
April 2013 Update

Copper River Highway

Bridge 339, Cordova Alaska

AKSAS Project # 60555

April 18, 2013

Update

We have recently completed several key steps in the preliminary design process:

- With the assistance of U.S. Geological Survey hydrologists, our hydraulic engineers have streamflow estimates, channel survey data, a river model to evaluate various design scenarios, scour depth estimates and water surface elevation information.
- Our highway designers have developed the horizontal and vertical road alignment.
- Our structural (bridge engineers) have developed a preliminary bridge design based on the hydraulic information and highway design criteria.

Review and evaluation of the preliminary design has raised important questions relating to constructability and compatibility of the proposed bridge with site specific challenges. This is an uncommon bridge project because the river is so deep (almost 70-feet) with very fast moving currents, and we do not presently have access to the far (east) bank. Fundamental questions we seek to answer include:

1. How to transport construction equipment and materials across the river?
 - a. Using an ice road during the winter to cross the river is not predictable or dependable due to fluctuating coastal temperatures and snow depths. Ice thickness is temperature and snow cover dependent.
 - b. Winter construction is known to be challenging and may not be feasible due to the extreme snow fall and wind on the delta
 - c. We don't know if a temporary floatable bridge can withstand the fast-moving river current.
2. How to remove the existing bridge and build the new bridge?
 - a. Bridge demolition and construction requires access to the far end (east) approach embankment which has completely eroded away.
 - b. Construction of a temporary bridge adjacent to the existing bridge may be impracticable (due to extreme costs). The temporary bridge would have to accommodate deep and fast moving river currents.
 - c. Barge access to the site would likely be hindered by sand bars and shallow water depths across the braided delta. We are also skeptical a large barge could be anchored in the fast moving river current.
 - d. The deep and fast moving river current would make pile placement and driving operations challenging. Additional assessment is needed to determine if pile driving operations are feasible under these conditions.

These questions introduce unacceptable risks to the project. We have determined the project would benefit with assistance from a specialized Bridge/Engineer/Construction Consultant. We intend to procure a consultant to evaluate the preliminary design for constructability, develop a sequenced method of construction and develop an independent construction cost estimate. In addition the consultant will develop recommendations for alternative bridge concepts, construction methods and cost estimates that may be more compatible with conditions at the site.

Then a preferred design alternative will be chosen and used to prepare an environmental document analyzing project impacts. Once the environmental document is approved we will develop and submit Corps Wetlands, Fish & Game, and Coast Guard permits for review and approval. We expect two years will be required to obtain all required permits. At the same time we will begin the right-of-way acquisition (ROW) process for bridge/river guide banks that extend beyond the existing ROW limits.

We plan to perform geotechnical field and laboratory investigations after a preferred bridge design is chosen. This is expected to be the summer field season of 2014. Once the geotechnical lab data has been reduced the hydraulic design, foundation design and bridge design will be coordinated to complete the final design and prepare contract documents for advertising.



Figure 1 – Bridge 339 looking south August 14, 2012

Schedule Update

Progress:

1. Received the reduced survey topographic data mid November 2012
2. Preliminary Civil design completed late November 2012
3. Preliminary Bridge & Hydraulic design completed early January 2013

Current Schedule:

1. Summer 2013 – Procure Bridge/Engineer/Construction Consultant
2. Winter 2013/2014 - Evaluate preliminary design & develop alternate suitable bridge designs
3. Winter 2013/2014 - environmental document approval, begin permitting
4. Summer 2014 – field bridge foundation investigation
5. Winter 2014/2015 thru fall 2015 – final design
6. Winter 2015/2016 – permitting & Right-of-Way acquisition complete
7. Winter 2015/2016 – advertize for construction bids
8. Summer 2016 – construction