MEMORANDUM

To: Outagamie County Drainage Board  
From: Sean Bekx
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Date: July 24, 2020  
Project No.: M1485A17

Project: Duck Creek Drainage Annexation  
Client: Outagamie County Drainage Board

Re: Duck Creek District Annexation - Channel Calculations

There are 33 total Trapezoidal Channel Calculation sheets dated July 24, 2020 for the proposed channels in the Duck Creek Drainage District Annexation. Each sheet is numbered and corresponds to a specified segment of one of the channel alignments provided in the plan set titled “Duck Creek District Annexation” (referred to as “the plans”). Each segment is defined either by an entire channel alignment or from station to station along the alignment.

For each calculation sheet, a summary of the minimum longitudinal slopes and approximate available depths is provided for each segment in the “Notes” section. The minimum longitudinal slopes are based on the proposed profiles shown the plans, and the approximate available depths are based on the proposed cross section within the segment with the least available depth. The “Design Discharge, Q” represents the peak flow rate draining to the channel during the 10-year, 24-hour storm event. Side slopes were assumed to be 2:1 (H:V) as the maximum side slopes to be used. A Manning’s n value of 0.05 was used which is typical for these types of drainage ditches. For each sheet, a bottom channel width was selected such that the calculated “Normal Depth, yn” would be less than the available depth for that segment.

On the plans, the proposed cross sections have a channel bottom elevation that matches the proposed channel profile and a width that is equal to or greater than that selected on the corresponding calculation sheet. The proposed cross sections also have 2:1 (H:V) side slopes that tie into the existing cross section.