant Iowa DOT

 Contact Person Tim Crouch Title State Traffic Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone (515) 239-1513 E-Mail tim.crouch@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

 Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

 Total Safety Cost \$ 25,000

 Total Project Cost \$ 25,000
Safety Funds Requested \$ 25,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

 No

A. Not applicable

B. Traffic signs are used to tell drivers about the traffic rules and any hazards located along the road. In Iowa, School Bus Ahead signs have been used on state roads to notify drivers when there is limited visibility and are nearing an area where a stopped school bus will pick up or drop off passengers. Currently there are 203 locations with School Bus Ahead signs across Iowa on state roads with limited visibility which would hinder the ability to see a stop school bus. The hazard of having a stopped bus only occurs a small portion of the day but the sign is present at all times when the hazard is not present. Because the likelihood of encountering a school bus is small, this potentially will cause drivers to ignore the signs and decrease the safety at the bus stop. To improve the safety at school bus stops along state routes an automated flashing light could potentially be used to notify a driver when a stopped school bus is present. Ideally, the system would be automated which would activate the light when the bus drives by then would deactivate after the school bus has left. The research team will evaluate the feasibility and applicability of such a system to improve safety at the limited visibility school bus stopping locations.

The study will look at the state of practice, completing the following tasks:

- Literature search (any research or states addressing this other than static signs)
- Magnitude of the problem (crashes at these locations)
- Discussion/search of industry information on potential (dynamic low cost) technology

C. \$25,000

D. 6 months



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August, 3, 2016

 Location / Title of Project Statewide Multi-Disciplinary Safety Team (MDST) Facilitator Program

 Applicant Iowa DOT – Office of Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

 Phone (515) 239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 60,000

 Total Project Cost \$ 60,000
Safety Funds Requested \$ 60,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

Iowa's Statewide Multidisciplinary Safety Team (MDST) Program assists with the facilitation, development and operation of local multi-discipline safety teams to help identify and resolve local crash causes and enhance crash response practices in the state of Iowa. These teams include a wide range of local and state safety participants from various backgrounds. These professionals meet on a regular basis to discuss safety topics, problems, projects, and improvements along local roadways within regional areas of Iowa.

By coordinating communication and collaborating with other stakeholders, participants gain a broader perspective on safety issues and learn best practices from professionals outside their area of expertise. This ultimately leads to the development of solutions that may not have been considered otherwise.

The Statewide MDST program assists with a number of technical services that can help further develop existing safety groups, establish new relationships and foster growth of innovative and effective safety practices within the transportation community.

Project

One of the program's main goals is interagency collaboration and information exchange. This approach will improve communication on technical transportation issues among professionals from local governments, cities, counties, metropolitan planning organizations and regional entities and the DOT statewide. The program also assist MDSTS by providing technical briefs, technical reports, and research documents; technical and safety workshops; outreach and technology services; and traffic safety assessments.

More specifically, the program, organized and applied by the statewide MDST program facilitator, will continue with the following initiatives with existing and new MDSTs: promotion of the ongoing growth of a safety culture in Iowa; work with GTSB, DOT safety staff, and others to provide appropriate topics, presentations, crash maps, GIS data, workshops, contacts, and requested safety analysis for MDST meetings; attendance and involvement with meetings to keep current on safety related information and issues, as well as current research projects and studies to share with our safety partners and MDSTs; provision of crash summary data; facilitation of multi-disciplinary processes to identify safety issues and improvements; the provision of assistance, information, and support to promote and enhance the formation and active participation of area agencies in MDSTs; the development and/or evolution of MDSTs and the MDST website (to be used as a tool and resource for MDSTs and their members); development of marketing material; and creation of an MDST planning, operation, and management document for local safety groups.

The \$60,000 in funding requested will be used over a 12 month period and allow the continuation of the statewide MDST program facilitator.

Cost

Requested Funding: \$60,000

Proposed by: Theresa Litteral



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August, 3, 2016

Location / Title of Project Local Roads Safety Liaison Program

Applicant Iowa DOT – Office of Traffic and Safety

Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

Phone (515) 239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Safety Cost \$ 85,000

Total Project Cost \$ 85,000

Safety Funds Requested \$ 85,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

This program commenced in March of 2008 as a new outreach project to local governments (primarily counties) under funds from the Iowa Department of Transportation. Although it started as a tool to get DOT provided safety program information and assistance to county engineering offices that had not been active in safety, the program has been expanded to provide more training coordination and grant program assistance to both cities and counties. This continues to be accomplished for them through: personal on site consultations, assistance with grant awareness and funding applications, planning of and/or training at fall safety workshops, presentations to county engineer groups, league of cities members, multi-disciplinary teams and regional planning organizations around the state. These associations have helped build and strengthen the safety “community/culture” both locally and regionally. Budgetary struggles continue for local entities and most do not have the staff and/or time available to permit attending the formal training opportunities, or to perform the necessary analysis to identify traffic safety concerns. The Local Roads Safety Liaison program can continue to fill that gap from an impartial position.

Project

Continuation of previous initiatives, including:

- Work w/ Safety Circuit Rider, ITSDS, GTSB, state MDST teams and DOT safety staff and training personnel to provide appropriate topics, crash maps, workshops, contacts, and requested safety analysis.
- Attend and involvement with meetings to keep current with safety related information and issues, as well as current research projects and studies, to provide a knowledge base which can be shared with other safety partners
- Provide specific new safety research information to local agencies.
- Provide detailed analysis of traffic related crashes to local agencies when requested, using traffic studies and crash analysis tools, and identify alternate safety improvements to provide mitigation
- Continue to assist counties with road safety reviews, assessments and/or audits, where requested (including GTSB “high five” program assessment assistance)
- Continue to provide current and timely information and assistance to those local agencies that rely on this form of presentation to keep the safety message heard

Next Steps (Continuation from previous years):

- Continue all program items above with revisions or updates as necessary
- Work with DOT Traffic & Safety staff to locate, submit and promote suitable projects from counties with good candidates for the HSIP Secondary safety program
- Promote the adoption of local safety program development for counties and assist as needed with the application new local safety plans.
- Assist local agencies in developing overall traffic safety programs, including crash analysis and site reviews by multiple disciplinary teams.
- Provide assistance, information and support to promote and enhance the formation and active participation of area agencies in multidisciplinary groups.
- Assist in relaying the “systemic” safety approach to the local jurisdictions

The funding requested matches with staff time of approximately 80 hours per month and this is anticipated to carry out these tasks. Continued coordinated work with DOT and InTrans staff, along with various safety interest groups and trainers could be continued and program growth expanded to

areas including cities and RPAs. Developing associations with those officials and other contacts around the state will definitely promote the ongoing development of a safety culture in Iowa.

