Memorandum

DATE October 11, 2016

TO Jason Jurgens, Jon Barber, Ryan Walkowiak

FROM Julie Wells, Kevin Donahoo

SUBJECT CN 42575 Ord South – Addition of 23 Code of Federal Regulations (CFR) Section 650.111 parts (b), (c) and (d) to the environmental document summary

23 CFR Section 650.111 (b) Location studies shall include evaluation and discussion of the practicability of alternatives to any longitudinal encroachments.

There in one longitudinal encroachment along this project. The work in this location is consistent with the rest of the project, involving milling, widening 2.5 feet left and right, and resurfacing. The change in the roadway section at this longitudinal encroachment location is due to the superelevation correction at the horizontal curve and widening. This was evaluated in the floodplain analysis and will have no impact on the base flood elevation or conveyance of floodwater. The changes fall within the Zone A Floodplain regulation's allowance of up to a one-foot (1-ft.) cumulative increase in the 100-year Base Flood Elevation for changes in a floodplain.

Alternatives to this longitudinal encroachment would include:

- *Installation of guardrail – In addition to the an increase in project cost, the guardrail itself is an additional obstacle along the roadway which would not be present with the grading required to correct the superelevation in this area and for the shoulder widening needed to meet minumum design standards.*
- *Not widening the roadway – This option would not meet the need of the project or the transportation system.*

23 CFR Section 650.111 (c) Location studies shall include discussion of the following items, commensurate with the significance of the risk or environmental impact, for all alternatives containing encroachments and for those actions which would support base flood-plain development.

(1) The risks associated with implementation of the action are as follows:

According to the hydraulic investigation and analysis completed for the floodplain certifications on this Project, the maximum increase in the Base Flood Elevation at any of the encroachment locations on the Project is 0.25 feet, or approximately three (3) inches. At a majority of the locations there will be a decrease in the Base Flood Elevation. At several locations there will be no increase in the base flood elevation. This will not increase the potential for loss of life or property, and therefore would not be considered a significant risk.

(2) The impacts on natural and beneficial flood-plain values,

Natural and beneficial floodplain values include, but are not limited to, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, forestry, natural moderation of floods, water quality maintenance, and groundwater. There are no significant encroachments associated with this Project; therefore this project will not have a substantial

adverse impact on the natural and beneficial floodplain values. Since it is not a significant encroachment, floodplain conveyance would not significantly change and floodplain characteristics would be maintained.

(3) The support of probable incompatible flood-plain development,

As defined by the FHWA, the support of incompatible base floodplain development will encourage, allow, serve, or otherwise facilitate incompatible base floodplain development, such as commercial development or urban growth. The proposed improvements on this Project would maintain local and regional access to existing rural and agricultural areas and would not create new access to undeveloped lands. Therefore, this highway improvement Project would not support any incompatible floodplain development.

(4) The measures to minimize flood-plain impacts associated with the action, and

The floodplain analysis and certifications have been completed to comply with floodplain regulations and show minimal impacts to the floodplains along this Project. The effect on the floodplains as a result of this project, as well as the certification that shows it meets floodplain regulations, has been communicated to the local floodplain Administrators and permits have been obtained.

Other measures employed to minimize floodplain impacts associated with this action include minimizing grading by tying in the foreslopes as soon as possible from the edge of widening. The roadway grade raise with this overlay achieves the pavement depth necessary to support the traffic using this highway and it has been minimized without compromising the structural integrity of the pavement. These measures have minimized floodplain impacts while still meeting the need of the project.

(5) The measures to restore and preserve the natural and beneficial flood-plain values impacted by the action.

There will be limited impacts to the natural and beneficial flood-plain values of the floodplains along this Project. Since there will be temporary soil disturbance during construction activities, sediment and erosion control best management practices will be utilized during construction and disturbed areas will be seeded following construction.

23 CFR Section 650.111 (d) Location studies shall include evaluation and discussion of the practicability of alternatives to any significant encroachments or any support of incompatible flood-plain development.

As defined in 650.105, a significant encroachment involves a significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route, a significant risk meaning potential for loss of life or property, or a significant adverse impact on natural and beneficial flood-plain values.

This project does not result in a significant potential for interruption or termination of this transportation facility which is needed for emergency vehicles or a community's only evacuation route. It also does not result in a significant risk or potential for loss of life or property. This project does not result in a substantial adverse impact on natural and beneficial flood-plain values. This highway improvement Project would maintain local and regional access to existing rural and agricultural areas and so would not support any incompatible floodplain development.

There are no significant encroachments as a result of this Project and it does not support incompatible floodplain development.