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To: Tony Graham  
Mike Raiche  
Rob Pribyl

From: Ross Mullen, PE (MN), CFM  
Dan Elemen, PE (MN,ND)

File: 227701760/ B008926-20-500

Date: ~~July 16, 2021~~ Rev. July 27, 2021

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**Reference: Opinion of Probable Construction Cost of Maple Lake Water Level Control Structure (weir)**

The Maple Lake Property Owners Association (MLPOA) and the Maple Lake Improvement District-Wright County (MLID-WC) are considering construction of a water level control structure to maintain the runout elevation of Maple Lake. The outlet of Maple Lake, Mill Creek, is a natural channel located on the southwestern side of the lake and flows southwest under State Highway 55.

The MLPOA and MLID-WC contracted with Wenck Associates, Inc. (now part of Stantec Consulting Services, LLC) to provide conceptual level drawings and an opinion of probable construction cost for the lake water level control structure. Hereafter lake normal water level, lake normal height, lake runout elevation, and lake water level, all refer to the establishment of a lake runout elevation for Maple Lake. Leadership at the MLPOA and MLID-WC identified several priorities for the design:

- Design should limit construction costs, including consideration of:
  - Reused sheet pile
  - Riprap reinforcement, instead of sheet pile
- Design should consider an alternate site location for improved maintenance access (i.e. ice and debris management) by considering a location closer to the lake
- To the extent practical, limit lakeshore property owner concerns regarding fluctuating lake water levels
- Design should reflect configuration that is likely to receive regulatory approval

As part of the scope of work, the contract included recommendation of a lake runout elevation based on background data gathering from public agencies and review of historical lake elevation without independent data collection (such as survey of aquatic vegetation locations, survey and identification of lakeshore sediment deposition and type to determine impacts of shoreline erosion, lake bathymetry surveys to ensure continued navigability of the Little Maple channel, or environmental assessment). In December 2020, we submitted a memorandum to the Minnesota Department of Natural Resources (MNDNR), requesting conditional approval of the recommended Maple Lake runout elevation. This letter is included as Exhibit A. Since the December 2020 submittal, MLPOA and MLID-WC leadership have reevaluated the December 2020 proposed runout elevation and have been weighing additional considerations and lakeshore resident input. The final recommendation on a lake runout elevation may change but is unlikely to significantly affect the construction cost.

Figure 1 presents the two construction configurations analyzed to limit costs.

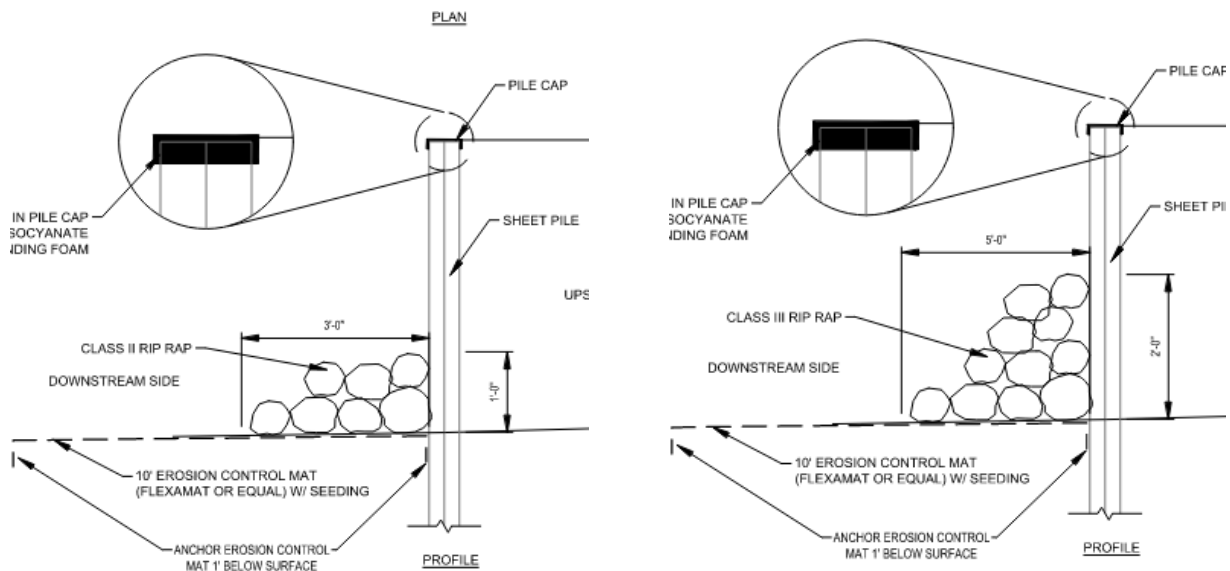
- Option 1 Sheet Pile Only: A sheet pile weir extending deep beneath the subsurface. This option limits the amount of riprap downstream of the weir (to provide scour protection) as well as the average diameter of the riprap (Class II with average diameter of 6-inches)

**Reference: Opinion of Probable Construction Cost of Maple Lake Water Level Control Structure (weir)**

- Option 2 Sheet Pile Reinforced with Riprap: A sheet pile weir extending beneath the subsurface. This option limits includes more riprap and a larger average diameter (Class III with average diameter of 9-inches). Figure 2 below shows the location of both proposed runout structures; one at the location where existing lake levels are controlled, and one further up the channel where it may be more easily accessed via the adjacent property.

Conceptual level design drawings for these two options are included in Exhibit B. A summary matrix of the engineer's opinion of probable cost is included in Table 1, with detailed cost estimates included in Exhibit C.

