# Accelerated Innovation Deployment (AID) Demonstration

Missouri Department of Transportation—High Friction Surface Treatments

1. **Project Abstract** (5 sentences maximum)

MoDOT is applying for AID funding to place a minimum of nine High Friction Surface Treatments (HFSTs) during the 2015 construction season. This project will accelerate the full implementation of HFSTs within each of MoDOT’s seven districts. MoDOT is currently not adding any projects to our Statewide Transportation Improvement Program due to funding constraints; therefore the only way to accelerate the implementation of HFSTs in Missouri is through the AID program. This application addresses both material and construction aspects of the transportation system. HFSTs address the following TDIP program goals:

* Significantly accelerate the adoption of innovative technologies by the surface transportation community,
* Provide leadership and incentives to demonstrate and promote state-of-the-art technologies, elevate performance standards, and new business practices in highway construction processes that result in improved safety, faster construction, reduced congestion from construction and improved quality and user satisfaction, and
* Improve highway efficiency, safety, mobility, reliability, service life, environmental protection, and sustainability.

1. **Project Description**

MoDOT has limited experience with High Friction Surface Treatments; which is one of FHWA’s Every Day Counts Initiatives. By the end of the 2014 construction season, four high friction surface treatments (funded by a Highways for Life grant) will be in place but only within MoDOT’s Central District. The goal of this project is to apply a HFST in every district to expedite full implementation of this important safety technique and to give each district an opportunity to experience the benefits first hand. MoDOT has come to realize that full implementation will only occur when each district has hands-on experience with a new technology or technique. In fact, MoDOT still has one district that does not have a roundabout, a design first implemented in Missouri in August of 2000.

This AID funding would be used to place a minimum of nine HFSTs; one curve will be treated in each of the seven districts along with several high speed intersection approaches within the state. If initial bids come in lower than anticipated, MoDOT will add additional locations.

Improving curve safety and improving intersection safety are two of the “Necessary Nines” listed in Missouri’s *Blueprint To Save More Lives*. The Blueprint identifies strategies that have the greatest potential to save lives and reduce serious injuries, and increasing pavement friction is one of the strategies listed. In 2009 through 2011, 47.9% of fatalities and 41.3% of serious injuries were attributed to vehicles leaving the roadway. The objective of this project is to increase surface friction to keep vehicles on the roadway, especially during wet pavement conditions.

The performance goals for this project are simple, increase surface friction and decrease accidents at the treatment locations. Accident information will be gathered for the three years prior to the treatment and will be gathered at one year and at three years after application. Accidents will be subdivided by severity and pavement condition (dry/wet) at the time of the accident. Previous state experience has shown that crash reduction can be significant. When Kentucky placed HFSTs at 60 locations they saw an average reduction of 78% overall and an 85% reduction in wet-weather related crashes. Pennsylvania and South Carolina DOTs report a before/after total crash reduction of 100% and 57% respectively at trial locations (taken from EDC FAQs for High Friction Surface Treatments.) Based on experience from other states, MoDOT’s goal is to reduce accidents at treated locations by at least 50% and increase friction values by at least 50%.

1. **Innovation Performance**

The HFSTs will be monitored and documented throughout the project and at one and three years after placement. Items of interest are the increase in friction values and the reduction of accidents. Friction values will be measured prior to placement and after placement. Accident data will be collected for the three years prior to placement, at one year after placement and at three years after placement.

The estimated timeline is as follows:

* Once notification of the grant is received, locations will be finalized within one month.
* Plans will be developed and a job special provision will be written within 3 months of the locations being finalized.
* Obligation of funding will be done within five months of notification.
* Letting will take place at the end of calendar year 2014 or beginning of 2015. It is anticipated these will be let in one contract although it is possible the design division will request these to be let in two or three contracts if they believe it will reduce mobilization costs to group them regionally.
* Once the project has been awarded, MoDOT will determine if there will be funding left to add additional locations.
* Friction Testing will be completed before application of each HFST.
* Construction will take place during the 2015 construction season.
* Once construction is complete, friction testing will be measured again.
* At one year, accidents will be evaluated and compared to the previous three year accident history.
* At three years, accidents will again be evaluated to compare the three years prior to placement and the three years after placement.

1. **Applicant Information and Coordination with Other Entities**

This will be strictly a DOT project; no other entities will be involved outside of MoDOT and FHWA.

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1. **Funding Request**

MoDOT requests $1 million in AID funding. The cost breakdown is as follows:

Funding estimate for 9 projects = **$1,062,000**

(See below for estimates per location)

Friction Testing: $6,000 per friction test x 9 locations x 2 test dates: **$108,000**

Before and after customer satisfaction determinations: **$35,000**

(Cost estimate was received from someone that does customer satisfaction projects for MoDOT.)

Total cost: $1,205,000

AID portion: $1,000,000

State portion: $205,000

The following locations have been selected to receive the HFST. If during the development of the plans it is determined that the project is not a good candidate, a similar location within that district will be selected.

Locations:

Northwest District: US 36 EB & WB curve in St. Joseph

Northeast District: RT H from RT E south to MO 47 in Lincoln County

Kansas City District: IS 29 SB to IS 635 SB ramp in Platte County

Central District: WB US 54 curve near Kingdom City

St. Louis District: Mo 370 from logs 12.46 to 12.596

Southwest District: WB MO 360 in Greene County from log 3.9 to 4.121

Southeast District: NB I-55 to NB I-57 Ramp

Intersection approaches: US 61 intersection south of Hannibal and SB MO 291 at Courtney Street in Kansas City.

Approximate Project costs:

Past projects have been around $25/yd2 for the HFST, estimates below are based on an additional $5 yd2 for traffic control, striping and mobilization.

Northwest District: 4,600 yd2 X $30/ yd2 = $138,000

Northeast District: 4,000 yd2 X $30/ yd2 = $120,000

Kansas City District: 3,200 yd2 X $30/yd2 = $96,000

Central District: 4,500 yd2 X $30/ yd2 = $135,000

St. Louis District: 2,900 yd2 X $30/yd2 = $87,000

Southwest District: 4,400 yd2 X $30/ yd2 = $132,000

Southeast District: 3200 yd2 X $30/yd2 = $96,000

Intersection approaches: 4,300 yd2 X 2 intersections x $30/yd2 = $258,000

SUM = $1,062,000

1. **Eligibility and Selection Criteria**

The Missouri Department of Transportation is an eligible entity to apply for the AID initiative. MoDOT has not received any AID funding to date. High Friction Surface Treatments are an Every Day Counts Initiative.

High Friction Surface Treatments align with the TDIP program goals to accelerate adoption of innovative technologies and provide incentives to demonstrate and promote technologies to improve safety. MoDOT has identified increasing surface friction as an important strategy to improve curve and intersection safety, but the limited experience with HFSTs has hampered full implementation of this safety technique. By applying a HFST in each of MoDOT’s seven districts, full implementation will be accelerated.

MoDOT is excited for this opportunity to accelerate implementation of High Friction Surface Treatments and will be ready to obligate the funds within 6 months of notification the grant was approved. The DOT is willing to participate in monitoring and assessment activities regarding the effectiveness of the innovation and will be willing to help disseminate information regarding MoDOT’s experience. MoDOT is willing to accept full FHWA oversight of the HFST projects. A before and after public satisfaction survey will also be conducted by the DOT to determine the public’s satisfaction with the HFSTs.

**Additional Attachments**   No  Yes [**NOTE**: PDF files should be identified by Applicant and Project Title]