



MEMORANDUM

TO: Elizabeth Nijkamp, Engineer Review Manager, El Paso County

FROM: Kyle R. Campbell, P.E. – Division Manager

DATE: Comments 7/28/21

SUBJECT: **On-Call Contract #17-067H-1; PO#8113073**
Bridge Reviews
Task Order #6: Mesa Top Bridge Submittal – Third Review

This memorandum provides a list of comments for the 3rd Submittal of the Mesa Top Bridge, based on requirements in the County's Engineering Criteria Manual (ECM), 2019 CDOT Standard Specifications for Road and Bridge Construction, Current CDOT Bridge Design Manual and the Current CDOT M&S Standards Plans.

Please find below the responses to the aforementioned comment letter. Responses to review comments are shown in **BOLD** below the comment.

COMMENTS

There were multiple comments from the second submittal which were not addressed. The remainder of the comments on this third submittal apply to the new HEC-RAS model which was not previously provided.

Per El Paso County's list of documents typically required for the Structure Record, the following documents have still not been submitted as previously requested:

- Project Provisions – It was noted with the 2nd submittal that no Project Provisions were required for the bridge structure. A similar note on the applicable project provisions for the superstructure and channel work needs to be provided.

RESPONSE: See letters provided from Contech and Classic Consulting with resubmittal.

Hydraulic Submittal

HEC-RAS Output and Scour Calculation comments:

1. Proposed conditions section 700 shows encroachment for both Qs (3123 and 1932) on the left overbank. The contraction coefficient for that section should be increased. A typical value of 0.3 is often used.

RESPONSE: A 0.3 contraction coefficient was used as reflected in the modeling provided to Elizabeth.

2. Pier width is shown as 4 feet in the contraction scour calc which does not match the plans. (Comment 7 from this section in Second Review memo).

RESPONSE: A 3' rounded pier was modeled as provided to Elizabeth.

3. The ground geometry in the bridge cross-section shown in the contraction scour does not match the ground geometry of the same section in the HEC-RAS model. Please make sure the correct geometry is used in the scour calculations. In general, confirm proposed ground geometry at the bridge. The Bridge Hydraulic sheet shows sections at the bridge with a high point in the middle of the channel, but the pier scour calc and the HEC-RAS model shows those high points removed at the bridge sections. Also, see next comment about the Q100s. The contraction scour should be run with the higher Q if that is the design flow.

RESPONSE: HEC-RAS modeling provided to Elizabeth separately from EDARP due to files not allowed in EDARP.

Hydraulic Report:

1. Where did the soil D50 come from that was used in the contraction scour calculations? How was the riprap sized? Please provide riprap sizing calculations.

RESPONSE: Rip-rap sizing provided in Appendix of report.

2. Add discussion about increase in water surface elevation at section 700 from 7056.80 ft (existing conditions) to 7056.89 (developed conditions). Is this increase within the criteria to not require a CLOMR for this project?

RESPONSE: The elevated El Paso County flows used for modeling the bridge reflect water surface elevation changes. When using the much lower FEMA flows, no impact warranting FEMA engagement is shown.

3. Make sure the final version of the report includes all calculations and supporting documentation like the complete scour calcs, riprap sizing, HEC-RAS print outs, etc.

RESPONSE: See included HEC-RAS section print-outs and owner info in the revised report.

Bridge Hydraulic Information Plan Sheet:

1. How are the plan view limits of riprap being defined? What is the riprap size? Is there bedding or geotextile proposed? (Comment 1 from this section in Second Review memo).

RESPONSE: As reflected on the "Bridge Hydraulic Information" sheet in the Appendix, 24" rip-rap is proposed over Mirifi fabric to a point 5' horizontally from the toe of slope and with 1' off freeboard as reflected in the sections.

2. Show scour limits (Comment 2 from this section in Second Review memo).

RESPONSE: Scour limits are provided within Scour Analysis section of report. We can add to Plan View sheet if desired.

Contech Superstructure Calculations and Plans:

1. Dimensions of inside top flange splice plate does not match calculations. Update calculations or plans for applicable correct dimensions.

RESPONSE: Documents provided.

2. Bottom longitudinal reinforcing in deck on plans doesn't match calls.

RESPONSE: See revised documents provided.

Please do not hesitate to contact me with any further questions or concerns you may have regarding this project.

Sincerely,

A handwritten signature in blue ink that reads "Kyle R. Campbell". The signature is written in a cursive, flowing style.

Kyle R. Campbell, P.E.
Division Manager

Sm/117560/Letters/Response to Memo dated 062921