Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co. (Jim Herbert, Joe Welna, Josh Phillips)
Subject: Item 6F – Consider Approval of Scope and Budget for Feasibility Study for CIP Project: Double Box Culvert Repair Project (2026 CIP Project FCP-1)
Date: February 13, 2025

6F. Consider Approval of Scope and Budget for Feasibility Study for CIP Project: Double Box Culvert Repair Project (FCP-1)

Recommendations:

1. Consider approving the scope of work and $55,000 budget presented in this memorandum and direct the Engineer to complete the feasibility study for the Double Box Culvert Repair Project (2026 CIP Project FCP-1) scheduled for construction in 2026.
2. Direct the Engineer to consult with the U.S. Army Corps of Engineers (USACE) to determine whether the Resources Management Plan Pre-application Consultation Protocols may apply to this project.
3. Direct the Engineer to prepare a feasibility study that complies with the applicable requirements of the USACE, MnDNR, and BCWMC criteria.

Background

The proposed Flood Control Project Double Box Culvert Repair project is in the Bassett Creek Watershed Management Commission's (BCWMC) current CIP slated for 2027 (FCP-1) with an estimated budget of $1,200,000. Staff recommends that this project be moved ahead in the CIP schedule to 2026 because the project currently slated for 2026 implementation (the third project in the Medicine Lake Rd & Winnetka Ave Long Term Flood Mitigation Plan in Golden Valley) is not currently ready for feasibility study development and is not ready for implementation in 2026.

The Double Box Culvert Repair project is located entirely within the City of Minneapolis and would address needed repairs along the 5,600-foot-long tunnel. Although often referred to as the "Double Box Culvert," the system also includes a 315-foot section of single box culvert at the downstream end. The Double Box Culvert is part of a system of storm sewer tunnels that convey Bassett Creek flow through downtown Minneapolis to the Mississippi River, where it discharges downstream of St. Anthony Falls. The storm sewer system was constructed in three phases including the I-94/2nd Street tunnel (Phase 1), the 3rd Avenue tunnel (Phase 2), and the Double Box Culvert (Phase 3), all of which are depicted in the attached figure (Figure 1-1 from the 2024 Double Box Culvert inspection report, also on the February 20 BCWMC meeting agenda). The Double Box Culvert was constructed by the USACE in 1992 and it was turned over to the local sponsor (City of Minneapolis) in 2002 (i.e., the City of Minneapolis owns the system). The Double Box Culvert was constructed by open cut excavation 0–20 feet below ground surface and was designed to convey Bassett Creek flows to the 3rd Avenue tunnel, via a 30-foot drop structure. The Double Box Culvert generally runs parallel with the Cedar Lake Trail and consists of three primary cross sections (from upstream to downstream):

- Flared end inlet structure (Sta. 172+45 to 172+24)
- 11-foot-high by 11-foot-wide double box culverts (Sta. 172+24 to Sta. 119+88)
- 11-foot-high by 15-foot-wide single box culvert (Sta. 119+88 to Sta. 116+73)

The past two Double Box Culvert inspection reports (2019 and 2024) identify the needed repairs; this project would address the significant repairs. The repairs are entirely underground and contained within the box culverts.

The BCWMC requires completion of a feasibility study for BCWMC CIP Projects prior to the BCWMC holding a hearing and ordering the project. The feasibility study for this project would further examine the methods to repair the defects identified in the 2024 inspection report, including shear key joint repair, crack sealing and deposit removal, and exposed reinforcement repair.

The project is consistent with the goals (Section 4.1) and policies (Section 4.2.2) for flooding and rate control in the 2015 – 2025 BCWMC Watershed Management Plan and is consistent with the BCWMC's subsequent Flood Control Project policies, adopted in 2016, and updated in 2021.

The BCWMC completed a Resource Management Plan (RMP) in 2009 through which the Corps of Engineers (USACE) and the BCWMC agreed on a series of steps, work items, deliverables (called "protocols") that must be accomplished and submitted to complete the RMP process and USACE review/approval process. Although this reach of Bassett Creek was not included in the RMP, the USACE has allowed the RMP protocols to be applied to other projects not specifically included in the RMP. With the completion of the protocols, we expect the USACE application process to move more quickly than it would otherwise. Most of the protocols must be addressed as part of the feasibility study, in addition to the usual tasks that would be performed as part of a feasibility study under the criteria adopted by the BCWMC in October 2013. In general, the protocols require compliance with Section 106 of the National Historic Preservation Act, compliance with Section 404 of the Clean Water Act, and Clean Water Act Section 401 Water Quality Certification. Compliance with Section 106 typically requires a cultural resources inventory.

