Scour Memo Update

(for existing bridges)

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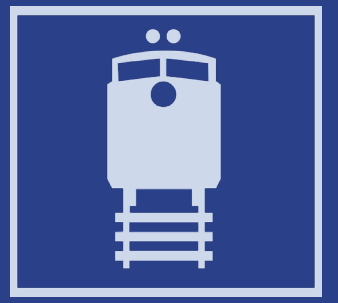


Hydraulic Scour Memo Changes

- Added language in Part A explaining that bridge inspection scour vulnerability rating does not have to equal the scour memo determination rating

- Removed item in Part B & C about if scour countermeasures are in place, not scour critical. This will be defined by bridge design and bridge inspection instead of within the hydraulic scour memo.

Hydraulic Scour Memo Purpose

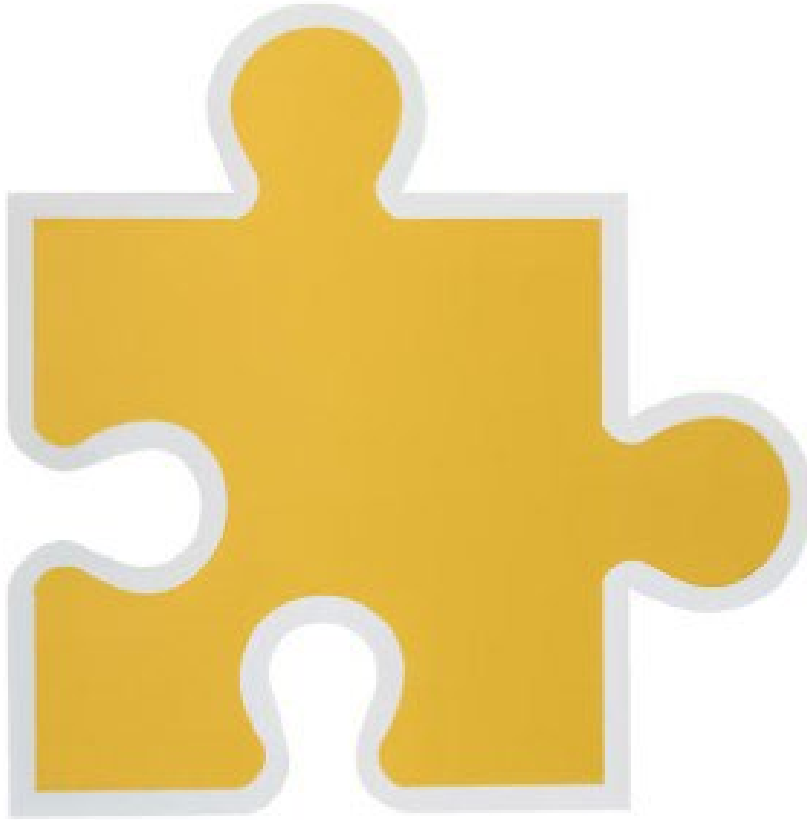
(for existing bridges)

- Model the hypothetical scour depth (100 and/or 500-year storm)
- If hypothetical scour depth occurs, what is the risk to the bridge
- Recommend scour countermeasure protection

