

Memorandum

DATE February 6, 2020

TO Dillon Dittmer, Jamie Hawkins, Brad Garbers, Mercy Manzanares

FROM Robert Carnazzo

THRU Julie Ramirez and Jason Dayton

SUBJECT Floodplain Certification — In Gordon & South, 27-4(109), CN 51541

In Gordon & South is a resurfacing, restoration, and rehabilitation project located in Sheridan County, Nebraska, along Highway N-27. The project will begin approximately 2000 feet south of the Niobrara River (MM 210.14) in the SW SE Section 26 T31N R42W, and extends north to just north of 10th Street in the City of Gordon (MM 222.65).

Improvements on the project consist of rural and urban sections:

- Rural: From the Niobrara River to approximately 200 feet south of Ross Street.
The project will remove two and one-half (2.5) inches of existing pavement by milling followed by a four (4) inch asphalt overlay, for a one and one-half (1.5) inch increase in pavement elevation. The pavement edges along the earth shoulders will be improved and the earth shoulders regraded to the new elevation. Mailbox turnouts will be constructed at select locations. Driveways will be overlaid. No culvert work is being completed.
- Urban: From approximately 200 feet south of Ross Street to 10th Street in Gordon.
The project will remove two (2) inches of existing pavement between the concrete curbs by milling followed by a two (2) inch overlay, for no change in the pavement elevation. Select locations of curb and gutter will be removed and reconstructed. Sidewalk curb ramps will be removed and reconstructed. Driveways will be repaved.
- The bridge over the Niobrara River (S027 21050) will have the existing concrete overlay removed, the deck pavement repaired, expansion joints removed and replaced, abutment erosion repaired, the guardrail removed and replaced including the remodeling of the bridge rail where they are attached, and placement of a three (3) inch asphalt overlay. There will be no change in the bridge deck elevation.
- The bridge over Sand Draw (S027 21287) will have the existing concrete overlay removed, the deck pavement repaired, expansion joints removed and replaced, abutment erosion repaired, the guardrail removed and replaced including the remodeling of the bridge rail where they are attached, construction of new flumes within the guardrail surfacing, and placement of a two (2) inch asphalt overlay. There will be no change in the bridge deck elevation.

Community of Sheridan County

Niobrara River, S027 21050, Section 26 T31N R42W

The project encroaches the Base Floodplain for the Niobrara River in Section 26, T31N R42W. The river's ordinary high water flow is conveyed through the highway by a 170-foot long bridge structure (S027 21050). At this location the project will remove two and one-half (2.5) inches from the highway of existing asphalt pavement, and then place a four (4) inch asphalt overlay, resulting in a one and one-half (1.5) inch increase in pavement elevation. The bridge work will consist of removing a concrete overlay, deck repair, replacement of expansion joints, remodeling of guardrail connections, removal and replacement of guardrail, and a three (3) inch asphalt overlay. There will be no change in the bridge deck elevation. There will be no work within the river's flow area below the bridge. An analysis completed for the bridge's rehabilitation in 1994 indicated that

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the base flood elevation of the Niobrara River is conveyed beneath the bridge at an elevation of 3224.0 feet NAVD88. The bridge and highway surface elevations are 3450.8 feet NAVD88. Since the project will not affect a change in the stream channel or its conveyance through the bridge, the project will not affect the depth of flow in the stream. The project will not cause a change in the base flood elevation of the Niobrara River.

Sand Draw, S027 21287, Section 14 T31N R42W

The project encroaches the Base Floodplain for Sand Draw in Section 14, T31N R42W. The river's ordinary high water flow is conveyed through the highway by an 80-foot long bridge structure (S027 21287). At this location the project will remove two and one-half (2.5) inches from the highway of existing asphalt pavement, and then place a four (4) inch asphalt overlay, resulting in a one and one-half (1.5) inch increase in pavement elevation. The bridge work will consist of removing a concrete overlay, deck repair, replacement of expansion joints, abutment erosion repaired, remodeling of guardrail connections, removal and replacement of guardrail, construction of new flumes within the guardrail surfacing, and a two (2) inch asphalt overlay. There will be no change in the bridge deck elevation. There will be no work within the stream's flow area below the bridge. An analysis completed for the bridge's rehabilitation in 1994 indicated that the base flood elevation of Sand Draw is conveyed beneath the bridge at an elevation of 3495.0 feet NAVD88. The bridge and highway surface elevations are 3508.2 feet NAVD88. Since the project will not affect a change in the stream channel or its conveyance through the bridge, the project will not affect the depth of flow in the stream. The project will not cause a change in the base flood elevation of Sand Draw.

Unnamed Tributary, Section 02 T31N R42W

The project encroaches the Base Floodplain for an unnamed tributary in Section 02 T31N R42W. The tributary's ordinary high water flow is conveyed through the highway by a 72-inch pipe culvert. At this location the project will remove two and one-half (2.5) inches of existing asphalt by milling and then place a four (4) inch asphalt overlay, resulting in a one and one-half (1.5) inch change in pavement elevation. The pavement edges will be improved and the earth shoulders regraded to the new elevation. No other work will be completed. An analysis completed for this certification indicates that the base flood (100 year event) of 560 cfs overtops the highway at a base flood elevation (BFE) of 3597.3 feet (NAVD 88). The one and one-half (1.5) inch increase in pavement elevation will increase the BFE by an equivalent one and one-half (1.5) inches to an elevation of 3597.4 feet (NAVD 88).

