Collaborative Hydraulics: Advancing to the Next Generation of Engineering
C.H.A.N.G.E.

https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/change.cfm

Innovation Implementation Stage Definitions	Prompt Questions for Describing the Implementation Stage The following questions are intended to help you determine your current implementation stage. While it is not mandatory to respond to each question, providing some narrative describing your current status will be helpful to the EDC teams.
Not Implementing. The State is not currently using the innovation (Collaborative Hydraulics) anywhere in the State and is not interested in using 2D bridge hydraulic modeling and visualization tools.	Has the state determined that 2D modeling is not beneficial to their project delivery after learning the benefits of 2D modeling? Does the state lack the resources or expertise to begin an evaluation of 2D modeling? Does the state have limited access to 2D modeling training due to course prioritization or funding limitations?
Development Stage. The state is interested in pursuing the CHANGE initiative and the use of 2D bridge hydraulic modeling, however has not had an opportunity to test 2D bridge hydraulic modeling software on a State project. The State is interested in pursuing the innovation or seeking additional information on how to implement it. For example: The state has acquired 2D bridge modeling software and considering its use on projects.	Is the state seeking information on 2D bridge hydraulic modeling and training for their staff/consultants? Does the state have the resources or expertise to begin an assessment of 2D modeling? Has the state hosted specific 2D modeling training for bridge hydraulic modeling or sent staff to the training? (NHI Course 135095 Two-dimensional Hydraulic Modeling of Rivers at Highway Encroachments) Has the state participated in workshops, webinars, or peer exchanges related to 2D modeling? Has the state requested technical assistance from the FHWA Resource Center for 2D modeling?
Demonstration Stage: The state is testing/piloting the use of 2D bridge hydraulic modeling and has used 2D modeling on projects on a limited basis. For example: The state is currently using 2D modeling on a limited basis but needs additional development support	Has the state used 2D modeling for any phase of project development? Has the state compared 2D model results with any previous 1D model results or measured data? Has the state contacted other states to learn from their 2D modeling experiences?
Assessment Stage: The state has been actively using 2D modeling on projects and has concluded that the CHANGE initiative is beneficial and is moving to institutionalize 2D bridge hydraulic modeling in its policies, procedures and guidelines. For example: The state is currently using 2D modeling on project design and plans to include guidance in their hydraulics manual)	Has the state decided to use 2D bridge hydraulic modeling on their projects and currently working to train more staff and integrate it into their policies, procedures, and guidelines? Has the state established an implementation champion or team? Has the state created an Implementation Plan or included 2D bridge hydraulic modeling guidance in their hydraulics manual? Has the state completed a hydraulic analysis and design with a 2D model (either in-house or by a consultant)? Is 2D bridge hydraulic modeling used throughout the states divisions/regions, or only by a portion?
Institutionalized: The state has adopted 2D bridge hydraulic modeling and graphical visualization tools for project delivery, when appropriate and has institutionalized 2D bridge hydraulic modeling in its policies, procedures and guidelines. For example: The state is currently using 2D bridge hydraulic modeling on project designs and has incorporated guidance in their hydraulics manual)	Does the state routinely use 2D bridge hydraulic modeling and graphical visualization tools on complex hydraulic projects, and has 2D bridge hydraulic modeling guidance been integrated into their policies, procedures, and guidance (hydraulics manual)? Does the state have at least one 'champion' who is well versed in 2D bridge hydraulic modeling application and can provide technical direction to others?

Progress Report Questions:

Reporting Period:	**Progress Report #3: January – June 2018**
1) If there has been NO CHANGE on this innovation during this reporting period and the previous Progress Report is still accurate, select "No Change from last Progress Report" and you do not need to complete Questions 2-7.	(Choice) ☐ No Change from last Progress Report ☒ Changes indicated in Progress Report Below
2) Division Contact for additional information:	
3) What is the State's current stage of innovation implementation? Review the Innovation Profile Template and select the appropriate implementation stage for this innovation.	(Choice) ☐ Not Implementing ☐ Development Stage ☒ Demonstration Stage ☐ Assessment Stage ☐ Institutionalized
4) Describe the State's accomplishments for this reporting period (both State DOT and local agency accomplishments). Please provide EDC-4 highlights with good "so what" nuggets. -- What would another state be interested in and/or how could leadership use the information I am providing? -- If the State has advanced to the next implementation stage, consider the prompt questions in the chart and explain the advancements made to support your selection. -- Please include benefits as part of your explanation (i.e. time/cost savings, delay/crash reductions, etc.)	*The Drainage Design Bureau has used 2D modeling in parallel w/ conventional 1D hydraulic models on multiple bridge replacement projects w/ modeling developed internally and by consultants. We are working to implement procedures for acquiring adequate terrain data and to accurately model bridge and channel geometry. We have coordinated w/ the NMDOT Survey to determine best practices and take advantage of new technology for getting sufficient terrain data.* *The results from 2D modeling appear to be more accurate and detailed than what we get from 1D. Once the issues related to developing a larger model are resolved (if appropriate survey limits are set early this is a small incremental cost) then a 2D hydraulic model can be developed faster and with more confidence than similar 1D efforts.*
5) Describe any additional assistance needed by your state.	*We have referenced 2D modeling in the current drainage design manual and identified those scenarios where use of a 2D model is necessary. We are waiting on FHWA guidelines for analysis and design using 2D models before further updating the manual.*
6) Describe any implementation obstacles or lessons learned. Also, indicate if and how your state can provide assistance to others in their implementation of this innovation.	*Identifying necessary survey limits early in the project development cycle and getting adequate terrain data is critical to timely implementation of 2D modeling efforts.*
7) The responses have been coordinated with the necessary transportation agencies and Division Office technical resource.	*(Choice)* ☒ Yes ☐ No