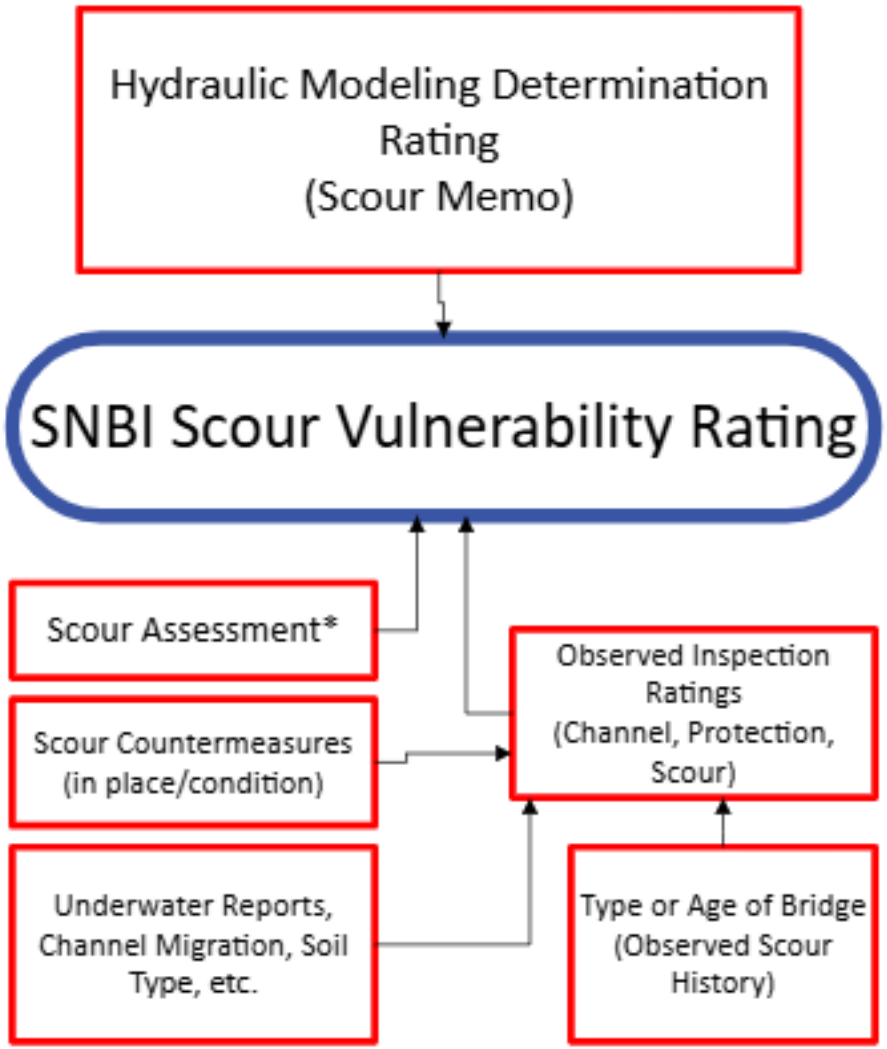
A Piece of the Puzzle

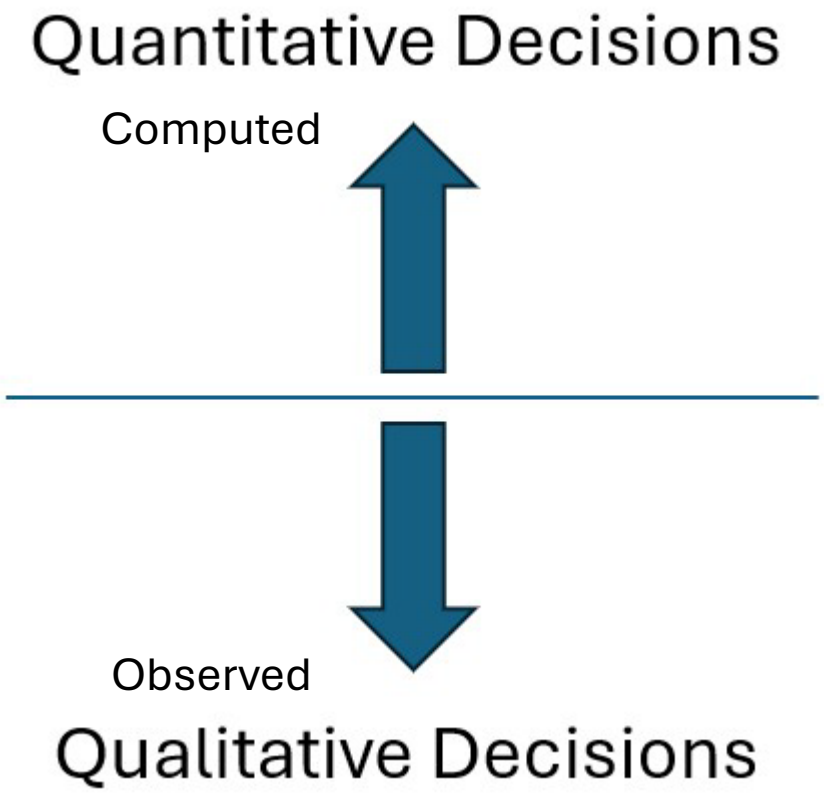
- Hydraulic Scour Determination Rating is only PART of the overall SNBI Scour Vulnerability Rating.