Cost

Requested funding: \$85,000

Proposed by: Keith Knapp



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August 3, 2016

 Location / Title of Project Iowa Safety Circuit Rider Program Supplemental Support

 Applicant Iowa DOT – Office of Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

 Phone (515) 239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 20,000

 Total Project Cost \$ 20,000
Safety Funds Requested \$ 20,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

The Safety Circuit Rider program was created over 20 years ago as a strategy to bring safety training to local government agency personnel at their own place of work. The Safety Circuit Rider program was established as a part of the Local Transportation Assistance Program by a coalition including the Iowa DOT, Governor's Traffic Safety Bureau, Federal Highway Administration, and the Institute for Transportation at Iowa State University. It provides needed training in transportation safety to local agencies across the State of Iowa in such topics as work zone temporary traffic control, flagging, roadside safety, and permanent signing and pavement markings from the Manual on Uniform Traffic Control Devices. In addition, the circuit rider also provides information and advice on problems and concerns related to these topics and conducts research in related areas.

Project

The program currently receives \$55,000 annually in Section 402 Highway Safety funds from the Governor's Traffic Safety Bureau. Over time the program has expanded and requires a budget substantially greater than that. In light of this, the Safety Circuit Rider program has been partially funded by the Traffic Safety Improvement Program at the Iowa Department of Transportation for many years. The funds being requested from the TSIP will help the program meet the safety training needs of Iowa's roadway workers in the future. Iowa's safety program of outreach to local jurisdictions is nationally recognized, and has been awarded the FHWA/RSA award for local programs. The funding sought by this applications will be used for labor and travel expenses for a one year period.

Cost

Requested funding: \$20,000

Proposed by: David Veneziano



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August 3, 2016

 Location / Title of Project Synthesis on Multi-Lane Roundabouts State of the Practice

 Applicant Iowa DOT – Office of Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

 Phone (515) 239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 40,000

 Total Project Cost \$ 40,000
Safety Funds Requested \$ 40,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

Roundabouts have been installed throughout the United States for decades. More recently, multi-lane roundabouts have seen increased applications. However, all of the available safety and operational performance of this design has not been summarized in one place that can serve as a reference document.

Project

The focus of this work will be a synthesis of the state-of-the-practice for multi-lane roundabouts. It will summarize various information on them, including the safety and operation history and performance of these designs, practices and policies, selection criteria, design guidance, and so forth. The synthesis will also compare rural and urban multi-lane roundabouts, as well as high and low speed applications. Finally, the information collected and summarized will include approaches to driver education related to the unique geometric design of multi-lane roundabouts. As a result of this project, a better understanding of the state-of-the-practice for multi-lane roundabouts will be available, including what their benefits are as well as potential drawbacks that may need to be addressed.

Cost

Requested funding: \$40,000

Proposed by: David Veneziano



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August 3, 2016

 Location / Title of Project Work Zone Sign Package Program (Continuation)

 Applicant Iowa DOT – Office of Traffic and Safety

 Contact Person Eric Wright Title Access Policy Administrator

 Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

 Phone (515) 233-7903 E-Mail Eric.Wright@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 50,000

 Total Project Cost \$ 50,000
Safety Funds Requested \$ 50,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

The initial year of this program is currently under contract and is going to be developed and then applied and evaluated during the 2017 construction session. This request is for funding connected to an additional year of the program.

Project

The funds applied here would continue the Iowa LTAP Work Zone Sign Package Program to help municipalities make their work zones safer for motorists, pedestrians and workers by providing them with a basic work zone safety sign package. The target population for cities continues to be those with less than 10,000 residents. The cities interested in participating in the program submit an application to the Iowa Local Technical Assistance Program (LTAP) and approximately 10 winners are selected each year based on the demonstrated need of temporary traffic control devices, their commitment to work zone safety and attendance at an Iowa DOT Work Zone Safety Workshop. The Iowa DOT recommends that participants attend this workshop every three years and within that time period, attendance at this workshop by smaller cities has exceeded the amount of sign packages that are available during 2017 fiscal year. Additional criteria to be considered when determining winners may also include, Flagger Training workshop attendance, Iowa LTAP Roads Scholar Program participation and other safety related workshop attendance.

The sign package may include:

- 2 Flagger Ahead Signs
- 2 One Lane Road Ahead Signs
- 4 Road Work Ahead Signs
- 2 Be Prepared to Stop Signs
- 6 Type II Barricades
- 16 28" Traffic Cones
- 4 Class 2 Safety Vests
- 6 Sign Stands
- 4 Traffic Drums with Bases
- 2 24" Stop/Slow Paddles

Cost

Requested funding: \$50,000

Proposed by: Paul Albritton



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 3, 2016

Location / Title of Project Motor Grader Operator Maintenance of Granular Surfaced Roads: Tips from Iowa Operators (Revision)

Applicant Iowa DOT – Office of Traffic and Safety

Contact Person Eric Wright Title Access Policy Administrator

Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

Phone (515) 233-7903 E-Mail Eric.Wright@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific

Traffic Control Device

Safety Study

Funding Amount

Total Safety Cost \$ 25,000

Total Project Cost \$ 25,000

Safety Funds Requested \$ 25,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

This project is a revision of a field guide that was done in 1974 and then updated in 1991 (25 years ago). It is still requested by operators to assist them in the completion of their duties.

Project

Public safety on gravel roads is directly tied to the operators' use of the motor grader. There are approximately 75,000 miles of unpaved roads in Iowa and due to the nature of these roads, periodic routine maintenance must be performed to maintain a safe travel surface. A more consistent, uniform roadway surface encourages safer driving habits and potential reduction in vehicle crashes. With counties facing a turnover of operators and the onset of new technologies, a quick reference guide of gravel road maintenance concepts and motor grader operation tips is desired. The original field guide was written in 1974 and the most recent revision in 1991, is still requested by operators and maintenance supervisors. It is a compilation of tips from experienced operators throughout the state, covering a range of topics from the desired roadway shape to snow removal. The updating of this publication has the potential to help make Iowa granular surfaced roads safer for the traveling public and the funds applied here would be for this revision.

Cost

Requested funding: \$25,000

Proposed by: Paul Albritton



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/10/16

 Location / Title of Project Work Zone Safety Training

 Applicant Iowa DOT - Office of Traffic and Safety

 Contact Person Dan Sprengeler Title Work Zone Traffic Control Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone 515-239-1823 E-Mail Dan.Sprengeler@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

 Total Safety Cost \$ 100,000

 Total Project Cost \$ 100,000
Safety Funds Requested \$ 30,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

- A. Not applicable
- B. The Iowa DOT supports an ongoing program for training city, county, state, contractor, and utility personnel in traffic control within work zones. Motor vehicle crashes in work zones continue to kill and injure motorists and workers each year. Despite the hundreds of workers trained yearly (approximately 675 in 2016), many road workers have yet to be reached with training in basic work zone safety.

