

STAFF REPORT

ITEM: Floodplain Permit Application for roadway widening, drainage improvements, and replacement of the existing Tributary G crossing associated with the 36th Avenue NW Improvement Project.

APPLICANT: City of Norman Public Works Department

ENGINEER: STV – Brian J. Huckleberry, P.E.

BACKGROUND

The applicant requests approval of a floodplain permit for improvements to 36th Avenue NW from just north of Tecumseh Road to just south of Indian Hills Road. The project includes roadway reconstruction and widening, sidewalk improvements, storm sewer installation, grading, and replacement of the existing crossing of Tributary G 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 Tributary G crossing consists of two 48-inch corrugated metal pipes (CMPs). The project will replace the existing pipes with a bridge-class structure consisting of three 10-foot-wide by 6-foot-high reinforced concrete box culverts (3-10' × 6' RCB).

The applicant provided existing and proposed HEC-RAS modeling, floodplain cut and fill calculations, project plans, and a No-Rise Certification and Floodplain Impact Statement evaluating the effects of the proposed improvements.

Summary of Proposed Development

- Roadway widening and reconstruction
- Replacement of existing bridge crossing tributary to the Little River
- 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 Tributary G crossing.
- 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 two 48-inch CMPs. The proposed project replaces the existing crossing with three 10-foot by 6-foot reinforced concrete box culverts, substantially increasing the conveyance capacity of the crossing.
- Existing and proposed HEC-RAS modeling was completed to evaluate the hydraulic impacts of the proposed improvements. The modeling shows a reduction in the 100-year water surface elevation upstream of the proposed crossing.

- Immediately upstream of the culvert, the modeled 100-year water surface elevation decreases from approximately 1163.14 feet under existing conditions to 1162.72 feet under proposed conditions, a reduction of approximately 0.42 feet.
- The proposed improvements also increase the capacity of the crossing prior to roadway overtopping. The modeled overtopping elevation increases from approximately 1161.94 feet under existing conditions to 1162.85 feet under proposed conditions.
- The site plan and profile identify approximately 9,513.81 cubic yards of cut and 7,491.58 cubic yards of fill within the regulatory floodplain, resulting in a net increase of approximately 2,022.23 cubic yards of available floodplain storage.
- The project engineer provided a No-Rise Certification and Floodplain Impact Statement concluding that the proposed improvements will result in no adverse floodplain impacts and comply with the allowable 100-year flood elevation requirements.

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, drainage, and grading improvements will introduce approximately 7,491.58 cubic yards of fill within the regulatory floodplain. The project provides approximately 9,513.81 cubic yards of cut, resulting in a net increase of approximately 2,022.23 cubic yards of available floodplain storage. The proposed improvements therefore provide more floodplain storage than is displaced by the project 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 HEC-RAS modeling and a No-Rise Certification and Floodplain Impact Statement. The existing Tributary G crossing consists of two 48-inch CMPs and will be replaced with three 10-foot by 6-foot reinforced concrete box culverts. The increased capacity of the proposed crossing results in a reduction in the modeled 100-year water surface elevation upstream of 36th Avenue NW.

Immediately upstream of the crossing, the modeled 100-year water surface elevation decreases from approximately 1163.14 feet to 1162.72 feet, a reduction of approximately 0.42 feet.

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

RECOMMENDATION

Staff recommends approval of floodplain permit application #748.