Content and Scope of Feasibility Study

The feasibility study will address and include the feasibility study criteria adopted by the BCWMC in October 2013:

- Analysis of multiple alternatives with the context of Commission objectives, including the following for each alternative:
    - Pros and cons analysis
    - Cost estimate for construction and a "30-year cost" *("30-year cost" not applicable to this project)*
    - Analysis of life expectancy
    - Summary of each alternative for the Commission to judge its merits
    - Cost estimate for annualized cost per pound of pollutant removal *(not applicable to this projectF)*
- Evaluation of new and/or innovative approaches
- Identification of permitting requirements

As noted earlier, most of the RMP protocols must be addressed as part of the feasibility study. However, because this part of the creek is underground, Section 106 should not apply to this project, so a cultural resources review will not be needed. In addition, there are no wetlands to identify.

Typically, BCWMC feasibility studies include gathering public input on proposed projects. However, because this project is all underground and contained within the box culvert, and due to the time constraints, this work scope does not include a public engagement task.

Below is a summary of the work scope components for this project:

1) Project Coordination and Project Meetings

As with all tunnel-related issues, BCWMC will maintain close coordination with Minneapolis staff throughout the feasibility study. In addition, specific project meetings include the following:

a) Project kick-off meeting with BCWMC staff, commissioners representing Minneapolis, and Minneapolis staff to review project expectations, schedule, and scope, and preparation of meeting notes.

b) One (1) virtual meeting with BCWMC staff, Minneapolis staff, and agency staff (i.e., USACE, MnDNR), as needed, to discuss project and review permit requirements for the project. This task will also include preparation of meeting notes to confirm discussion results.

c) Other coordination meetings, as needed.

2) Site Visits and Data Collection

a) Site visit with contractor – As part of the 2024 inspection, the Commission Engineer planned to meet with a contractor on-site to review the needed repairs and discuss constructability and cost estimates. Due to scheduling constraints, the site visit did not occur. Therefore, a first task for the feasibility study will be for the Commission Engineer to hold a site visit in the box culvert with a contractor.

b) Project easements – The proposed project is located within the box culvert system owned by the City of Minneapolis, so no easements are required to perform the repairs. However, temporary easements may be needed for contractor staging and access to the box culvert system. We will review the existing access vaults and easements with Minneapolis staff and confirm whether any temporary easements are required for the project. If easements are required, easement survey and acquisition will be completed during final design.

3) Evaluation and Concept Plans

a) Develop concept plans for the project, considering input from Minneapolis staff and USACE staff. This includes developing the following concepts:

   i) Do nothing/delay repairs

   ii) Perform repairs – key work items to include:

      (1) Shear key joint repair

      (2) Crack sealing and deposit removal

      (3) Repair exposed reinforcement

(4) Add tie-off bolts for future inspection of the box culvert near the drop structure

(5) Water control

b) Refine concept plans based on input from Minneapolis staff, USACE staff and BCWMC.

c) Identify permitting requirements for the repairs.

d) Develop quantities and cost estimates for each concept, and analysis of life expectancy.

4) Feasibility Report and Presentations

a) Prepare draft report, including concept plans, for review by Minneapolis staff and BCWMC Administrator; and revise report based upon review comments. We assume one set of comments will be provided by the Minneapolis staff and BCWMC.

b) Present draft feasibility study findings at BCWMC meeting.

c) Prepare final report (revising draft report based on comments provided by the BCWMC) for approval at BCWMC meeting and use at future project hearing.

d) Present final feasibility study findings at BCWMC meeting, if necessary.