Some localities send several staff members each year and thus maintain an adequate training level over time. Other localities participate irregularly or not at all. Efforts are made to reach all Iowans who work on or adjacent to the roadway to insure that they understand proper traffic control methods required by law, according to the Manual on Uniform Traffic Control Devices, Part VI.

Objectives:

- To conduct approximately 10 day-long workshops at locations across Iowa to accommodate at least 800 participants
 - To have instruction tailored to city, county, contractor, utility, and Iowa DOT personnel
 - To retain consultant services for the primary trainer
 - To develop local personnel to assist in training
 - Partial funding of registration fees – this funding will help to keep the registration fee as low as possible for those attending the training
- C. The estimated cost of this project is \$30,000 for training in February and March of 2018.
- D. The anticipated time schedule for this project is for training in February and March of 2018.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 10, 2016

Location / Title of Project Relationships between weather and roadway safety

Applicant Iowa DOT – Traffic and Safety

Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

Phone 515-239-1349 E-Mail Jan.Laaser--Webb@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Safety Cost \$ 50,000

Total Project Cost \$ 50,000

Safety Funds Requested \$ 50,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

Adverse weather conditions, including snow, rain, fog and high winds, have shown to affect safety on the roadways. Understanding the relationship between weather and crashes can help identify high risk areas, provide predictive road weather information, design effective safety countermeasures, and support decision making for road maintenance priorities. A number of studies have quantified the impacts of various weather events on crash rate and injury severity. The results vary greatly by study regions and data aggregation levels. In particular, many studies lack weather data at high temporal and spatial resolutions. In recent years, segment based weather, traffic and crash data have become available, which provides a basis for a comprehensive study on the relationship between weather and crashes on Iowa DOT roadways. A three-phase project investigating safety and mobility impacts of winter weather was completed in 2014. A crash frequency model was developed to describe the impacts of traffic volume, posted speed limits, road surface width, air and pavement temperature, visibility, and wind speed on crashes. However, winter maintenance operational data was not available at the time and not included in the analysis. An on-going project that uses operational data to assess mobility and crash experience during winter conditions has integrated snow plow automatic vehicle location (AVL), crash and snow data along the I-80 corridor. The previous studies mostly focused on winter weather and have not included traffic speeds and flow rates in the analysis.

Project

This project will investigate the relationships between weather conditions (e.g. precipitation type and rate, wind speed and direction, visibility, and pavement conditions), traffic flow, and crash frequency and severity. This can be achieved by mining and fusing various datasets, including geographic information management system (GIMS), travel time and speed data provided by INRIX, traffic volume and vehicle class makeup collected by Wavetronix sensors and automatic traffic recorders (ATR), crash database, pavement conditions inferred from snowplow AVL and images, and weather data from Mesonet. Extensive data validation will be conducted before investigating the impact of road weather conditions on safety measures. For example, police-reported surface conditions in the crash database will be compared with weather data from Mesonet (available from 2010 to today) and snowplow AVL. The self- and police-reported time and location of the crashes will be compared with speed and flow measurements from road sensors and from INRIX. The purpose of the data validation is to identify inconsistencies in different data sources and remove faulty data. The impacts of different weather events on travel speeds and traffic flow will be examined. A crash frequency model will be developed to study the impact of weather, traffic and roadway geometric on number of crashes by road segment. A severity model will be developed to study the factors contributing to crash severity.

Cost

\$50,000

Prepared by: Jing Dong



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August 10, 2016

 Location / Title of Project Development of Additional CMFs

 Applicant Iowa DOT – Traffic and Safety

 Contact Person Michael Pawlovich Title State Safety/Crash Data Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone 515-239-1428 E-Mail Michael.Pawlovich@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 80,000

 Total Project Cost \$ 80,000
Safety Funds Requested \$ 80,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background

Several current studies have developed CMFs that are specific to Iowa. CMFs are utilized to program safety funds and reduce crashes and crash severity. As a result, CMFs that the most appropriate to Iowa are desired by Iowa agencies. Additional CMFs may be developed through tracking existing and future installations of countermeasures by Iowa agencies, conducting targeted installations of desired countermeasures, or selecting CMFs developed outside of Iowa which have similar site characteristics.

Project

The goal of this project is to set the stage for future development of CMFs. This will be accomplished through three main objectives:

- A) Identify priority countermeasures by topic area (i.e. roadway departure, intersection) and determine gaps in information to effectively promote and utilize countermeasures within Iowa;
- B) Target installation of 2 to 3 countermeasures which have been tested in Iowa but do not have a sufficient number of installations to develop CMFs. This will include selection of sites, installation, and tracking treatments;
- C) Develop and utilize a methodology to track installations of safety countermeasures installed by state, county, and local agencies within the state so future CMFs can be developed

Cost

Cost is estimated at \$80k and includes project activities as well as purchase and installation of devices.

Prepared by: Shauna Hallmark



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/11/16

 Location / Title of Project Young Driver Study

 Applicant Iowa DOT - Office of Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone 515-239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

Total Safety Cost \$ _____

Total Project Cost \$ _____

Safety Funds Requested \$ 80,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

A. Not applicable

B. NARRATIVE

Young drivers are over-represented in motor vehicle crashes. From 2010 to 2014, drivers ages 14 to 20 were involved in nearly 45,000 crashes in Iowa that resulted in injuries. After several years of fewer young driver crashes resulting in fatalities, there were 44 such crashes in 2014 compared to just 33 in 2013. A detailed review of fatal crashes involving teen drivers in Iowa found the teens contributed to three quarters of the crashes and 28% of the fatalities were occupants of other vehicles or non-motorists (McGehee, Reyes et al., 2013). Reducing crash risk for Iowa's young drivers means safer roadways for everyone.

Graduated driver licensing (GDL) programs are the primary way states aim to reduce young driver crash risk. Young drivers proceed through three stages of licensure to gain driving experience in increasingly risky situations. One analysis of crash rates following the implementation of GDL in Iowa in 1999 found reductions in rates for 16- and 17-year-old drivers but not for 18-year-old drivers (Neyens, Donmez et al., 2008). The authors concluded that "the [GDL] program appears to be working, however further analysis is needed to determine what factors are preventing lasting effects for these teenage drivers." The study was not able to account for the specific type of license held by the young drivers and no follow-up analyses have been published.

Another policy specific to Iowa is the minor school license (MSL), which permits drivers as young as 14.5 years old to drive to school without a supervisor; thus, Iowa's young drivers are among the very youngest solo drivers in the United States. Hallmark, Veneziano et al. (2008) found that 15-year-old drivers with MSLs are 7 to 9 times more likely to be involved in a crash than those with an instruction permit. However, the study did not directly measure the impact of MSLs on the effectiveness of GDL.

