Memorandum

Mankato West Parking Expansion

To: Alec Pietz, PE

From: Nathan Hermer, PE

Date: May 19th, 2025

Subject: Mankato West Parking Expansion Stormwater Design

CC:

MANKATO WEST PARKING EXPANSION STORM DESIGN

The existing Mankato West High School parking lot was proposed to just be resurfaced as part of the school addition project, but additional parking stalls are now proposed south of the existing parking lot where the existing softball field sits. This project along with the school addition project will add 36,900 SF (0.85 AC) of new impervious area to the site. A filtration basin on the south side of the new proposed parking lot was designed to treat the water quality volume (WQV).

The WQV was determined by multiplying 1.1" of stormwater over the new impervious area on the site.

WQV = (1.1"/12) * 36,900 SF = 3382.5 cubic feet

The filtration basin is designed with MnDOT media mix D and provide a 1" per hour infiltration rate. This allows 4' of water to drawdown in the basin within 48 hours. The basin bottom elevation is 764.70' and the overflow structure is set at 768.70'. The area of the basin bottom is designed at 1,080 SF which provides a WQV of 4320 cubic feet. There is a proposed future secondary access to the parking lot that would add approximately 1500 SF of additional impervious area and an additional 140 cubic feet to the water quality volume. The proposed basin was designed with the capacity for this additional impervious area.

HydroCAD modeling of the filtration basin for the 2yr, 5yr, 10yr, and 100yr 24hr storm events is attached.