

STAFF REPORT

ITEM: Floodplain Permit Application for roadway widening, drainage improvements, and bridge replacement associated with the 36th Avenue NW Improvement Project within the Little River floodplain.

APPLICANT: City of Norman Public Works Department

ENGINEER: Olsson- Jacob Burton, P.E., CFM

BACKGROUND

The applicant requests approval of a floodplain permit for improvements to 36th Avenue NW. The project includes roadway reconstruction and widening, sidewalk improvements, storm sewer installation, grading, and replacement of the existing crossing of a tributary to the Little River. Portions of the proposed improvements are located within the FEMA Special Flood Hazard Area, designated as Zone A on FIRM Panel 40027C0190K.

The existing crossing consists of an approximately 18.6-foot-wide by 10-foot-high reinforced concrete box (RCB). The project will replace the existing structure with a three-cell bridge-class structure consisting of three 10-foot-wide by 9-foot-high openings, substantially increasing the available conveyance area through the roadway crossing.

The applicant provided existing and proposed HEC-RAS modeling, floodplain storage calculations, project plans, and a sealed No-Rise Certification and Floodplain Impact Statement evaluating the effects of the proposed improvements. The engineer concludes that the project will result in no adverse floodplain impacts, no net loss of floodplain storage, and no rise in the 100-year water surface elevation.

Proposed Development Characteristics

- Roadway widening and reconstruction
- Replacement of the existing 18.6-foot-wide by 10-foot-high RCB with a three-cell structure consisting of three 10-foot-wide by 9-foot-high openings
- Sidewalk improvements
- Storm sewer installation
- Grading within the regulatory floodplain

STAFF ANALYSIS

- The proposed project includes roadway widening and reconstruction, sidewalk improvements, storm sewer installation, grading, and replacement of the existing bridge crossing a tributary to the Little River.
- The project is located within a FEMA Zone A regulatory floodplain. A regulatory floodway has not been established at the project location.
- The existing crossing consists of an approximately 18.6-foot-wide by 10-foot-high RCB. The proposed project replaces the existing crossing with a three-cell structure

- consisting of three 10-foot-wide by 9-foot-high openings, substantially increasing conveyance capacity through the 36th Avenue NW crossing.
- Existing and proposed HEC-RAS modeling was completed to evaluate the hydraulic impacts of the proposed improvements. The analysis indicates that the project will not result in an increase in the 100-year water surface elevation and will improve flood conveyance through the project area.
 - At River Station 3100, immediately upstream of the proposed crossing, the modeled 100-year water surface elevation decreases from 1167.02 feet under existing conditions to 1165.49 feet under proposed conditions, a reduction of approximately 1.53 feet.
 - The project includes fill associated with roadway, sidewalk, grading, and storm sewer improvements within the floodplain. The floodplain storage calculations identify approximately 2,284.31 cubic yards of cut and 1,366.12 cubic yards of fill. The proposed storm sewer system provides approximately 43.04 cubic yards of additional floodplain storage capacity.
 - The project engineer provided a Floodplain Impact Statement indicating that the proposed improvements will result in no adverse floodplain impacts, no net loss of floodplain storage, and no rise in the 100-year water surface elevation.

APPLICABLE ORDINANCE SECTIONS (36-533)

(e)(2)(a) – Floodplain Modification and Fill Restrictions

(e)(2)(e) – Compensatory Storage

(f)(3)(a)(8) – No-Rise Condition Requirements

DETAILED ORDINANCE ANALYSIS

(e)(2)(a) and (e)(2)(e) – Floodplain Fill Restrictions and Compensatory Storage

The proposed roadway, sidewalk, drainage, and grading improvements will introduce approximately 1,366.12 cubic yards of fill within the regulatory floodplain. The project provides approximately 2,284.31 cubic yards of cut, in addition to approximately 43.04 cubic yards of additional storage capacity associated with the proposed storm sewer system.

The cumulative storage volume provided by the increased volumetric opening associated with the replacement crossing and the proposed storm sewer system exceeds the volume of fill introduced by the roadway, sidewalk, and grading improvements. The proposed improvements therefore result in a net increase in available floodplain storage and satisfy the compensatory storage requirements.

(f)(3)(a)(8) – No-Rise Requirement

For development within a flood hazard area that is not designated as a regulatory floodway, the ordinance requires certification that the proposed work will result in an increase of no more than 0.05 feet in the Base Flood Elevation on adjacent property.

The project engineer provided existing and proposed hydraulic modeling and a sealed Floodplain Impact Statement demonstrating that the proposed improvements will not increase the 100-year water surface elevation within the regulatory floodplain. The existing

approximately 18.6-foot-wide by 10-foot-high RCB will be replaced with a three-cell structure consisting of three 10-foot-wide by 9-foot-high openings. The increased hydraulic opening improves conveyance through the 36th Avenue NW crossing and reduces modeled 100-year water surface elevations upstream of the crossing.

At River Station 3100, immediately upstream of the proposed crossing, the modeled 100-year water surface elevation decreases from 1167.02 feet under existing conditions to 1165.49 feet under proposed conditions, a reduction of approximately 1.53 feet.

Based on the hydraulic analysis and compensatory storage calculations provided, the proposed improvements satisfy the applicable floodplain requirements of the ordinance.

RECOMMENDATION

Staff recommends approval of floodplain permit application #747.