Achieving further reductions in young driver crashes—and the resulting fatalities, injuries, and property damage—will require data-driven changes to licensing policies and possibly driver education. Analyses need to account for young driver license type and license history in addition to driver age. The Iowa Governor's Traffic Safety Bureau is funding a young driver "census," an analysis of the number of drivers holding each kind of license each quarter of the year by age. The project will be completed by September 2017 and will provide the denominator data with which to analyze crash rates per licensed driver by type of license held.

The proposed effort will leverage the forthcoming "census" datasets to calculate and analyze young driver crash rates in new and specific ways. The possible research questions that can be addressed are plentiful. The specific questions will be drafted and selected with input from a Technical Advisory Committee. The following are some of the possibilities.

1. How do young driver crash rates based on license type and duration of licensure vary over time? Do crash rates differ by crash type (e.g., single vs. multiple vehicle or manner of crash/collision) or where the crash occurred (e.g., road type, rural location, county)?
2. In 2014, Iowa implemented a new GDL policy requiring young drivers to hold an Instruction Permit for 12 months before obtaining an Intermediate License. When FY18 begins, three years of crash data will be available to evaluate whether this policy change has had an effect on crash rates.

3. How does the policy of issuing Minor School Licenses affect crash rates and do they impact the effectiveness of GDL policies?
4. How, if at all, does the age at which Driver Education is completed affect crash involvement? Does the duration the Instruction Permit is held before completing DE make a difference on crash rates?
5. What are the long term effects of GDL for 18-, 19-, and 20-year-old drivers?
6. How do crash rates for 18-, 19-, and 20-year-olds who obtained driver's licenses without participating in GDL compare to those who did complete GDL?

Crash rates based only on driver age cannot account for the variety of licenses a young driver might hold throughout their transition to a fully licensed driver. Answering questions like those proposed here will investigate how current GDL and MSL policies affect crash rates and provide the evidence to inform effective policy changes.

References

- Hallmark, S. L., D. A. Veneziano, et al. (2008). "Evaluation of Iowa's graduated driver's licensing program." *Accident Analysis and Prevention* 40(4): 1401-1405.
- McGehee, D.V., M.L. Reyes, et al. (2013). *Moving Beyond Teen Crash Fatality Statistics: The Go-Team Study*. http://publications.iowa.gov/14930/1/IA_DOT_GOTM-000_UI_MovingBeyondTeenCrashFatalityStats.pdf
- Neyens, D. M., B. Donmez, et al. (2008). "The Iowa graduated driver licensing program: Effectiveness in reducing crashes of teenage drivers." *Journal of Safety Research* 39(4): 383-390.

C. ESTIMATED COST including a list of the sources and amounts of supplementary funds (itemized if possible).

Research Associate, salary and fringe	25,500	
Graduate Research Assistant, salary and fringe*	28,700	
Travel to brief sponsor and to present findings at regional and national meetings	2,400	
Indirect (26%)	14,700	
GRA tuition*		<u>8,700</u>
Total	\$80,000	

*Alternative budget estimate with only Professional/Scientific Staff (no GRA) also comes to \$80,000

D. A TIME SCHEDULE for the proposed project with a **completion date**.

One year timeline with study completed by June 30, 2018



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 08/08/2016

 Location / Title of Project Non-motorized traffic monitoring: Phase I

 Applicant Sam Sturtz

 Contact Person Sam Sturtz Title Transportation Planner

 Complete Mailing Address 800 Lincoln Way
Ames, Iowa 50010

 Phone 515-233-7801 E-Mail Samuel.sturtz@dot.iowa.gov

(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

 Co-Applicant(s) Cara Hamann and Steve Spears

 Contact Person Cara Hamann Title Faculty Associate

 Complete Mailing Address 145 N. Riverside Dr
Iowa City, IA 52242

 Phone 319-384-1513 E-Mail cara-hamann@uiowa.edu

(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 50,000

 Total Project Cost \$ 75,000
Safety Funds Requested \$ 50,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

 No

B. NARRATIVE

Monitoring of non-motorized traffic (bicycles and pedestrians) is needed to obtain important information needed for project evaluation and planning as well as crash exposure rates. However, this information is currently being collected only on a project-by-project basis in Iowa, not allowing for estimation of figures such as miles traveled, as is traditionally done with vehicles in the form of VMT.

Project objective

We propose the establishment of a non-motorized traffic monitoring program to estimate bicycle and pedestrian miles traveled (BMT & PMT) and measure the safety impact of bicycle and pedestrian improvements.

The long-term goal of this project is to establish a statewide non-motorized traffic monitoring program. We expect this goal to be accomplished through several phases. The current application is Phase I of the project, to be conducted in the greater Cedar Rapids metropolitan area, working with the Corridor MPO. The objective is to conduct 24 short duration counts (1 week at each site) and establish at least one continuous count location. Additional phases/years (beyond the scope of the current proposal) will include expanding the number of short duration counts and installation of continuous counters at selected locations throughout the state.

Counting technology

Based on our preliminary research, we propose the use of tube and infrared counters for the 24 short duration counts and loop or piezo and infrared counters for the continuous counter location. The tube counters are capable of counting both bicycles and motor vehicles, as well as speed. The ability to study speed will allow for speed studies pre- and post-bicycle or other roadway improvements (e.g., addition of bicycle lanes, road diets, one-way to two-way conversions). We have obtained price-quotes from [Eco-Counter](#), whose products are being used many places throughout the United States and internationally. Eco-Counter products include user-friendly wireless data transmission and data analysis software resources in the price of the counter. We have also contacted Jamar Technologies, Inc. and have received information, but are waiting on price quotes. They also have tube, infrared, and loop counters appropriate for the proposed work.

Site selection and crash data

We will work with Brandon Whyte (Corridor MPO Non-motorized transportation planner), as well as representatives from the Corridor's cities (Cedar Rapids, Marion, Hiawatha) to select the 24 short duration count sites. We will also use crash data from the past five years to identify problematic sites in terms of bicycle and pedestrian safety. We have already identified many of the sites, which include urban, suburban, and rural areas and locations where improvements will be made (e.g., bike lanes or bike boulevards added) within the next 1 to 3 years. For the continuous counter location, we are planning to use 3rd Ave SW, Cedar Rapids, between 3rd St SW and 4th St SW. This location is currently a one-way, 4-lane road. It is slated to be converted to a two-way with parking protected bike lanes added in both directions within the next year. Please refer to the enclosed map which shows current and forthcoming bicycle facilities in the corridor.

There are several publications available on bicycle and pedestrian counting programs that we will utilize to guide our site selection and estimation of BMT and PMT. These include Chapter 4 (Traffic monitoring for non-motorized traffic) from the [2013 Traffic Monitoring Guide, TRB Circular E-C183](#) ('Monitoring bicyclist and pedestrian travel and behavior'), as well as online resources available through the [Portland State University Initiative for Bicycle and Pedestrian Innovation](#).