There are three main considerations for the geotechnical stability are 1) settling and sinking 2) ability to withstand hydrostatic and hydraulic forces and 3) seepage. Based on the proposed height of the structure and the underlying lay soils, the required depth of the sheet pile to limit settling and sinking is likely to provide adequate ability to withstand the hydrostatic and hydraulic support. As any reduction in sheet pile quantities for Option 2 would require the contractor to cut standard length sheets by only a marginal amount, there will not be a reduction in the number of sheet pile lengths purchased by the contractor (and therefore no savings passed on). Therefore, we do not recommend Option 2



**Option 1 Sheet Pile Only**

**Option 2 Sheet Pile Reinforced with Riprap**

**Figure 1 Construction Configurations of Maple Lake Water Level Control Structure**

Reference:      **Opinion of Probable Construction Cost of Maple Lake Water Level Control Structure (weir)**



**Figure 2 Location of Maple Lake Water Level Control Structure**

**Reference:**      **Opinion of Probable Construction Cost of Maple Lake Water Level Control Structure (weir)**

**Table 1 Summary Matrix of Engineer’s Opinion of Probable Construction Cost**

Location	Sheet Pile Only	Sheet Pile Reinforced with Riprap
Location A: Existing Rock Structure	\$67,700	Not estimated, cost greater than Sheet Pile Only
Location B: Improved Maintenance Access	\$84,200	Not estimated, cost greater than Sheet Pile Only

As discussed above, the MLPOA and MLID-WC are weighing additional considerations in the selection of a lake runout elevation. According to a MNDNR 2020 survey, the runout elevation of the lake is 1001.25 feet North American Vertical Datum of 1988 (NAVD88) /1000.95 feet National Geodetic Vertical Datum of 1929 (NGVD29). These are two of the most commonly used vertical datum measurements used in the United States and report the elevation of a feature relative to Mean Sea Level (MSL).

Maple Lake, lake elevations are reported in NGVD29 on the MNDNR website as collected by a local lakeshore property owner. Because lake water levels have been collected since 1944, reporting lake water levels in NGVD29 provides consistency and allows for direct comparison of lake water levels. Minnesota state agencies have since updated to NAVD88; however for a specific site (like Maple Lake), using either vertical datum is appropriate as long as the vertical datum is noted. Based on the National Oceanic and Atmospheric Administration VERTCON tool, the conversion factor is:

$$NAVD88 - NGVD29 = 0.35 \text{ feet (approx. 4 inches)}$$

Below are some additional notes and recommendations regarding the runout elevation for Maple Lake, full discussion of considerations of the selected lake runout elevation are included in Exhibit A:

- Per the Minnesota statutes, the lake outlet structure must be established within a permanent flowage easement and owned and operated by a local government unit (LGU). The MLPOA and MLID-WC are working to acquire this easement outside of the scope of this project.
- Wenck-Stantec has requested regulatory review from the Minnesota Department of Natural Resources (MNDNR) Area Hydrologist regarding the selection of a lake runout elevation. The Area Hydrologist has indicated that MNDNR staff in St. Paul will need to make a regulatory determination for the lake runout elevation. Based on our conversations with the Area Hydrologist, there are three possible outcomes of this determination:
  - A. Maple Lake has not previously had a regulatory runout elevation and the majority of riparian (lake shore) owners can establish a runout elevation as discussed in the *Lake Outlet Dams* brochure published by the MNDNR with a majority of lakeshore property owners approving of the selected runout elevation.



**Reference: Opinion of Probable Construction Cost of Maple Lake Water Level Control Structure (weir)**

- B. The current runout elevation was established in violation and a lake runout may be established by the leadership of MLPOA and MLID-WC within the historical range of runout elevations.
  - C. Property owners and the aquatic ecosystem have adjusted to the existing lake runout elevation and the MNDNR will consider the 2020-year survey as the regulatory lake runout elevation. Changing the lake runout from this elevation will require unanimous consensus from all lakeshore property owners (Minnesota Statutes 103G).
- In order to meet regulatory design requirements, a lower runout elevation will have a smaller primary discharge opening requiring more frequent maintenance to remove ice and debris.
  - Drawdown of the lake for precipitation events that have less than a 6-inch bounce of the lake, is approximately equal regardless of the selected runout elevation. Above 6-inch bounces, the different weir designs have slightly different drawdown durations; however, these are insignificant compared to the seasonal variability of the drawdown. Exhibit D shows these drawdown times for different proposed runout elevations and the maximum drawdown time for cool weather (i.e. no evaporation) and minimum drawdown time for hot, windy weather (i.e. largest monthly average evaporation). Any given storm is likely to be between these two extremes.
  - A full calibration of the Maple Lake hydrologic and hydraulic model was not possible because both the Maple Lake and Buffalo airports did not report a continuous rainfall record for the period of record from 2000-2020 (the MNDNR's preferred review period of record). Additionally, the reporting parameters of these rainfall monitoring gages is unclear and may have shifted during the period of record as they report differ from nearby daily rainfall records. Maple Lake monitoring levels also included periods when the configuration of the runout is unknown and/or the outlet channel had become blocked by debris (such as floating logs, bogs, and/or beaver activity). We simulated the lake using the Minneapolis-St. Paul detailed rainfall records to provide an extremely high-level understanding of how various runout elevations would impact the water levels of the lake for average, dry, and wet years.
- A. The average annual precipitation at Maple Lake is 28.59-inches. Within the last 20 years, we selected the following representative years for comparison:
    - Representative wet year (2016, 41.52-inches of precipitation)
    - Representative dry year (2020, 25.06-inches of precipitation)
      - Note that within the last 20 years, 2020 is the only year with statistically significantly less than average precipitation; however, full rain records were only available through October as of the time of this report.
    - Representative average year (2018, 28.35-inches of precipitation)
  - B. Table 2 below presents a comparison of the uncalibrated, model for these selected years and the runout elevations being considered by leadership. Graphs of water levels are included in Exhibit E.

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- The average refers to the warm weather season difference in average lake level, in inches (May through September).
- Minimum refers to the how the lake level would have been different at the time of the lowest water level in the warm weather season.
- Maximum refers to the how the lake level would have been different at the time of the highest water level in the warm weather season.
- It appears that the lake levels roughly scale linearly with the runout elevation (i.e. if the selected runout elevation is reduced 3-inches from the current runout, the lake levels drop by about 3-inches over the course of a given year).

