

Common MOA HEC RAS Issues Flagged By FMP (11/09/09)

It should be noted that this list is not a definitive list of all that is reviewed during an MOA review, but is provided as a guide to make sure the basic items are addressed properly.

1. Confirm if **hydrology** in effective model varies from the FIS or not. In many cases HEC2 models will be forced to use flows from the effective model versus the FIS in order to produce duplicate effective models that match the effective results.
2. **Boundary Conditions.** If you are using a truncated model then you should use a known water surface elevation the majority of the time and tie-in to within 0.5-ft of the effective model at the upstream cross section in the model. Otherwise if the model is not truncated the boundary conditions should not vary from the effective model (anything may be possible, but there should be overwhelming evidence that the boundary condition is incorrect before it is revised from the effective model and then it will only be done in the corrected effective and additional models).
3. **Floodway or Encroachment Surcharges;** make sure they are not over one foot or are negative in the Corr Eff or Revised Models.
4. **Revised – Corrected Effective WSEL's;** make sure it is negative (revised WSEL's are lower than corrected Effective WSEL's) for MOA's.
5. You should not used **fixed water surface elevation** points at any locations in your models.
6. **Bridge modeling methods** should be the same for all models unless the water surface elevations are such that the produce a different flow condition through the structure. If a different flow condition is seen and adjusted for in the modeling then it should be discussed in the project narrative.
7. **Manning's "n" changes** should be justifiable and stated in the project narrative. Manning's "n" changes without documentation will not be accepted under the MOA.
8. **Contraction and expansion coefficients** should be 0.3 and 0.5 respectively for sections 4,3, and 2 around structures. Some contractors will choose to add an intermediate cross section in between effective sections 4 and 3 or effective sections 2 and 1 and this can sometimes adjust the contraction and expansion values, but this should be documented in the project narrative if done. In this instance we would accept leaving the effective cross sections contraction and expansion coefficients alone and if the additional section is in between 4 and 3 then assign contraction and expansion values of 0.3 and 0.5 respectively. If it is below section 2 then a judgment call about expansion will need to be made and documented.
9. **Center reach lengths** should be the upstream station minus the downstream station. When these do not line up we notice it. Sometimes it is commented on and sometimes not depending on the effective model. Either way attention should be paid to reach lengths during the model build. Especially when adding in new cross sections or adjusting effective cross section locations.

10. **Encroachment station placement** should tie-in with the effective model stations at the upstream and downstream cross section in any truncated model. Other than that all floodway encroachment stations should be placed in appropriate locations. They should be contained by the 100-yr floodplain boundary, be outside of bank stations and not be placed in the ineffective flow areas, etc.
11. **BSR should match the bridge deck information** in the hydraulic model and datum adjustments should be accounted for.
12. **Watch for datum adjustments.** For models with different datum's, make sure that boundary conditions are adjusted along with geometry. Make sure all plans (Dup Eff, Corr Eff and Revised) are adjusted.
13. **Geo-reference** cross sections added to any model already geo-referenced in all models.
14. Make sure your **bank stations are containing your stream** centerline in the geometric window from HEC-RAS.
15. **Ineffective areas**; make sure up and down stream act together on either side of bridge i.e.) being either effective or ineffective (together).
16. **Model Submittal To FMP**; only submit models with the same profiles that the Effective model used. If, say our design year is a 25yr event, add that profile and save as a design model but do not submit to FMP. Make sure all runs have an output file saved. Omit all extraneous runs and files.
17. **Levees** are not to be used unless it is a certified levee. Other techniques exist to block effective flow in the HEC-RAS environment.