These resources indicate that a combination of short duration and long duration counts is preferred. They also contain recommendations on counting methods and counter capabilities (e.g., whether bicycles and pedestrians can be counted separately). See the figure (Figure 4-1, Traffic Monitoring Guide) below for an example of this technology comparison flow chart. From this we can see that inductance loops, infrared sensors, and pneumatic tubes are preferred for capability to count both bicycles and pedestrians, separately. These are the technologies we propose to use for this project.

FIGURE 4-1 SIMPLIFIED FLOWCHART FOR SELECTING NON-MOTORIZED COUNT EQUIPMENT

1. What Are You Counting?						Cost	
		Bicyclists Only	Pedestrians Only	Pedestrians & Bicyclist Combined	Pedestrians & Bicyclist Separately		
2. How Long?	Permanent	Inductance Loops ¹	●		◐	\$\$	
		Magnetometer ²	○			\$-\$\$	
		Pressure Sensor ²	○	○	○	○	\$\$
		Radar Sensor	○	○	○		\$-\$\$
		Seismic Sensor	○	○	○		\$\$
	Temporary/Short Term	Video Imaging: Automated	○	○	○	○	\$-\$\$
		Infrared Sensor (Active or Passive)	○ ³	●	●	◐	\$-\$\$
		Pneumatic Tubes	●			◐	\$-\$\$
		Video Imaging: Manual	○	○	○	●	\$-\$\$\$
		Manual Observers	●	●	●	●	\$\$-\$\$\$

○ Indicates what is technologically possible.
 ● Indicates a common practice.
 ◐ Indicates a common practice, but must be combined with another technology to classify pedestrians and bicyclists separately.
 \$, \$\$, \$\$\$ Indicates relative cost per data point.
¹ Typically requires a unique loop configuration separate from motor vehicle loops, especially in a traffic lane shared by bicyclists and motor vehicles.
² Permanent installation is typical for asphalt or concrete pavements; temporary installation is possible for unpaved, natural surface trails.
³ Requires specific mounting configuration to avoid counting cars in main traffic lanes or counting pedestrians on the sidewalk.

Reporting

We will prepare a final (Phase I) report with our findings. As part of this report, we will outline Iowa-specific best practices and recommendations for establishing non-motorized counting programs, which could be adopted by MPOs, cities, or counties throughout the state. We will also provide BMT and PMT estimates, speed studies, and before-after studies (to the extent possible within this first proposed year) that will be useful for transportation safety planning.

C. ESTIMATED COST

Item	QTY	Total
Counting technology		
Infrared sensor (for short duration counts)	2	5750
Pneumatic tubes (for short duration counts)	2	4550
Multi system-inductance loops and infrared sensor (for continuous counts)	2	9600
Salaries		
Students (conduct field work and assist with data management, analysis, and report preparation)	2	15,240
Faculty/Research Specialist (project management, analysis, report preparation)	1	11,360
Supplies and fees (office supplies, computer network fees)		500
Travel (to counting sites, to present results)		3,000
Total		\$50,000

D. TIME SCHEDULE

	2017						2018					
	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
Data Collection												
Pilot test short duration counters												
Short duration (1 week counts)												
Install permanent counter												
Resume and expand short duration counts in preparation for Phase II												
Data Analysis												
Data management and analysis												
Report preparation												



Smarter Transportation, Better Community

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Samuel Sturtz
Transportation Planner
Iowa DOT Office of Systems Planning
800 Lincoln Way
Ames, IA 50010

Dear Mr. Sturtz,

The Corridor MPO is pleased to support the Iowa DOT's grant application for the Transportation Safety Improvement Program (TSIP). The proposed bicycle and pedestrian counting program will greatly expand and complement our current count efforts, and help us to better understand the impacts of existing and proposed bike/ped infrastructure in the Cedar Rapids metropolitan area. Improved accessibility for cyclists and pedestrians has been a major emphasis in our region for several years now, and we feel that evaluation of the impact of our efforts, both in terms of transportation mode shift and safety, are vital to continued support from both the public and elected officials.

We commit to providing support to the Iowa DOT and their partners at the University of Iowa in the following ways:

- Access to previously collected Corridor MPO bicycle and pedestrian counts.
- Assistance with securing permission for the placement of temporary and permanent bicycle and pedestrian counting devices.
- Technical advice and support in planning and execution of the count program, including count location and timing.

The Corridor MPO recognizes the importance of providing safe, efficient pedestrian and bicycle mobility to the citizens of our region. We support the proposed TSIP project and its potential to help us evaluate the impacts of bike/ped projects and to identify safety impacts as we work toward a greener and more active metro area. We look forward to working with the Iowa DOT and its partners at the University of Iowa on this important initiative.

Sincerely,

Brandon Whyte
Multimodal Transportation Planner
Corridor Metropolitan Planning Organization

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Iowa Traffic Safety Data Service (ITSDS)Applicant Iowa Department of Transportation, Office of Traffic and SafetyContact Person Michael D. Pawlovich Title Traffic Safety/Crash Data
EngineerComplete Mailing Address 800 Lincoln Way
Ames, IA 50010Phone (515) 239-1428 E-Mail Michael.Pawlovich@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____
_____Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 250,000 (FFY 2016)Safety Funds Requested \$ 50,000

Iowa Traffic Safety Data Service (ITSDS)

- A. Not applicable.
- B. The Iowa Traffic Safety Data Service (ITSDS) provides timely access to crash analyses and reports from many safety and geographic information systems tools developed by the Iowa Department of Transportation (DOT) and the Center for Transportation Research and Education (InTrans/CTRE) in recent years. The ITSDS facilitates decision-making, effective presentation of information, and education. One major example of ITSDS-related activities is the Office of Traffic and Safety's web-based Profiles website (<http://www.iowadot.gov/crashanalysis/index.htm>).

The ITSDS originated as a major component of Iowa's Section 411 (federal) program for improving state traffic records systems. It was approved by the Iowa Statewide Traffic Records Advisory Committee (STRAC) as a way of attaining the objectives within the statewide strategic plan for safety data. The Section 411 program has now ended and Section 408 funds currently provide the primary support; however, support from the Traffic Safety Improvement Program (TSIP) remains important as Section 408 funds can be redirected, may end with a new federal transportation bill, and are less flexible.

The services provided by ITSDS are available at no cost to Iowa cities, counties, the DOT, and the Governor's Traffic Safety Bureau (GTSB). It has become a highly valued program by state and local safety entities in need of data analysis or to augment the widely distributed analysis tools, SAVER and CMaT.