Table 2 Change to Maple Lake Water Levels for Open Water Months (May-September) Compared to Existing Rock Structure In-Place Condition (inches)

Runout Elevation																								
	1000.7 feet NAVD88			1000.8 feet NAVD88			1000.9 feet NAVD88			1001.0 feet NAVD88			1001.05 feet NAVD88			1001.15 feet NAVD88			1001.25 feet NAVD88			1001.35 feet NAVD88		
	1000.35 feet NGVD29			1000.45 feet NGVD29			1000.55 feet NGVD29			1000.65 feet NGVD29			1000.7 feet NGVD29			1000.8 feet NGVD29 <sup>6</sup>			1000.9 feet NGVD29 <sup>6</sup>			1001.0 feet NGVD29		
Change in Elevation from Existing Rock Pile Runout (inches) <sup>1</sup>	-6.6			-5.4			-4.2			-3			-2.4			-1.2			0			+1.2		
Elevation below Ordinary-High Water Level (inches) <sup>2</sup>	17.4			16.2			15			13.8			13.2			12			10.8			9.6		
	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>	Avg <sup>3</sup>	Min <sup>4</sup>	Max <sup>5</sup>
Wet Year (2016)	-3	-4	0	-3	-4	0	-2	-3	+1	-1	-2	+1	0	-1	2	0	0	1	0	0	1	2	2	3
Dry Year (2020)	-5	-5	-5	-4	-4	-4	-3	-3	-3	-2	-2	-2	-2	-2	-2	0	-1	0	0	-1	0	1	1	1
Average Year (2012)	-5	-5	-5	-4	-4	-4	-3	-3	-3	-2	-2	-2	-2	-2	-2	-2	-4	-2	-2	-4	-2	-2	1	1

- 1- The existing runout elevation was surveyed by the MNDNR/MNDOT as 1001.25 feet NAVD88/ 1000.9 feet NGVD29. Negative indicates the elevation is lower than the existing rock pile, positive indicates the elevation is higher than the existing rock pile.
- 2- The Ordinary-High Water Level is 1002.15 feet NAVD88 (1001.8 feet NGVD29). Additional discussion is included in Exhibit A. Based on conversations with the MNDNR, typical lake runout elevations are between 0.5 and 1.0 feet below the OHWL with a few lake runout elevations approaching 1.5 feet below the OHWL.
- 3- The average difference in the lake elevation over the boating season, May – September, (inches). Negative indicates the modeled water levels are lower (i.e. if the proposed structure had been constructed we would expect the water levels to have been lower), positive indicates the modeled water levels are higher (i.e. if the proposed structure had been constructed we would expect the water levels to have been higher) than those observed with the existing rock pile in-place.
- 4- The difference in the lake elevation at the time of the minimum (lowest) lake level during the boating season, May – September. Typically, the minimum lake level occurs at the end of the boating season.
- 5- The difference in the lake elevation at the time of the maximum (highest) lake level during the boating season, May – September. Typically, the maximum lake level occurs between mid-May and mid-June.
- 6- Denotes additional conceptual design was completed for these options.

**Exhibit A: *Maple Lake Water Level “Lake Height” Control Structure Elevation* letter dated December 21, 2020**

**Exhibit B: Conceptual Level Plan Set Drawings of Proposed Maple Lake Outlet Structure (weir)**

**Exhibit C: Detailed Opinion of Probable Construction Cost**

**Exhibit D: Lake Drawdown Times for Various Lake Runout Elevations**

**Exhibit E: Wet, Average, and Dry Weather Comparison of Lake Water Levels**

**Stantec Consulting Services Inc.**



**Ross Mullen, PE (MN), CFM**  
Water Resources Engineer  
Phone: 320.309.3473  
ross.mullen@stantec.com



# Technical Memo

# EXHIBIT A



---

**To:** Mr. James Bedell Minnesota Department of Natural Resources (MNDNR) Area Hydrologist

**From:** Ross Mullen, PE (MN), Wenck Associates, Inc.

**Date:** December 21, 2020

**Copy:** Tony Graham  
President of Maple Lake – Lake Property Owners Assoc. (ML-LPOA)  
Mike Raiche  
President/Chairman of MLIDWC  
Maple Lake Improvement District- Wright County (MLID)

**Subject:** Maple Lake Water Level “Lake Height” Control Structure Elevation

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Dear Mr. Bedell,

The *Maple Lake Improvement District- Wright County* (MLID), is considering construction of a water level control structure to maintain the runout elevation of Maple Lake. The outlet of Maple Lake, Mill Creek, is a natural channel located on the southwestern side of the lake and flows southwest under State Highway 55. Maple Lake and Mill Creek are shown on Figure 1.

The runout elevation of Maple Lake has varied by as much as one and a half feet over the last 80 years. The purpose of this project is to permanently set the runout elevation of the lake going forward. Based on your recommendations, we are proposing a fixed crest structure. As stated in the MNDNR “Lake Outlet Dams” publication, the determination of a lake runout elevation is important because it has impacts to navigation of the waterbody, shoreline erosion, water quality, ice damage, and flooding.

After several months of technical analysis, desktop data review, review of historical lake level and runout elevations, spot surveys of the Maple Lake shorelines, and discussions between the MLID and ML-LPOA, **we propose a lake runout elevation of 1000.7 feet NAVD88.** We request your ***conditional*** support of the water level control structure runout elevation before we finalize the design of the structure. Wenck staff and MLID and ML-LPOA officials discussed the appropriate lake levels extensively, weighing each of the factors listed in the “Lake Outlet Dams” publication and the best available data. This value was selected as a compromise between:

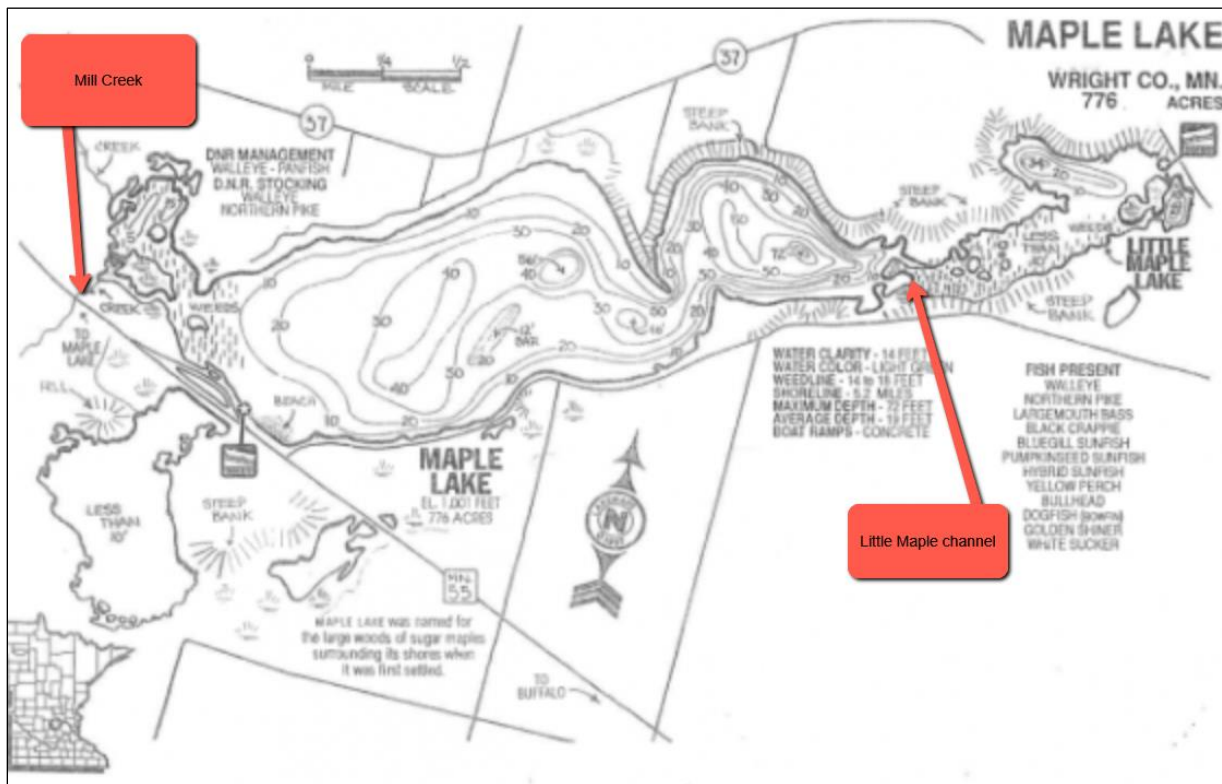
1. Reestablishing historical water levels to minimize the shoreline erosion due to high water observed in recent years
2. Lowering the lake level too much, which could result in nutrient release from the lakebed damaging water quality and/or change to the Ordinary High-Water Level (OHWL)
3. Navigation of the Little Maple channel, which property owners estimated at three feet deep in September 2020 (when lake levels were at approximately 1000.9 feet NAVD88), the Little Maple channel is shown Figure 1.

The subsequent sections of this memo discuss how this proposed runout elevation was determined.

Note all elevations reported in this memorandum are reported in North American Vertical Datum of 1988 (NAVD88) unless otherwise specified. Maple Lake lake elevations are reported in the National Geodetic Vertical Datum of 1929 (NGVD29) on the MNDNR website and on its website. All graphics include both datums. Based on the National Oceanic and Atmospheric Administration VERTCON tool, the conversion factor is:

$$NAVD88 - NGVD29 = 0.35 \text{ feet.}$$

Figure 1 Maple Lake Bathymetry Map with Annotation showing Mill Creek and Little Maple Channel



# EXHIBIT A

Mr. James Bedell  
MNDNR Area Hydrologist  
December 21, 2020

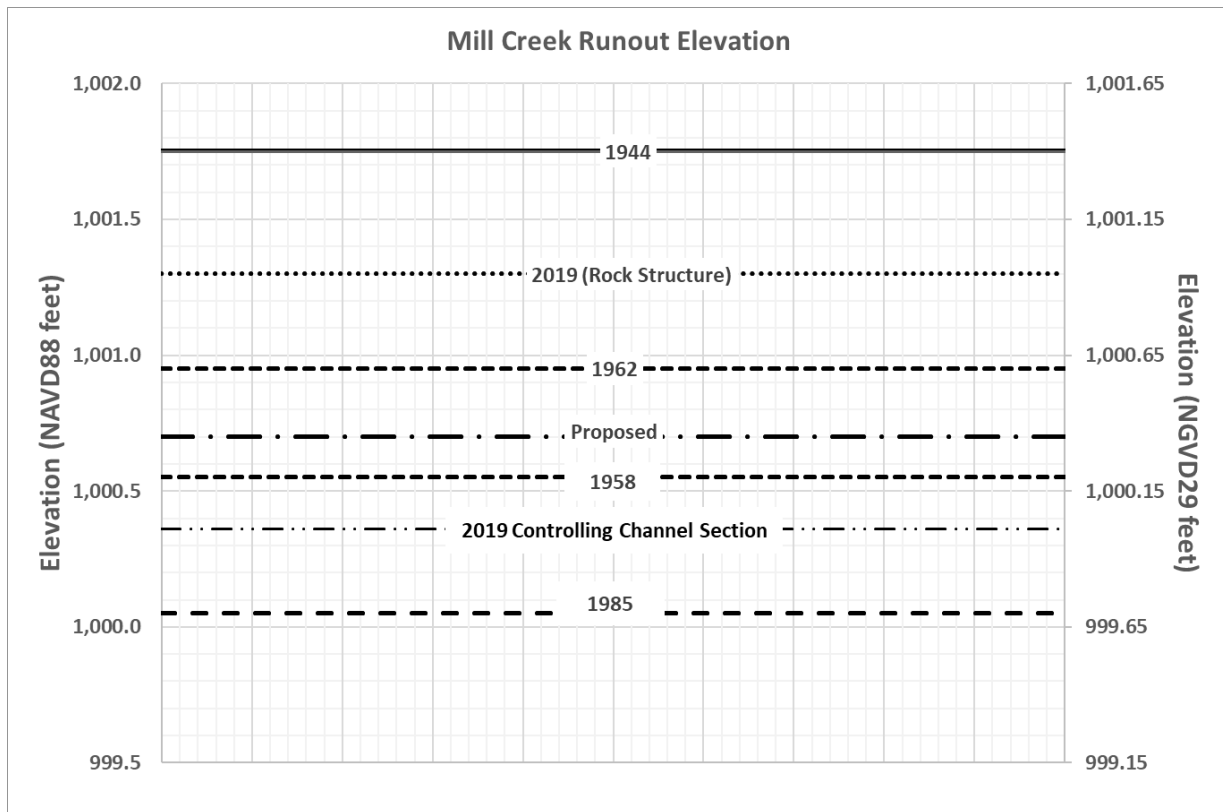


## Channel Runout Elevation

During our prior conversations, you stated that there are records of that the runout elevation has varied by almost two feet due to animal (beaver) activity, natural processes such as sedimentation and flood flushes, as well as private property owners wishing to change the lake level.

The lowest historical runout elevation of 1000.05 feet NAVD88 was measured in 1985 and the highest historical runout elevation of 1001.75 feet NAVD88 was measured in 1944. The historical runout elevations, provided by you, and the proposed runout elevation are shown in Figure 2 below. The existing controlling section of the Mill Creek channel is at 1000.36 feet; however, an unpermitted plastic-wrapped, rock water level control structure was placed in the channel to raise the water level to 1001.25 feet NAVD88. The rock structure is shown on Figure 3. The proposed runout elevation is approximately at the average of these historical runout elevations.