Niobrara River Tributary, Section 35 T32N R42W

The project encroaches the Base Floodplain for a Niobrara River Tributary in Section 35 T32N R42W. The tributary's ordinary high water flow is conveyed through the highway by an eight (8) foot wide by eight (8) foot high (8x8) box culvert. At this location the project will remove two and one-half (2.5) inches of existing asphalt by milling and then place a four (4) inch asphalt overlay, resulting in a one and one-half (1.5) inch change in pavement elevation. The pavement edges will be improved and the earth shoulders regraded to the new elevation. No other work will be completed. An analysis completed for this certification indicates that the base flood (100 year event) of 670 cfs is fully conveyed by the 8x8 box culvert at a base flood elevation (BFE) of 3595.1 feet (NAVD 88). Since the project will not affect a change in the stream channel or its conveyance through the box culvert, the project will not affect the depth of flow in the stream. The project will not cause a change in the base flood elevation of the Niobrara River Tributary.

Unnamed Tributary, Section 02 T32N R42W

The project encroaches the Base Floodplain for a Unnamed Tributary in Section 02 T32N R42W. The tributary's ordinary high water flow is conveyed through the highway by a box culvert with three (3) - six (6) foot wide by four (4) foot high (Triple 6x4 box culvert) openings. At this location

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the project will remove two and one-half (2.5) inches of existing asphalt by milling and then place a four (4) inch asphalt overlay, resulting in a one and one-half (1.5) inch change in pavement elevation. The pavement edges will be improved and the earth shoulders regraded to the new elevation. No other work will be completed. An analysis completed for this certification indicates that the base flood (100 year event) of 710 cfs overtops the highway at a base flood elevation (BFE) of 3625.3 feet (NAVD 88). The one and one-half (1.5) inch increase in pavement elevation will increase the BFE by an equivalent one and one-half (1.5) inches to an elevation of 3625.4 feet (NAVD 88).

Community of City of Gordon

The City of Gordon has no FEMA Floodplain mapping, but does participate in the National Flood Insurance Program (NFIP). FEMA has identified the community as being located in a region with No Special Flood Hazard Areas (floodplains). To meet the State of Nebraska's Minimum Standards for floodplains, NDOT policy in unmapped communities is to classify drainages with greater than 640 acres of watershed upstream of the highway as potential Base Floodplains. State Minimum Standards require that all development activity within potential Base Floodplains meet a "Less Than 1-foot Rise" criteria. A review of topographic mapping showed that Antelope Creek, which flows through the City, has a watershed in exceedance of 640 acres (1 sq. mile), a large fraction of which is controlled by the Antelope Creek 40-B Dam, however there is still an part of the creek's watershed not controlled by the dam that is in excess of 640 acres. Therefore NDOT will treat the Antelope Creek as having a potential Base Floodplain.

Antelope Creek, Section 25 T33N R42W

The project encroaches upon the potential Base Floodplain for Antelope Creek in Section 25 T33N R42W. The creek's ordinary high water flow is conveyed through the highway by the City of Gordon's storm sewer system at this location. Within the City of Gordon, the NDOT project will remove two (2) inches of existing pavement between the concrete curbs by milling followed by a two (2) inch overlay, for no change in the pavement elevation. Select locations of curb and gutter will be removed and reconstructed. Sidewalk curb ramps will be removed and reconstructed. Driveways will be repaved. No storm sewer or culvert work will be completed. Assuming that the City's storm sewer is not able to contain the base flood (100 year event), the base flood will flow through town along the city streets and cross the highway as overland flow. None of the project work will change the street conveyance of the overland flow or the direction of its flow. Since the project will not affect a change in the Creek's conveyance or direction of flow, the project will not affect the depth of the flow. The project will not cause a change in the potential base flood elevation of Antelope Creek.

Enclosures: Certificates (6)
 FIRMettes covering project (7)
 Location Map

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Permit Information:

Community of Sheridan County

Niobrara River, S027 21050, Section 26 T31N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	3224.0 NAVD 88
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No

Sand Draw, S027 21287, Section 14 T31N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	3495.0 NAVD 88
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No

Unnamed Tributary, Section 02 T31N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	3597.3 NAVD 88
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No

Niobrara River Tributary, Section 35 T32N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	3595.1 NAVD 88
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No

Unnamed Tributary, Section 02 T32N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	3625.3 NAVD 88
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No

Antelope Creek, Section 25 T33N R42W

Is the work substantial improvement?	No
Is the work in an identified floodplain?	Yes
Elevation of the base flood (100-year event)?	No Change
Elevation/floodproofing requirement (if applicable)?	NA
Is the work in a designated floodway?	No