- C. Amount requested for contract with InTrans /CTRE to support ITSDS: \$50,000

(Supplementary funds typically are supplied via 408/405c NHTSA/GTSB funds in the amount of \$20,000 for Office of Traffic and Safety-related tasks and \$80,000 for GTSB-related activities. Additionally, further 408/405c NHTSA/GTSB funds have been allocated in the past year and likely the upcoming year for database development – intersection, interchange, segment, etc., risk factors development, HSM calibration, and other analytical purposes)

- D. Time schedule: Nominally starting when fund use is granted and ending one year after placing the funds under contract.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/15/16

 Location / Title of Project Increasing Public Awareness about the Dangers of Riding Off-Road Vehicles on the Road

 Applicant Iowa DOT - Office of Traffic & Safety

 Contact Person Chris Poole Title Safety Programs Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone (515) 239-1267 E-Mail chris.poole@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

 Total Safety Cost \$ 25,000

 Total Project Cost \$ 25,000
Safety Funds Requested \$ 25,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

 No

A. Application Certification: Not applicable

B. Narrative:

In recent years there has been a growing trend of recreational riding of off-road vehicles on Iowa's roadways. These off-road vehicles include all-terrain vehicles (ATVs), utility task vehicles (UTVs,) and recreational off-highway vehicles (ROVs). Evidence has shown that this is a dangerous activity that results in preventable deaths and injuries. This trend will continue until citizens are informed about and understand the dangers of this activity.

The goal of this project is to translate the evidence and stories about Iowans killed on the roads into targeted safety messages and to develop a coordinated campaign to get these messages out. Target audiences include law enforcement, public health departments, EMS and other healthcare providers, county officials, and citizens. Public awareness materials may include public service announcements, webinars, presentations, and an informational toolkit.

This project will help raise public awareness about this critical issue. As Iowans are provided with safety information, some will use it to protect themselves and their families by staying off the road and others may share the information with their community to prevent increasing roadway access and the risk of more roadway crashes. Fewer off-road vehicle riders on the road would translate over time into decreasing numbers of roadway deaths and injuries and their substantial economic costs to the state.

C. Estimated Cost: \$25,000

D. Project Schedule: July 1, 2017 through June 30, 2018



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 15, 2016

Location / Title of Project Automating near-miss crash detection using existing traffic cameras

Applicant Iowa DOT – Office of Traffic and Safety

Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

Phone 515-239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) Shauna Hallmark, Peter Savolainen, Skylar Knickerbocker, Mo Zhao, Neal Hawkins

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Safety Cost \$ 60,000

Total Project Cost \$ 60,000

Safety Funds Requested \$ 60,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

Background:

Iowa DOT has deployed over 365 cameras on their freeway system which can be accessed over the network. These connected cameras are currently used for manual verification of events and road-conditions. These cameras have a potential to be used as a sensor to perform real-time detection of near-miss crashes. The near-miss crashes, also called traffic conflicts (TCT), can be defined as “the occurrence of evasive actions, such as braking or weaving, which are forced on the driver by an impending crash situation or a traffic violation.” This technique has gained wide popularity as a surrogate for measuring traffic safety for two main reasons. First, traffic conflicts are more frequently observed than crashes so a large amount of information about safety can be collected quickly. Some researchers have reported that, on average, the ratio of the rate of crash to the rate of serious conflicts lies in the range of 1:2000, so 10 hours of observation of conflicts at a site provides information equivalent to two to three years of reported crash records. Second, it provides an opportunity for traffic engineers to proactively improve the safety of a site instead of waiting for the crash history to evolve. Some of the concerns raised about near-miss technique is that an event might be defined inconsistently when observed by different observers. This issue is eliminated when a consistent threshold is being applied in automatic detection of conflict using traffic cameras. The other concern is accuracy of detection using video cameras. In past, ability of video cameras, especially CCTV cameras, to accurately detect and track vehicles has been less than promising. Thus leading to inaccurate determination of traffic conflicts. In past few years, there has been a significant revolution in the field of image processing. This has been due to the emergence of hardware called a GPU cluster and a machine learning technique called deep-learning.

Deep-learning has revolutionized the field of multi-object detection and classification. The technique uses multi-layered graphs to mimic working of neuron in the brain by providing ability to execute multiple linear and non-linear transformations. In a recent experiment done by Google, Deep-Learning showed twice as much accuracy in identifying objects accurately in 10 million images extracted from you-tube images compared to any other image processing technique. Although these algorithms have been proven to be a very good classifier, in past, their application was restricted because of the fact that as the number of layers increased the training of these graphs became prohibitively slower. This problem was solved by the hardware innovation of GPU cluster. According to NVIDIA “A simple way to understand the difference between a CPU and GPU is to compare how they process tasks. A CPU consists of a few cores optimized for sequential serial processing while a GPU has a massively parallel architecture consisting of thousands of smaller, more efficient cores designed for handling multiple tasks simultaneously.” This provides the solution for quickly training the Deep-Learning networks. Hence, this is an ideal time to revisit the issue of using CCTV cameras as a traffic sensor.

Project: This project proposes to develop a prototype system that demonstrates the potential of using existing CCTV cameras to detect and monitor traffic conflicts. The benefits of such system would be potentially deploy it state wide as a proactive safety detection sensor and also to report safety performance. The project is proposed for freeway system because of ease of availability of video from the existing traffic cameras. This approach can be applied to arterial systems if such data was made available.

Cost: The proposed cost of this project will be \$ 60,000.

Timeline: The prototype development is estimated to be 18 months.

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Analysis: Iowa SPF DevelopmentApplicant Iowa Department of Transportation, Office of Traffic and SafetyContact Person Michael D. Pawlovich Title Traffic Safety/Crash Data
EngineerComplete Mailing Address 800 Lincoln Way
Ames, IA 50010Phone (515) 239-1428 E-Mail Michael.Pawlovich@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____
_____Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 75,000Safety Funds Requested \$ 75,000

Data Analysis: Crash Facts

- A. Not applicable.
- B. For the past decade, national safety analysis efforts have trended towards a more scientific approach. These efforts have centered around development of Safety Performance Functions (SPFs) and Crash Modification Factors (CMFs), culminating in the Highway Safety Manual (HSM) and the online Crash Modification Factor (CMF) Clearinghouse.

However, most of the currently developed SPFs and CMFs were based on data from particular states with different characteristics affecting roadway traffic crashes. These characteristics include design criteria and policies, driver tendencies, vehicle mix, weather, enforcement, and others. Additionally, as many of the “nationally” developed SPFs were developed a decade or more ago, these SPFs are becoming dated. Therefore, the applicability of “nationally” developed SPFs and CMFs to the current characteristics of Iowa is questionable.

The outcome of this project is the continued development of several Iowa-based SPFs beyond horizontal curve, interstate, rural, primary, two-lane, freeway, and expressway which coincide with the HSM Calibration also efforts currently ongoing.