Figure 2 Historical Runout Elevations of Maple Lake





# EXHIBIT A

**Mr. James Bedell**  
MNDNR Area Hydrologist  
December 21, 2020



*Figure 3 Rock Water Level Control Structure*



## Historical Water Levels Pattern

We understand it is your preference the proposed runout elevation study focus on conditions from 2000 to present. The period between 2000-present is exceedingly wet and correspondingly four of the five highest levels water levels ever recorded on Maple Lake are included in this period of record. The Wright County average annual precipitation is shown on Figure 4, the Maple Lake water levels for full period of record are shown on Figure 5, and the Maple Lake water levels for the 2000-present period of record are shown on Figure 6. As part of this analysis, Dan Nadeau of the Wright County Soil and Water Conservation District completed a spot survey along the shoreline of Maple Lake to provide property owners an understanding of the proposed water level control structure elevation, the relative lake height on their property, and allow them to provide input on the proposed water level control structure. A photograph of these spot surveys is included as Figure 7.

Between 2000 and 2014, water levels typically begin the year high, may even rise slightly higher into late May or the beginning of June with the spring snowmelt, and then gradually drop for the remainder of the year. In some years fall rain raises the water level again in the late season. The trendlines on Figure 6 illustrate this pattern.

# EXHIBIT A

Mr. James Bedell  
MNDNR Area Hydrologist  
December 21, 2020



Beginning in 2015, the lake level no longer follows this predictable seasonal pattern. In some years, the lake levels climb throughout the summer and through the fall, even as evaporation increases and precipitation decreases. In other years, the water level falls then rises again (showing a 'V' shape on the graph). MLID and ML-LPOA officials attribute this to a poorly managed Mill Creek channel. They stated that floating logs and beaver activity obstructed the channel and due to access issues, were unable to clear the channel. As part of the construction of a water level control structure, the MLID and/or local government unit expect to obtain a permanent easement on the Mill Creek channel for maintenance. During this time, MLID and the ML-LPOA officials stated they have received numerous calls about the lake height and corresponding shoreline erosion from property owners around the lake. Continued shoreline erosion due to high lake levels is expected to have an adverse effect on turbidity and overall water quality in Maple Lake.

Therefore, we focused on the period between 2000 and 2014, except for 2002 when a record amount of precipitation (34.4 inches which was 22% more than the next highest annual amount of precipitation of 28.3 inches in 2016) and the record high water level on Maple Lake was recorded. We selected a runout elevation that would reestablish the historical pattern of the lake, whereby higher lake levels would occur in the spring and the lake would discharge over the water level control structure and then into the summer and fall, the lake would no longer discharge into Mill Creek but continue to fall due to evaporation. Table 1 shows the monthly average water level compared to the proposed runout elevation (i.e. "Yes" will discharge or "No" will not discharge).

Figure 4 Average Countywide Precipitation (from MN State Climatology Office)

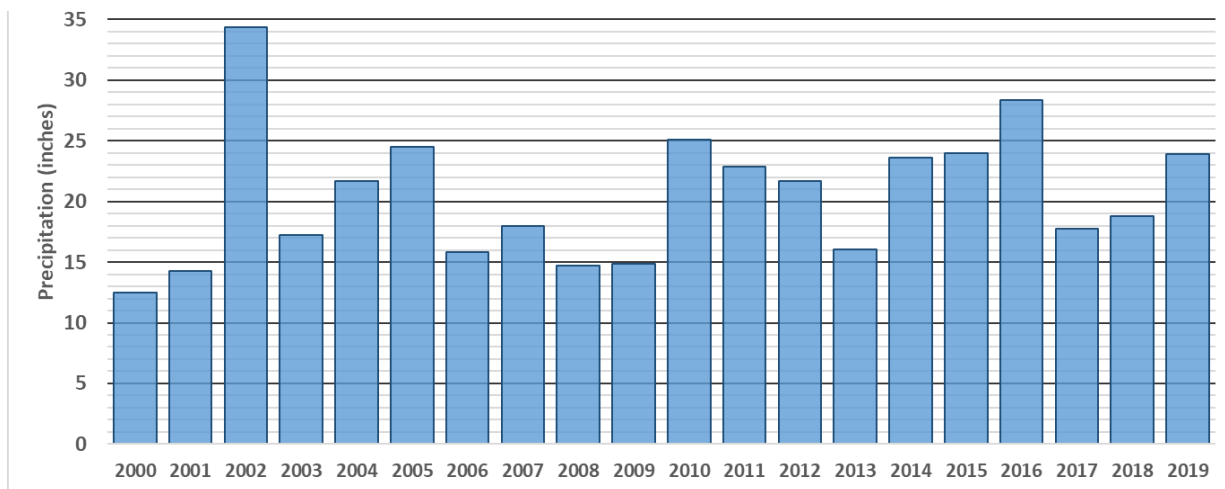


Figure 5 Recorded Water Levels on Maple Lake (1944- present)

