



Memorandum

To: Bassett Creek Watershed Management Commission (BCWMC)
From: Barr Engineering Co. (Barr)
Subject: Item 4I: BNSF Bridge Replacement – Minneapolis, MN
BCWMC April 20, 2023 Meeting Agenda
Date: April 13, 2022
Project: 23270051.58 2023 2307

4I BNSF Bridge Replacement– Minneapolis, MN BCWMC 2022-27

Summary:

Project Proposer: City of Minneapolis

Proposed Work: Railroad bridge replacement

Basis for Review at Commission Meeting: Proposed crossing and work in the floodplain

Impervious Surface Area: No change

Project Schedule: Work is currently planned for July – September 2023.

Recommendation for Commission Action: Conditional approval

General Project Information

The proposed project is located along the Main Stem of Bassett Creek, northwest of the intersection of Chestnut Avenue West and Penn Avenue North in Minneapolis. The work includes removing the existing super-structure and placing precast concrete structures onto the existing piers with an on-track crane, resulting in 0 acres of disturbance and no change in impervious surface from existing to proposed.

Floodplain

The proposed project includes work in the BCWMC 100-year floodplain. The 1% annual-chance (base flood elevation, 100-year) floodplain elevation along the Main Stem of Bassett Creek at the project site is 814.8 feet NAVD88 upstream of the bridge and 814.7 downstream of the bridge. The February 2021 BCWMC Requirements for Improvements and Development Proposals (Requirements) document states that projects must meet the following criteria:

- Projects within the floodplain must maintain no net loss in floodplain storage.
- Projects within the floodplain must maintain no increase in flood level at any point along the trunk system (managed to at least a precision of 0.00 feet).
- The lowest member of all crossings shall be at least 1 foot above the floodplain to prevent debris accumulation unless approved by the BCWMC.

Floodplain Storage

The proposed project will result in 0 cubic yard of floodplain fill due to the bridge replacement.

Floodplain Elevation (No Rise)

The BCWMC model was used to model the existing and proposed condition to demonstrate no rise in flood level along the creek. The BCWMC model was used to perform a relative comparison of the existing bridge and the new bridge at this location. Table 1 reports the 100-year high water elevation upstream and downstream of the existing and proposed condition. Results shown in Table 1 demonstrate “no increase in flood level” when comparing the existing and proposed bridge.

Table 1: Comparison of Existing and Proposed 100-Year High Water Elevation

Location	100-Year Existing Flood Elevation (ft)	100-Year Proposed Flood Elevation (ft)	Increase in Flood Level from Proposed to Existing (ft)
Upstream of Bridge	814.76	814.76	0.00
Downstream of Bridge	814.75	814.75	0.00

Lowest Crossing Member

The Requirements document states the lowest member of all crossings shall be at least 1 foot above the floodplain unless approved by the BCWMC, to minimize obstruction of flood flows. The existing bridge and the proposed bridge both have portions of the bridge deck lower than the 100-year floodplain elevation. For the proposed project, the average lowest member is 1.4 feet below the 100-year floodplain (compared to 2.13 feet for existing conditions). The conveyance area under the bridge will increase due to the existing pier structures remaining in place and the super structure being raised be approximately 0.7 feet. Given constraints with existing railroad track grade, raising the lowest member of the bridge to be at least 1 foot above the floodplain is not feasible.

Section 4 of the Requirements Documents provides the following policy from Section 4.2.2 of the Watershed Management Plan:

10. The lowest member of all crossings shall be at least 1 foot above the 100-year floodplain to prevent debris accumulation **unless approved otherwise by the BCWMC.**

The highlighted portion of the policy allows the Commission flexibility to approve projects without requiring the variance process. The BCWMC has approved other projects where the bridge across the creek did not meet the lowest member criteria (i.e. most recently the Bassett Creek Park Pedestrian Bridge Improvements – BCWMC 2022-08). Communication with the applicant’s consultant indicate that BNSF will provide a general statement on how they handle maintenance due to debris.

Lakes, Streams, and Wetlands

The City of Minneapolis is the local government unit (LGU) responsible for administering the Wetland Conservation Act; therefore, BCWMC wetland review is not required.

Rate Control

The proposed project does not create one or more acres of new or fully reconstructed impervious surfaces; therefore, BCWMC rate control review is not required.

Water Quality

The proposed project does not create one or more acres of new or fully reconstructed impervious surfaces; therefore, BCWMC water quality review is not required.