- C. Amount requested: \$75,000
- D. Time schedule: Within two years from contract start, anticipated to be initiated when funds are available.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/15/16

 Location / Title of Project Motorcycle Safety Course Coupons

 Applicant Iowa DOT - Office of Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone 515-239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

 Total Safety Cost \$ 75,000

 Total Project Cost \$ 75,000

 Safety Funds Requested \$ 75,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

- A. Not applicable
- B. The Iowa DOT hosts a Motorcycle Safety Forum (MSF) every spring jointly funded by the Iowa DOT and Governor's Traffic Safety Bureau (GTSB). The portion of funding from GTSB has dropped in recent years. One aspect of the forum used to be coupons for people who wanted to take a certified motorcycle safety course. This was discontinued in 2013 because of lack of funding.

These funds would be used to continue the program of offering coupons for certified Motorcycle Safety Courses. Participants use the coupons as payment for the course, and the presenters offering the course then request payment from the Iowa DOT.

The courses range in cost from about \$130-\$200 and about 600 people attended the 2014 MSF. While this funding level would not allow for all MSF attendees to have a coupon, those that typically attend the Motorcycle Safety Courses are new riders and those that want a refresher course on riding a motorcycle. So coupons would not be needed for every attendee of the MSF.

- C. The \$75,000 will go to offering coupons for Motorcycle Safety Courses that will be handed out at the 2018 MSF. Any remaining coupons or funds will be carried over for the 2019 MSF. Additional funding for the Motorcycle Safety Forum comes from Iowa DOT SMS funds and GTSB funds.
- D. The coupons will be handed out at the Motorcycle Safety Forum in spring 2018. The coupons can be redeemed for courses taken in 2018.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 08-15-2016

 Location / Title of Project In Service Evaluation of Culvert Extensions

 Applicant Khyle Clute - Office of Design, Methods Section

 Contact Person Khyle Clute Title Transportation Engineer

 Complete Mailing Address 800 Linoln Way Ames, Iowa 50010

 Phone 515-239-1862 E-Mail Khyle.Clute@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 60,000

Total Project Cost \$ _____

Safety Funds Requested \$ 60,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

 No

A. APPLICATION CERTIFICATION

Not applicable.

B. NARRATIVE

Current design manuals direct designers to extend culverts to the edge of clear zone before connecting to the wing wall. However, in the case of large culverts, placing vertical drop-offs at the edge of clear zone is still concerning and may warrant protection. In these cases, since a barrier may already be warranted, there exists a potential cost savings by shortening the culvert and connecting to the wing wall just beyond the deflection of the barrier. While introducing barrier would replace one hazard with another, unprotected culverts/pipe openings account for an annual average societal cost of \$33.5 million. Protecting these openings with barrier may be a cost savings by itself, but paired with the reduced construction cost by shortening the culvert, the combination may be even more beneficial.

The goals of this study are:

- Survey State DOTs to determine the height at which a vertical drop becomes a hazard even if placed outside the clear zone. This height would translate to the opening size that should be protected, regardless of location.
- Review crash rates for various culvert offsets and interaction with barriers for known locations.
- Develop benefit/cost per foot of culvert extension and relate to cost of barrier (both installation and presumed increased costs from crashes) to determine combinations of wing wall offsets and barriers for which shortening culverts is cost beneficial.

C. ESTIMATED COST

The estimated cost is \$60,000.

D. TIME SCHEDULE AND COMPLETION DATE

July 31, 2018



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 08-15-2016

 Location / Title of Project In Service Evaluation of Current Clear Zone Guidelines

 Applicant Khyle Clute - Office of Design, Methods Section

 Contact Person Khyle Clute Title Transportation Engineer

 Complete Mailing Address 800 Lincoln Way Ames, Iowa 50010

 Phone 515-239-1862

(Area Code)

 E-Mail Khyle.Clute@dot.iowa.gov

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____

(Area Code)

E-Mail _____

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 120,000

Total Project Cost \$ _____

Safety Funds Requested \$ 120,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

 No

A. APPLICATION CERTIFICATION

Not applicable.

B. NARRATIVE

Current Clear Zone design policy provides offset limits for which fixed objects are presumed to no longer be a hazard and thus do not warrant protection. However, since Clear Zone is not one of the ten FHWA Controlling Criteria, there are no formal requirements for design exceptions when Clear Zone requirements are not met, and thus there is limited review of hazards to determine the rate of incident per hazard type and offset. In reviewing 2011-2015 crashes for fixed object struck, these unprotected hazards result in an average annual societal cost of over \$1 billion. Focusing only on fatal and majors, they result in \$800 million per year. These values represent nearly 1/3 of societal costs from all crashes combined and yet were deemed to be non-hazardous and did not receive design mitigation. To better understand the likelihood and severity of incidents due to various fixed objects, a comprehensive review of these crashes needs to be undertaken to understand whether current Clear Zone guidelines are appropriate and develop a process by which designers can examine benefit/cost ratios for shielding fixed objects given specific roadway conditions.

The goals of this study are:

- Develop benefit/cost ratios for protecting a fixed object given offset and AADT.
- Evaluate current Clear Zone guidelines to determine if Preferred or Acceptable designations should continue or if each fixed object should be evaluated for treatment given the results of goal #1.
- Evaluate current mitigation strategies and their applicability to a given fixed object

C. ESTIMATED COST

The estimated cost is \$120,000.

D. TIME SCHEDULE AND COMPLETION DATE

July 31, 2019



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: 08-15-2016

Location / Title of Project In Service Evaluation of Railroad Signal and Stop Arm Pole Protection

Applicant Khyle Clute - Office of Design, Methods Section

Contact Person Khyle Clute Title Transportation Engineer

Complete Mailing Address 800 Lincoln Way Ames, Iowa 50010

Phone 515-239-1862 E-Mail Khyle.Clute@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Safety Cost \$ 60,000

Total Project Cost \$ _____

Safety Funds Requested \$ 60,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

No

In Service Evaluation of Railroad Signal and Stop Arm Pole Protection

A. APPLICATION CERTIFICATION

Not applicable.

B. NARRATIVE

Current highway design guidelines for railroad signal and stop arm pole protection (Standard Road Plan BA-253) indicate that designers should place steel beam guardrail between the edge of traveled way and the railroad pole in order to protect the fixed object hazard. Unfortunately, many of the poles are located in such a manner that they are within the deflection area of the steel beam guardrail, and thus the guardrail may not be able to protect an errant vehicle as desired, if at all. In fact, installing steel beam guardrail may increase the likelihood of an incident as it replaces a point hazard with a longitudinal hazard, and if struck, may guide the vehicle directly into the pole.

In reviewing other State DOT's guidelines, some indicate that the poles should not receive protection if within 6 feet of the traveled way, likely due to the deflection area of steel beam guardrail. Others indicate that guardrail should not be placed unless protecting some other hazard, typically a steep slope.

