AASHTO

AASHTO INNOVATION INITIATIVE

Sponsor

Nominations must be submitted by an AASHTO member DOT willing to help promote the innovation

1. Sponsoring DOT (State): Michigan Department of Transportation
2. Name and Title: Keith Cooper - Local Bridge Program Manager

Organization: Michigan Department of Transportation

Street Address: 425 W. Ottawa St.

City: Lansing | State: MI | Zip Code: 48909

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3. Is the sponsoring State DOT willing to promote this innovation to other states by participating on a Lead States Team supported by the AASHTO Innovation Initiative? Yes or No: Yes

Innovation Description (10 points)

The term "innovation" may include processes, products, techniques, procedures, and practices.

4. Name of the innovation:

Secondary Route Bridge Design Plan Guides

5. Please describe the innovation. Describe how this innovation transforms your existing "state of play."

Of the nearly 6,500 bridges in Michigan that are owned by local agencies, about 1,000 have been assessed as structurally deficient and in need of replacement. Some of the villages, cities and

6. If appropriate, please attach photographs, diagrams, or other images illustrating the appearance or functionality of the innovation (if electronic, please provide a separate file). Please list your attachments here.

Drawings available at:
https://www.michigan.gov/mdot/0,4616,7-151-9625_25885_40558-473913--,00.html

7. Briefly describe the history of its development.

MDOT worked with researchers from Wayne State University to examine bridge design practices around the state; consult with stakeholders, including local agencies and their consultants; and develop a set of bridge designs specifically suited to smaller agencies and low-volume roads.

State of Development (40 points)

Innovations must be successfully deployed in at least one State DOT. The AII selection process will favor innovations that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use.

8. How ready is this innovation for implementation in an operational environment? Please check of the following options. Please describe

- ☐ Prototype is fully functional and yet to be piloted
- ☐ Prototype demonstrated successfully in a pilot environment
- ☐ Technology has been deployed multiple times in an operational environment
- ☑ Technology is ready for full-scale adoption

The drawings are available at:
https://www.michigan.gov/mdot/0,4616,7-151-9625_25885_40558-473913--,00.html

9. What additional development is necessary to enable routine deployment of the innovation? What resources—such as technical specifications, training materials, and user guides—are already available to assist with the deployment effort?

Users need to become aware of the adaptable design drawings and apply them. Present Research Project and it's uses at conferences and technical meetings.

10. Has any other organization used this innovation? Yes or No: Yes
If so, please list organization names and contacts. Please identify the source of this information.

Organization	Name	Phone	E-mail
Kent County Road Comm	Wayne Harrall	(616) 242-6914	wharrall@kentcounty
St. Clair County Road Com	Mike Clark	(810) 388-4027	mclark@stclaircounty
Cogent Civil Engineering, L	Jennifer Doughterty	(616) 868-7488	jen@cogentengineeri
Washtenaw County Road C	Kelly Jones	(734) 761-1500	jonesk@wcroads.org

Potential Payoff (30 points)

Payoff is defined as the combination of broad applicability and significant benefit or advantage over other current practice (baseline).

11. How does the innovation meet customer or stakeholder needs in your State DOT or other organizations that have used it?

Yes, local agencies agreed that galvanized steel, spread box beam, side-by-side box beam, and spread bulb-tee structures shown in the drawings are the most viable bridge types for plan development

12. What type and scale of benefits have your DOT realized from using this innovation? Include cost savings, safety improvements, transportation efficiency or effectiveness, environmental benefits, or any other advantages over other existing baseline practice. Please identify the following benefit types:

Check boxes that apply	Benefit Types	Select a rating from the drop down menu
✔	Cost Savings	4-Moderate to High
✔	Shortened Project/Service Delivery Schedule	5-High
✔	Improved Customer Service	5-High
✔	Improved Quality	5-High
✔	Environmental Benefits	2-Low to Moderate
✔	Organizational Efficiency	5-High
✔	Improved Safety	3-Moderate
✔	Improved Operational Performance	5-High
✔	Improved Asset Performance	5-High
✔	Others (please describe)	Choose an Item

Provide an additional description, if necessary:

By using these plans to replace deteriorating bridges, local agencies can optimize costs with savings in design, construction and maintenance over the lifetime of the new bridges. The plans will also help local agencies meet Federal Highway Administration directives for quality control and assurance

13. Please describe the potential extent of implementation in terms of geography, organization type (including other branches of government and private industry) and size, or other relevant factors. How broadly might the technology be deployed?

MDOT is leading an outreach effort to build awareness and encourage local agencies to take advantage of the bridge designs. This research was presented at the 2018 Michigan Bridge Conference, which is attended by bridge engineers from agencies across the state. These design

Market Readiness (20 points)

The AII selection process will favor innovations that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential.

14. What specific actions would another organization need to take along each of the following dimensions to adopt this innovation?

Check boxes that apply	Dimensions	Please describe:
✔	Gaining executive leadership support	Adopting a design that is successful in Michigan would require the approval of executive
	Measuring performance (e.g. benefits documentation)	
	Improving technology understanding	
	Overcoming financial constraints	
	Addressing legal issues (if applicable) (e.g., liability and intellectual property)	
	Acquiring in-house expertise	
	Resolving conflicts with existing regulations and standards	
✔	Other challenges	Specifications noted in the drawings could be

15. What is the estimated cost, effort, and length of time required to deploy the innovation in another organization?

	Please describe:
Cost	The cost is lower than the normal design cost, as plans already exist.
Level of Effort	The level of effort is lower than the normal design, as plans already exist.
Time	There is a cost saving developing design plans, since plans are mostly

16. To what extent should the implementation of this innovation require the involvement of third parties, including vendors, contractors, and consultants? If so, please describe. List the type of expertise required for implementation.

Communication specialists might be needed to make people aware of this innovation. Bridge engineers need to have professional design skill to know how to apply the drawings.

Submit Completed form to: http://aii.transportation.org/Pages/Solicitation-Submit-Nomination.aspx