Copper River EVOS

95% Geotech Report Comments:

Reviewer: Bill Rice & Heather Hanson, USFWS

1. We strongly prefer culverts with closed bottoms for these projects for the following reasons:
   A. Concrete footers take longer to install than bottomed pipes and more accuracy in survey
   B. Concrete footers likely have to be pre-fabricated and shipped from Anchorage. Based on our experience, pour in place is not recommended due to risk of flooding construction site over time and amount of time involved to cure.
   C. Full-bottomed culverts act as one large footer and are at less risk of forces that may shift concrete footers over time. Given we may suspect significant water table variability and the less-competent foundations under some of these locations, going this route will reduce risk over the long term.
   D. Based on our experience, full-bottomed culverts perform adequately in similar soils with 2 feet or less bedding material. It would be good to compare what DOT designs in the area have had in the past for bedding.

2. Please revise the geotechnical report to include recommendations for bottomed culverts. We should also agree on a load rating and minimum cover for the geotech report recommendations with ADOT's input.

Draft H&H Report comments

Reviewer: Heather Hanson, USFWS

1. Please include a record of the conversation with ADOT O&M staff in this report regarding flood history at these sites.
2. It would be good to compare the conservative flows that have been predicted here with flows that do not include the additional "conservative" drainage areas and to see if they meet the 0.8 HW/D ratio requirements.
3. We typically do some analysis comparing the bankfull discharge based on the channel characteristics to the predicted 2 year flood flow to see how these correlate. While we expect these are relic channels, it would be good to see if this analysis indicates that they are relic channels especially given the magnitude of the flood flow prediction.
4. I would like to incorporate the gage data that has been collected in this analysis before the design proceeds any further. Franklin will provide an update on when he expects to have that data available.
5. Once the gage data is available, please look at the synthetic width method in the latest USFWS culvert design guidelines for predicting an optimal bankfull width for these crossing.
6. Please make sure we have buy in from ADOT on the final flood design flows.