An option other than using steel beam guardrail would be to protect the railroad pole using a crash cushion. While crash cushions can be offset further from the traveled way, and thus reduce incidental hits, they are significantly more costly and may not provide a positive return on investment.

The goals of this study are:

- Determine the crash rate into railroad poles without steel beam protection and compare to those with steel beam protection to determine if protecting against this hazard is actually reducing injuries.
- Determine the benefit/cost ratio for protecting with steel beam guardrail or crash cushions given the crash rate per vehicle in relation to AADT.
- Determine what railroad pole designs are breakaway, if any, such that they are designed to safely break away during a crash and thus would not warrant protection.
- Survey State DOTs to determine best practices if a positive benefit/cost ratio is unattainable for a given AADT and the railroad pole is not breakaway.

C. ESTIMATED COST

The estimated cost is \$60,000.

D. TIME SCHEDULE AND COMPLETION DATE

October 31, 2018



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 08-15-2016

 Location / Title of Project In Service Evaluation of Roadway Safety Features

 Applicant Khyle Clute - Office of Design, Methods Section

 Contact Person Khyle Clute Title Transportation Engineer

 Complete Mailing Address 800 Lincoln Way Ames, Iowa 50010

 Phone 515-239-1862 E-Mail Khyle.Clute@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Safety Cost \$ 100,000

Total Project Cost \$ _____

Safety Funds Requested \$ 100,000

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

A. APPLICATION CERTIFICATION

Not applicable.

B. NARRATIVE

The purpose of installing roadway safety features, which include steel beam guardrail, cable guardrail, concrete barrier, and crash cushions, is to reduce the rate and severity of injuries as compared to the presumed more severe hazard they are protecting. However, reviewing crashes between 2011-2015 where one of the sequence-of-events was striking a fixed object that was presumed to be a safety feature, these injuries are still resulting in an average annual societal cost of nearly \$167 million. Looking specifically at fatal and major injuries, they are resulting in \$122 million on average per year.

The intent of this study is to review fatal and major injury crashes to determine if the struck roadway safety feature(s) are performing as designed. The design failure could be either the feature itself, the surrounding roadway design (shoulder, pavement, slope, etc.), or a combination of both.

The goals of this study are:

- Determine if the reason for injury occurred prior to striking the safety feature, in which case the design was not at fault, or if the roadway condition or the feature itself was the reason itself, or at least played a role in causing the injury(ies).
- For situations where the design was partially at fault, determine what aspect of the design may have caused the injury. Some potential aspects are: failure of the product itself, rutting of the shoulder which induced rollover prior to or after the strike, overtopping of the feature leading to vehicle rollover, etc.
- Determine patterns of failure modes above to determine what aspects of design should be reviewed to mitigate future injuries. This could include paving the shoulder all the way to the safety feature, removing curb in front of the feature, increasing the height or shape of the feature, remove product from approved products list, etc.

C. ESTIMATED COST

The estimated cost is \$100,000.

D. TIME SCHEDULE AND COMPLETION DATE

July 31, 2019



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 15, 2016

Location / Title of Project Guidance on the Design and Application of Alternate Intersections

Applicant Iowa DOT – Traffic and Safety

Contact Person Jan Laaser-Webb Title State Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

Phone 515-239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) Anuj Sharma, Skylar Knickerbocker, Neal Hawkins, Shauna Hallmark,

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Safety Cost \$ _____

Total Project Cost \$ 100,000

Safety Funds Requested \$ 100,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

No

Background:

Nationally, approximately 40 percent of all crashes occur at intersection locations. Intersections are also prone to a disproportionate number of severe and fatal injuries. Collectively, these challenges are generally reflective of the increased number of conflict points at intersection locations.

In response to the conflict issue, a number of alternative intersection designs have been developed in recent years that aim to reduce the number of conflicts, particularly those involving left-turning vehicles. As left-turning vehicles also tend to largely contribute to delay, these alternative intersections also have the potential to improve traffic operations, as well. These alternative intersections include modern roundabouts, which are becoming increasingly common, as well as a series of additional designs that include displaced left-turn, median U-turn, and restricted crossing U-turn intersections.

Project: This project is aimed at developing guidance as to intersection-specific factors that are most conducive to the implementation of alternative intersection designs. The study will involve:

1. An assessment of the safety and operational performance of alternative intersections;
2. An inventory of alternative intersections that have been implemented in Iowa;
3. A statistical analysis to compare the safety and/or operational performance of alternate intersections; and
4. The development of a guideline document and process for use in prioritizing candidate locations for alternative intersections.

Time and Cost: The proposed duration of this project is 18 months and the proposed cost is \$100,000.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: August 15, 2016

 Location / Title of Project Safety Issues at Low-Volume Intersections

 Applicant Iowa DOT – Traffic and Safety

 Contact Person Jan Laaser-Webb Title State Traffic Highway Engineer

 Complete Mailing Address 800 Lincoln Way; Ames, IA 50010

 Phone 515-239-1349 E-Mail Jan.Laaser-Webb@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

Total Safety Cost \$ _____

 Total Project Cost \$ 75,000
Safety Funds Requested \$ 75,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain _____
 No

Background:

Intersections continue to be a high-priority safety area given the disproportionate number of traffic crashes, injuries, and fatalities that are experienced at such locations. In states such as Iowa, the diagnosis of safety issues and the identification of countermeasures at low-volume rural intersections is particularly challenging given low traffic volumes, as well as the random and rare nature of crashes on a site-specific basis.

The development of the Iowa intersection database provides extensive information regarding traffic volumes, roadway geometry, and other salient site-specific factors that can be used to assess such low-volume locations through systemic safety analyses. The identification of common issues increasing the frequency or severity of crashes at rural intersections is critical to the development of low-cost countermeasures that can be applied on a system-wide or site-specific basis.

Project: This project aims to identify roadway geometry, traffic control, and driver behavioral factors affecting the frequency and severity of traffic crashes at rural intersections. The Iowa intersection database will be leveraged as a part of this project and it is also anticipated that ancillary factors will be collected in the field or through Google Earth, such as sight distance and other local factors. Multivariate statistical analyses will be conducted to identify safety issues at low-volume and intersections. Separate analyses will be conducted to identify risk factors at high-speed stop-controlled intersections, as well as at unpaved-unpaved intersections. The latter set of locations are of particular interest as various locations have seen the removal of stop signs at ultra-low-volume (<150 daily entering volume) locations. Based upon the results of the statistical analysis, a series of risk factors will be identified that affecting crash frequency and/or severity. Ultimately, low-cost and emerging countermeasures will be identified to address these issues.

Time and Cost: The proposed duration of this project is 15 months and the proposed cost is \$75,000.