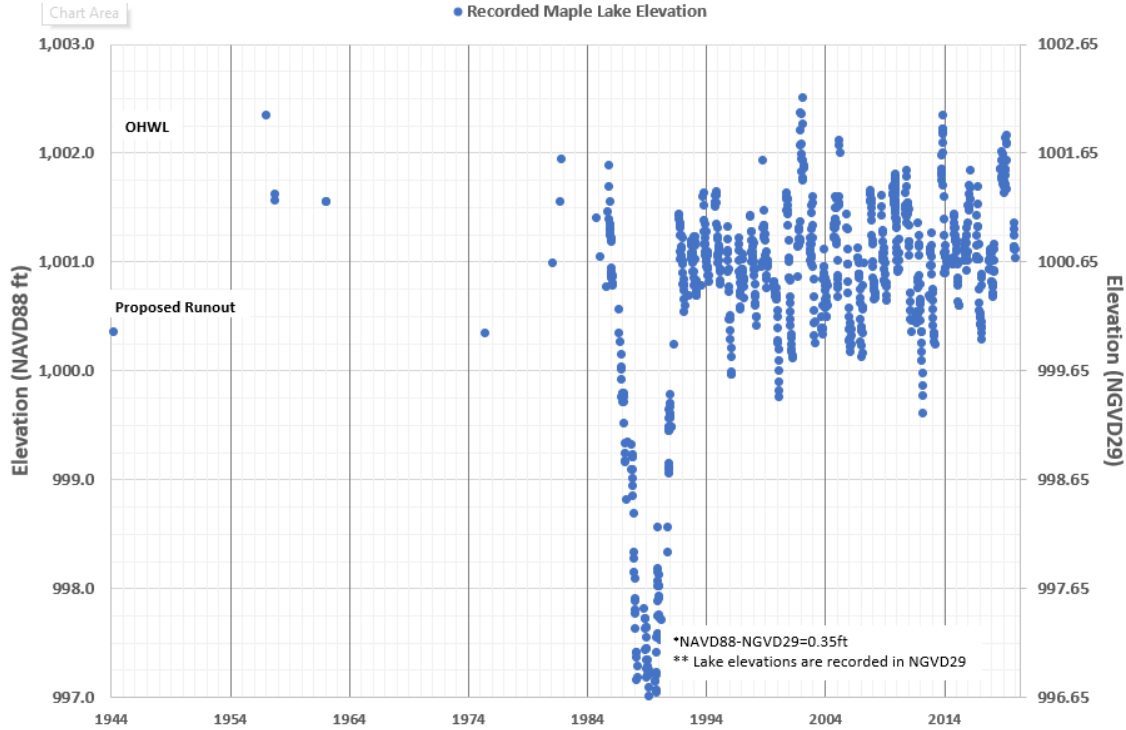
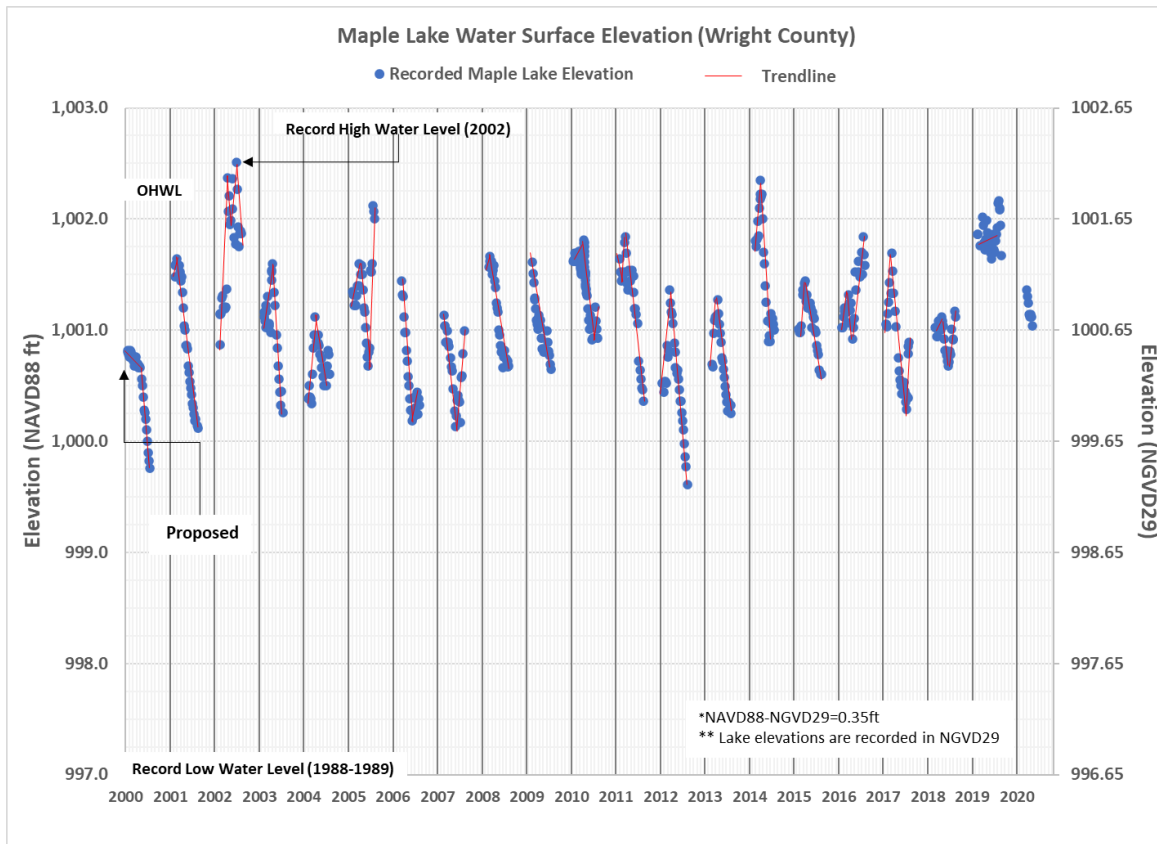


Figure 6 Recorded Water Levels on Maple Lake (2000- present)





# EXHIBIT A

**Mr. James Bedell**  
MNDNR Area Hydrologist  
December 21, 2020



Figure 7 Photograph of Spot Surveys Around Maple Lake



Table 1 Average Water Surface Elevation on Maple Lake for Typical Years (2000-2001, 2003-2014)

Month	Average Water Surface Elevation		Discharge During a Typical Year
	NAVD88 feet	NGVD29 feet	
<b>January</b>	Ice-In Period*		N/A
<b>February</b>	Ice-In Period*		N/A
<b>March</b>	Ice-In Period*		N/A
<b>April</b>	1001.1	1000.7	Yes
<b>May</b>	1001.3	1001.0	Yes
<b>June</b>	1001.4	1001.1	Yes
<b>July</b>	1001.1	1000.7	Yes
<b>August</b>	1000.7	1000.4	No
<b>September</b>	1000.6	1000.2	No
<b>October</b>	1000.6	1000.3	No
<b>November</b>	Ice-In Period*		N/A
<b>December</b>	Ice-In Period*		N/A

\*Typical ice-in period, five or fewer lake level readings available in period of record