Cost Estimate

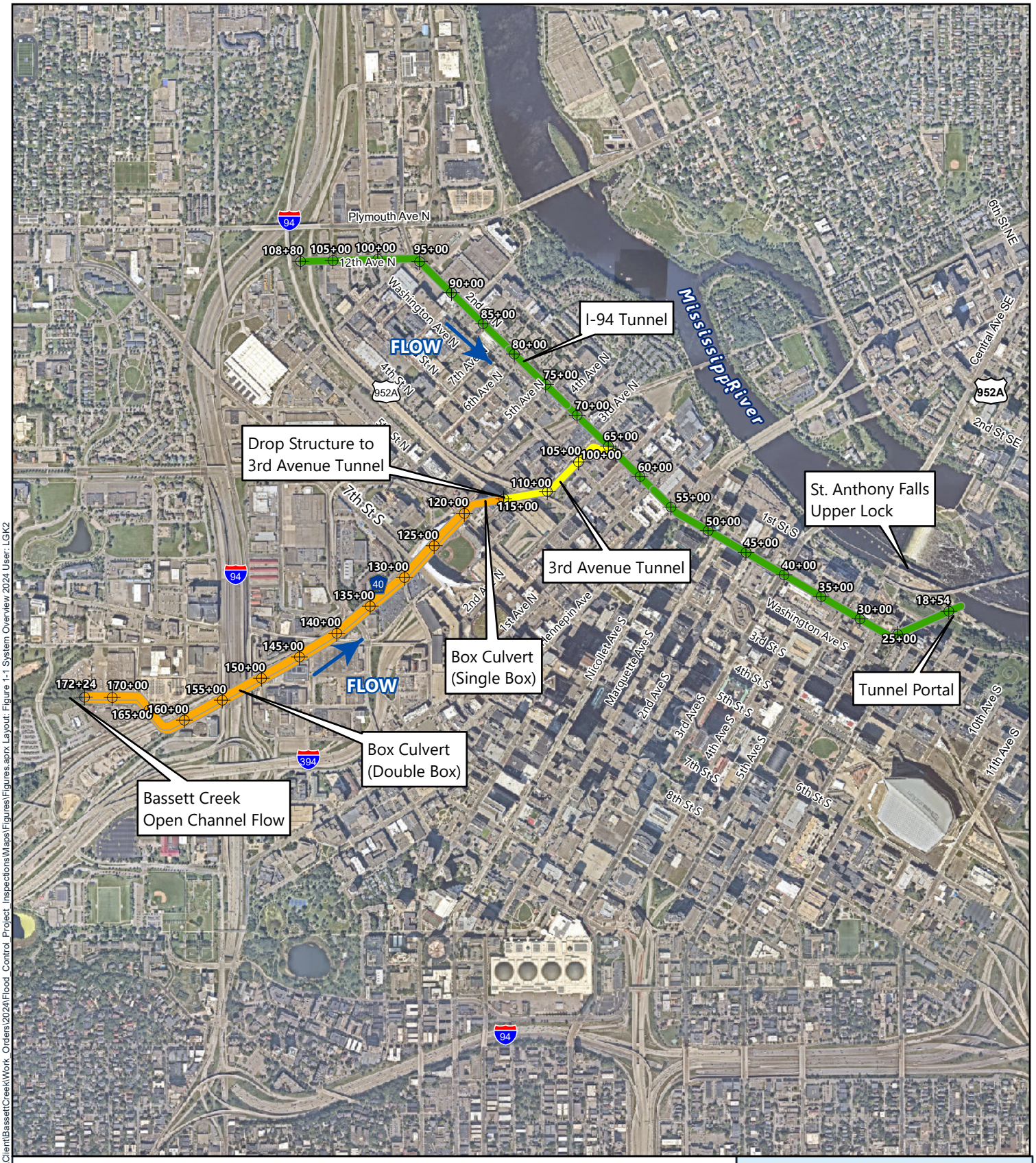
The table below summarizes our cost estimate for the scope of work outlined above.

Tasks	Estimated Total
1) Project Coordination and Project Meetings	$10,000
2) Site Visits and Data Collection	$11,500
3) Evaluation and Concept Plans	$19,500
4) Feasibility Report and Presentations	$14,000
Total	**$55,000**

Schedule

We will complete the tasks and milestones outlined in the scope of work on the following schedule. The schedule is aggressive. Potential schedule modifications will be coordinated with the Administrator.

Tasks and milestones	Estimated Schedule
Kick-off meeting with BCWMC and Minneapolis staff	March, 2025
Site visit with contractor	March, 2025
Meeting with BCWMC, Minneapolis, and agency staff	April, 2025
Submit draft feasibility report for Minneapolis and BCWMC staff review	April 25, 2025
Minneapolis and BCWMC staff complete review	May 2, 2025
Submit draft feasibility report for BCWMC review at Commission meeting	May 8, 2025
BCWMC completes review at Commission meeting	May 15, 2025
Submit final feasibility report for BCWMC review at Commission meeting	June 12, 2025
Final feasibility report – BCWMC approval at Commission meeting	June 19, 2025



Stationing

Phase 1: I-94/2nd Street Tunnel

Phase 2: 3rd Avenue Tunnel

Phase 3: Box Culvert

N

0 750 1,500

Feet

Imagery Source: NearMap, 9-11-2024

SYSTEM OVERVIEW
2024 Bassett Creek
Box Culvert Inspection
Performed for the Bassett Creek
Watershed Management Commission

FIGURE 1-1

BARR