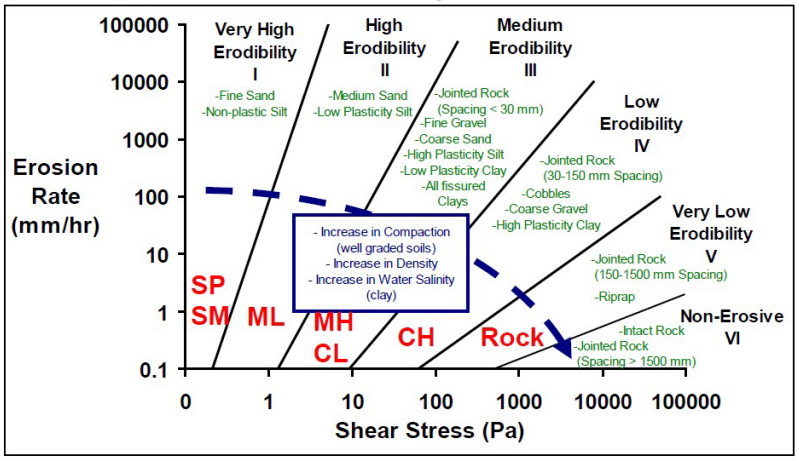
WSDOT 2023 Scour Training

5/30/2023 – 6/01/2023

Module 3: WSDOT Scour Policies (Julie Heilman, Amy Leland, Andrew Fiske)

- **Q: Julie mentioned updates to the Hydraulics manual are coming this spring. Was that the May 14, 2023 update or is there another update coming soon?**
  - Yes, the May 14, 2023 update is the most current. The Hydraulics Manual may be updated annually. Please confirm with HQ Hydraulics you are using the correct version of the manual for your project.
- **Q: When are the plans prep manual updates anticipated?**
  - Plans Prep Manual updates should be available in Fall 2023. This will include updates to the stream series (the layout, the profile, and the detail sheets).
- **Q: If 50-yr event produces the largest scour among all flow events, it would still not be scour-check or design flood?**
  - If the 50-year event produces the largest/greatest scour for all flow events assessed, the corresponding depth/elevation of scour would be used as the scour design flood and scour check flood.
- **Q: Are there plans to include a similar minimum scour depth for 4-sided structure?**
  - Bridges and 3-sided structures have a minimum scour depth of 3 feet. If calculated scour is less than 3 feet, than assume 3 feet of potential scour. Currently, we are not changing the minimum scour design criteria for 4-sided structures. The current criteria for 4-sided structures assumes total scour + 2 feet. Depending on the complexity and the dynamics of the system, we may require that the complexity features be part of the surface to better estimate local scour.
- **Q: How is the minimum 3' total scour requirement being applied? To all existing designs, or to new ones moving forward?**
  - It depends on which hydraulics manual the contract follows.
- **Q: Should minimum scour be included in the PHD?**
  - Yes.
- **Q: Can the erodibility index be part of the geotech memo as well? Can blow counts be translated to erosion resistance?**
  - In our geotechnical scoping memos that we have produced in the last year or so, we are providing a relative "Erodibility" for each unit encountered in the geotechnical investigation. The materials resistance to erosion is based on a few different factors including density, which we correlate to blow counts. But, more importantly it is related to grain size for granular deposits and to plasticity for cohesive deposits. So, we cannot directly connect blow counts to erodibility. In our geotechnical scoping memo, we give it an erodibility classification based on the HEC 18 plot discussed in Module 6.
  - We are developing an Erodibility Index for all geologic units; this research is ongoing and will inform future guidance.

USCS Classification and Erodibility



HEC 18 2012

- **Q: Can we request angle of repose from the geotech boring report? The boring sediments are usually a mix of materials, which makes it difficult to figure out that's the angle of repose through the charts available online.**
  - The geotechnical engineer will be providing a recommendation for the slope angle. It may or may not be the "angle of repose" depending on the site soil type and stratigraphy. To clarify the "angle of repose" or slope inclination recommendation will be provided during the geotechnical design phase, and will not be provided in the geotechnical scoping memo.
- **Q: What are the general responsibilities and scour-training requirements of the geomorphologist on the Stream Team and/or Review Team?**
  - A geomorphologist contributes to scour analysis and therefore a geomorphologist completing scour analysis or review is required to complete WSDOT's Scour Certification program by January 1st, 2024.
- **Q: How are maintenance access needs for scour countermeasures determined? I do see the guidance in the roadside manual but there seems to be some determination as to whether a countermeasure warrants access.**
  - Maintenance access is determined through coordination with the local area maintenance and as documented in the WSDOT Roadside manual. It is dependent on the conditions and constraints of that site (e.g., if the site is a deep ravine).
- **Q: What is the scour policy related to wood and other complexity features?**
  - Local scour must be calculated for wood and complexity features.
- **Q: If you widen a bridge and come up with total scour much larger than the existing structure foundation, how do you design/construct the extension?**
  - Your new foundation would need to be designed based on the total scour that you calculate. If you are extending the structure (e.g., leaving an existing pier in place) there are scour countermeasures that could be applied and may be required to protect the existing structure.
- **Q: Regarding Amy's portion of the presentation and the summary of bridge design elements associated with scour depth—with or without lateral migration, scour**

countermeasures, etc.—is the information summarized in figures also summarized in a table format?

- There is no table format.