- Hydraulic Scour Determination Rating and SNBI Scour Vulnerability Rating do not have to equal – although many times they do



Scour Vulnerability Rating Factors





* Scour Assessment required, if no modeling analysis

New SNBI Scour Vulnerability Rating

- **SNBI Code A:** Best condition, like NBI 113=9 or 8, indicating minimal risk.
- **SNBI Code B:** Good condition with designed, functioning scour protection (like NBI 113=8).
- **SNBI Code C:** Temporary or non-designed protection present; considered scour critical; requires a Scour Plan of Action (POA).
- **SNBI Code D:** Poor condition, like NBI 113=3 or less; considered scour critical; requires a Scour POA.
- **Codes 0 or U:** May be used if a POA is required but not yet implemented, also indicating a critical condition.

SNBI Codes B & C cover scour countermeasures

Scour Memo Changes

Added Language to Part A of the Scour Memo

> If scour countermeasures were previously installed and the bridge engineer of record or district bridge asset engineer for structures not currently in the progam has verified the scour countermeasures are still adequate in size, placement, and condition as recommended above, the SNBI (B.AP.03) Scour Vulnerability rating can be changed accordingly, but the scour analysis determination rating in this memo will remain as is. Designers should state in the Bridge Rehabilitation Report and plans that scour countermeasures are in place and verified as of the date of verification.

Scour Memo Changes

Removed Language in Part B on Scour Countermeasures

Part B Bridge Scour Status (once determination is made, send memo back to INDOT Hydraulics)

☐ Not Scour Critical – Part C not applicable

☐ Scour Critical

☐ Final Determination - The scour countermeasures indicated in Part A of this memo shall be installed, even if the bridge may have sufficient structural and geotechnical capacity in the scoured condition. Part C not applicable

☐ Contingent Determination - If structural and geotechnical analysis indicates that the existing foundations can accommodate all design loads while considering the potential loss of supporting material to the scour depths given in Part A of this memo, the Bridge Engineer of Record may consider the bridge to be Not Scour Critical. All applicable load cases shall be considered to ensure that the foundations are adequate for all vertical, transverse, lateral, and flexural loads. Special attention should be given to changes in bearing types during bridge rehabilitation projects that could lead to changes in the distribution of longitudinal forces and thermal restraint induces forces to the substructure units. In cases where the installation of scour countermeasures is not anticipated to result in significant environmental or economic impacts, the Bridge Engineer of Record may choose to forego this investigation and consider the bridge to be Scour Critical.

☐ ~~Contingent Determination - If Part A indicates that the scour countermeasures shown in the existing plans are sufficient, the Bridge Engineer of Record may verify that these countermeasures are still in place and thereby determine the bridge to be Not Scour Critical due to the presence of previously installed scour countermeasures.~~

Conclusion

- Hydraulic Scour Determination and Scour Vulnerability are not the same

- Hydraulics will propose scour countermeasures based on modeling analysis results; but whether the countermeasures have been placed per design will not be part of the Hydraulic Scour Determination.

  This will be determined by:

  - Bridge Design Processes
  - SNBI Scour Vulnerability Rating