

Scour Critical Bridge FAQ'S

Q: What is Bridge Scour?

A: Bridge scour is the removal of streambed material caused by swiftly moving water from around bridge abutments or piers. Scour can become so deep that streambed material is removed from beneath the abutment or pier footings (known as undermining), compromising the integrity and stability of a bridge structure. Bridge scour is the most common causes of bridge failure.

Q: What are abutments and piers?

A: Abutments and piers are part of the bridge substructure and transfer the traffic load from the superstructure (beams, arch or truss) to the bridge foundation. A pier is a vertical support situated between the abutments (end of the bridge) of a multiple span bridge.

Q: How are bridges determined to be Scour Critical?

A: Bridges are determined to be scour critical from the bridge inspection data that is obtained from field observations made during each bridge safety inspection by certified bridge safety inspectors.

Q: What is a Scour Plan of Action (POA)?

A: A Scour POA is a comprehensive document developed for each scour critical bridge which provides a single source of information pertaining to scour inspection, flood monitoring, and a schedule of countermeasures that have been recommended by bridge inspectors to protect a bridge from scour and stream stability problems. The POA is a different document from the Monitoring Log (see below).

Q: What is a scour countermeasure?

A: Placement of riprap (large rock) in close proximity to the bridge foundations that protects the underlying streambed against erosion and scour caused by fast flowing water.

Q: What is the purpose of Scour Plan of Action?

A: The Scour POA serves two purposes:

- The POA establishes a systematic process of monitoring and closing bridges to ensure public safety during a significant flood event and criteria for inspection and re-opening after a flood event.
- Assists bridge owners to program and prioritize the installation of scour countermeasures to protect scour critical bridges from flood damage.

Q: Why is a Scour Plan of Action required?

A: Bridge owners are required to develop POA's for scour critical bridges and monitor those bridges under the 2005 National Bridge Inspection Standards (NBIS) in the Code of Federal Regulations, Section 650.313(3)(3) Bridges that are scour critical. Prepare a plan of action to monitor known and potential deficiencies and to address critical findings. Monitor bridges that are scour critical in accordance with the plan.

Q: What are the scour critical bridge categories and what do they mean?

A: In Pennsylvania, scour critical bridges are categorized based on the bridges vulnerability to scour. Category A is the most susceptible to scour while Categories B & C, respectively, have decreasing scour vulnerability. Since Category A bridges are most vulnerable to scour, higher priority and frequency are given to these bridges for monitoring.

Q: How often should scour critical bridges be monitored?

A: The required minimum frequency for monitoring Category A bridges is once every 4 hours from the onset of monitoring. Monitor Category B & C bridges once every 12 and 24 hours, respectively.

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Q: Do I need to monitor bridges that are not classified as scour critical with Category (A, B or C)?

A: Many bridges are not classified scour critical and therefore do NOT need to be monitored during floods. However, nearly all bridges which cross waterways have some degree of vulnerability to scour damage or washout caused by significant flood waters.

Q: Who can monitor scour critical bridges?

A: Municipal employees and local volunteers can monitor scour critical bridges including road masters and road maintenance crews, emergency management personnel or volunteer fire police.

Q: Do I need to be an engineer or bridge inspector in order to monitor scour critical bridges?

A: No, PennDOT uses road maintenance crews to monitor scour critical bridges on state highways. However, familiarization with scour monitoring procedures should be completed prior to flood events.

Q: How can I receive notifications of the possibility of severe weather and flooding?

A: National Weather Service Alert websites at: <http://alerts.weather.gov/cap/pa.php?x=1> and <http://alerts.weather.gov/cap/pa.php?x=3> provide current weather Watches, Warnings or Advisories for Pennsylvania. PennDOT also provides weather and travel information at: <http://www.511pa.com>

A: You can also receive direct weather alerts by email or cell phone via text/SMS messages through the Commonwealth of PA Alert System. These updates can be received by visiting the AlertPA website at <https://alert.pa.gov/> and registering as a new user.

Q: What resources are available to help municipalities with information and training on this issue?

A: PennDOT developed a Local Scour Critical Bridge Map using an internet-based map application that identifies and locates all local scour critical bridges statewide by selecting a specific county:

- The Scour Critical Category (A, B, or C) of scour critical bridges are designated by color.
- Specific symbol shapes differentiate between county and township owned bridges.
- A pop-up dialog box containing additional information, including a hyperlink to the Scour Critical Bridge Monitoring Log, is available for each bridge by clicking on the bridge location symbol.

Q: What documents must be used when monitoring Scour Critical Bridges?

A: A bridge-specific monitoring log sheet is available on the Local Scour Critical Bridge Map pop-ups. This provides quick access to a monitoring log that can be printed and filled out during each visit to a scour critical bridge when a flood event occurs. **Note that, after a monitoring log has been filled out during a flood event, it must be kept with the bridge file information already retained in your records.**

Q: Where do I find the Local Scour Critical Bridge Map on the internet?

A: The link to the Local Scour Critical Bridge Map is available at PennDOT's website at <http://www.penndot.gov/ProjectAndPrograms/Bridges/Pages/Local-Scour-Critical-Bridge-Information.aspx>.

Q: Where do I find additional information pertaining to scour critical bridges on the internet?

A: The PennDOT website noted above has additional training information and is intended to be a learning center for local bridge owners to become more familiar with the policies and procedures to follow when a flood event occurs.

Q: Who can I contact if I have additional questions?

A: Please contact your PennDOT Municipal Services Supervisor in the PennDOT District Office – contact information is available at

<http://www.penndot.gov/Doing-Business/LocalGovernment/MunicipalServicesRepresentatives/Pages/default.aspx>