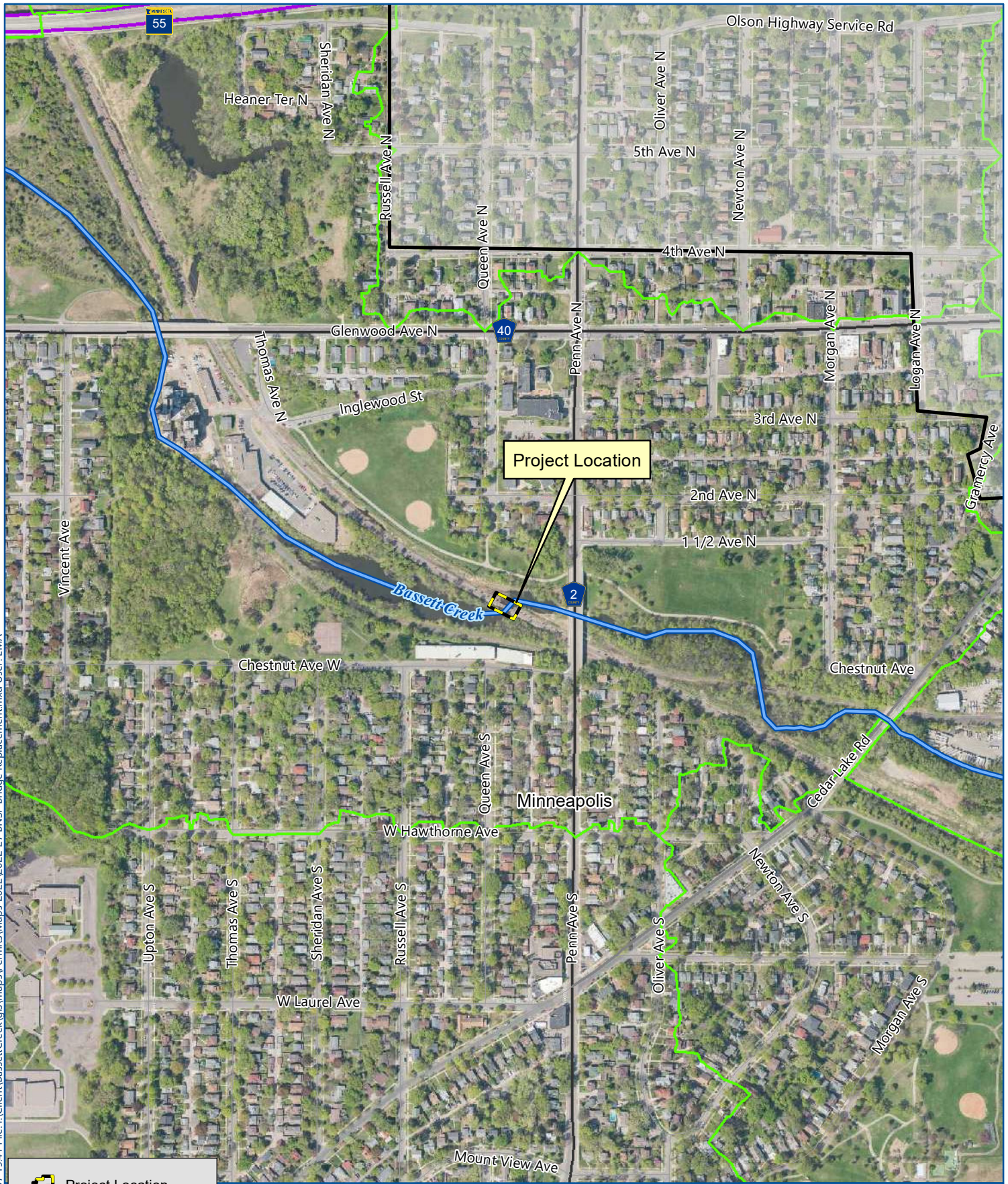
Erosion and Sediment Control







The proposed project does not result in more than 10,000 square feet of land disturbance; therefore, BCWMC erosion and sediment control review is not required.

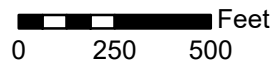
Recommendation for Commission Action

Conditional approval based on the following comments:

1. The following updates must be made to the XPSWMM models:
 - a. The cross section of link LBCD041.C in the corrected effective model and proposed model must be modified to include the three individual piers of the bridge, instead of the one pier.
 - b. Link LBCD041.OF in the proposed model must be modified to represent the new overflow based on the proposed bridge height.
2. The Requirements Document states that the lowest member of all crossings shall be at least one foot above the floodplain to prevent debris accumulation. The BCWMC is concerned about debris accumulation due to the restriction of flows. We acknowledge that there are limitations regarding the bridge reconstruction and modifying the lowest member to meet the Requirements Document. We request the applicant prepare and submit to the BCWMC Engineer a maintenance plan to clear accumulated debris from the bridge to minimize potential flooding impacts.



-  Project Location
-  Municipality
-  BCWMC Legal Boundary
-  Major Subwatershed
-  BCWMC Hydrologic Boundary
-  Bassett Creek



BCWMC 2022-27
 BNSF BRIDGE
 REPLACEMENT
 Minneapolis, MN

LOCATION MAP