## Ordinary High-Water Level

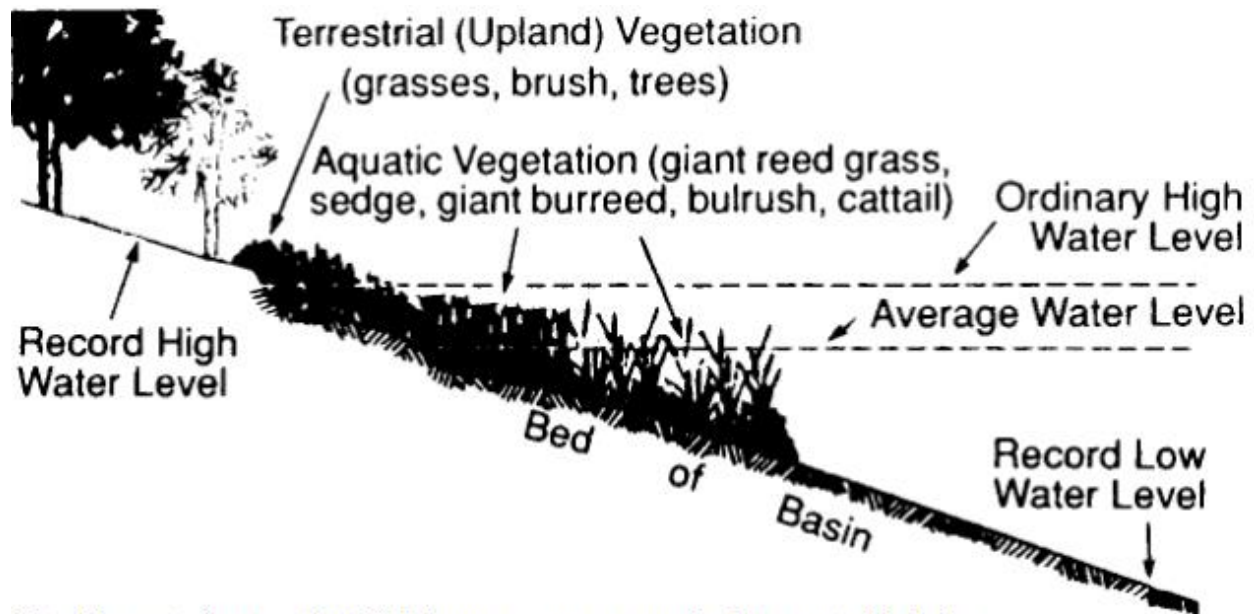
Based on our discussion on September 15, 2020, you identified a reporting error in the OHWL in the Minnesota Department of Natural Resources (MNDNR) archives and the correct OHWL is 1002.2 feet NAVD88 (1001.8 feet NGVD29). According to 1993 MNDNR publication *Guidelines for Ordinary High Water Level Determinations* the OHWL is

*“ an elevation delineating the HIGHEST water level that has been maintained for a sufficient period of time to leave evidence upon the landscape, commonly the point where the natural vegetation changes from predominantly aquatic to predominantly terrestrial”.*

Figure 8 shows an example of a OHWL determination.

In the same meeting, you stated the runout elevation of most lakes in Minnesota ranges between six inches and one foot below the OHWL (i.e. between 1001.7 and 1001.2 feet NAVD88). You also stated that you expected that Maple Lake could be lower than that amount, perhaps by as much as eighteen inches. The value selected is eighteen inches below the OHWL. Because the proposed runout elevation is approximately at the average of the historical runout elevations, we do not expect the OHWL to change.

*Figure 8 OHWL Elevation of a Waterbody (Excerpt from MNDNR, 1993)*



Note: The vegetation types identified above are common examples, but are not all inclusive.

# MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS

# EXHIBIT B

FOR

## MAPLE LAKE IMPROVEMENT DISTRICT MAPLE LAKE, MINNESOTA 55358



now part of



7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:

MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

MAPLE LAKE LEVEL CONTROL  
STRUCTURE IMPROVEMENTS  
4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA



now part of

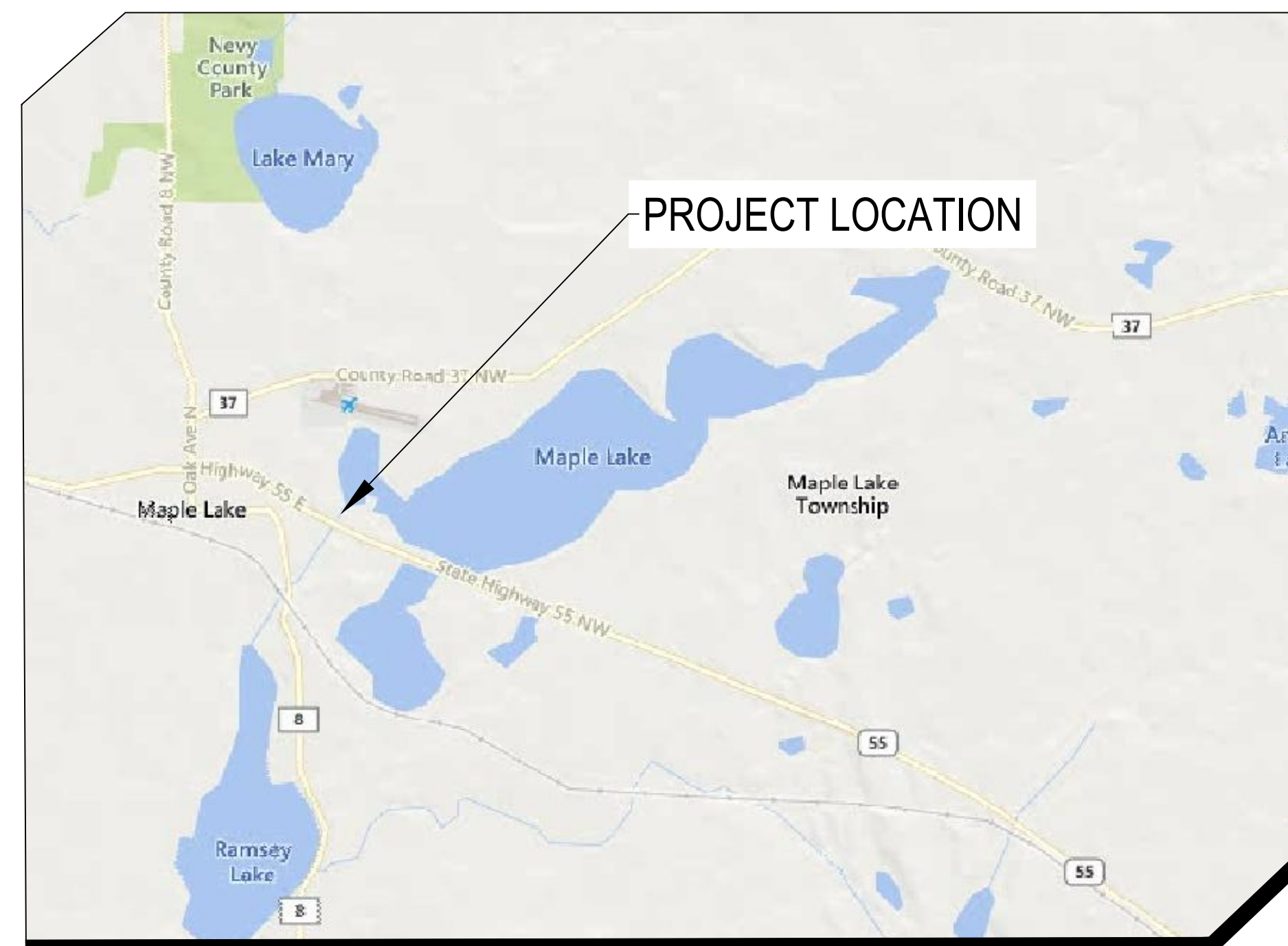


WENCK, NOW PART OF STANTEC  
7500 OLSON MEMORIAL HIGHWAY, SUITE 300  
GOLDEN VALLEY, MINNESOTA, 55427  
(P) - 763-252-6800  
CONTACT: ROSS MULLEN, PE

**OWNER**

**MAPLE LAKE IMPROVEMENT DISTRICT**

PO BOX 460  
MAPLE LAKE, MINNESOTA 55358  
CONTACT: TONY GRAHAM

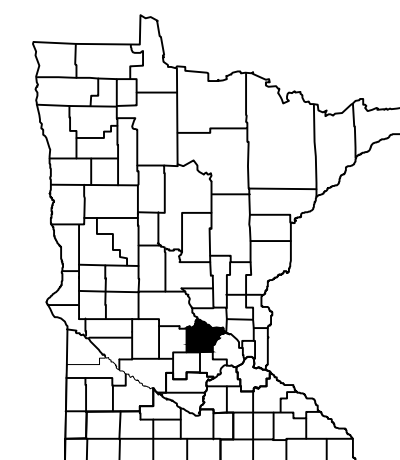


THIS PLAN SET CONTAINS 7 SHEETS

SHEET INDEX	
SHEET NO.	SHEET TITLE
C-001	TITLE SHEET
C-002	GENERAL NOTES
C-003	LEGEND
C-004	ESC AND REMOVALS
C-101	PROPOSED CONDITIONS
C-102	WEIR CROSS SECTIONS
C-801	DETAILS



VICINITY MAP  
NOT TO SCALE



PROJECT LOCATION  
CITY: MAPLE LAKE  
COUNTY: WRIGHT

PROJECT TITLE

ISSUE NO.:

DESCRIPTION:

DATE:

CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

LICENSE NO. (NUMBER)

DATE: (DATE)

PROJECT NO.: 227701760

DWN BY: DTE    CHKD BY: RSM    APP'D BY: ---

ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:

TITLE SHEET

SHEET NO.:

C-001



### GOVERNING SPECIFICATIONS

- MINNESOTA DEPARTMENT OF TRANSPORTATION (MN/DOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" LATEST EDITION AND SUPPLEMENTS.
- CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS FOR UTILITIES LATEST EDITION.
- APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES

### GENERAL NOTES

- UNTL REVISION BLOCK STATES "ISSUED FOR CONSTRUCTION", THE PLAN SET IS NOT CERTIFIED FOR CONSTRUCTION AND CONTRACTOR IS BUILDING AT THEIR OWN RISK
- EXISTING CONDITIONS SHOWN ARE FROM A COMBINATION OF TOPOGRAPHIC SURVEY AND LIDAR DATA COMPLETED BY THE MINNESOTA DNR, DATED 2020. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. CONTRACTOR RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND MUST IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS.
- NO SUBSURFACE UTILITIES WERE LOCATED OR SURVEYED AS PART OF THESE PLANS. WHETHER UTILITIES ARE ON SITE AND THEIR EXACT LOCATION/DEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
- CONTRACTOR RESPONSIBLE FOR CONTACTING GOPHER STATE ONE CALL (1-800-252-1166) A MINIMUM OF 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
- CONTRACTOR SHALL ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND MUST COORDINATE THE RELOCATION OR PROTECTION OF EXISTING UTILITIES, OR INSTALLATION OF NEW UTILITIES WITH UTILITY OWNERS THAT MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE STARTING WORK. COSTS FOR SUCH WORK, INCLUDING EXTRA TIME AND EFFORT FOR PROVISIONS NECESSARY TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER. FEES OR CHARGES WHICH ARE TO BE PAID TO THE UTILITY COMPANY, INCLUDING WORK THAT MUST BE PERFORMED BY THE UTILITY COMPANY, ARE AT NO ADDITIONAL COST TO THE OWNER.
- QUANTITIES ARE APPROXIMATE, AND MAY VARY TO ALLOW COMPLETION OF WORK.
- WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
- CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS TO ADJACENT PROPERTIES THROUGHOUT CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW).
- CONTRACTOR SHALL COORDINATE AND MAINTAIN UTILITY SERVICES TO ADJACENT PROPERTIES AT ALL TIMES. UTILITY SERVICE MUST NOT BE INTERRUPTED WITHOUT APPROVAL FROM OWNER, CITY, AND ADJACENT PROPERTIES.
- CONSTRUCTION LIMITS ARE TO EDGE OF PUBLIC WATERS UNLESS SHOWN OR NOTED OTHERWISE. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON PLANS WITHIN THE CONSTRUCTION LIMITS.
- CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
- CONTRACTOR SHALL PHOTO OR VIDEO DOCUMENT EXISTING CONDITIONS OF TREES AND PLANTINGS, ADJOINING CONSTRUCTION, SURFACES, AND SITE IMPROVEMENTS, ETC. TO REMAIN THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY CONSTRUCTION OPERATIONS. SUBMIT TO ENGINEER AND OWNER BEFORE CONSTRUCTION BEGINS. USE ADEQUATELY DETAILED PHOTOGRAPHS OR VIDEO RECORDINGS. INCLUDE PLANS AND NOTATIONS TO INDICATE SPECIFIC EXISTING DAMAGE CONDITIONS OF ITEMS DESIGNATED TO REMAIN. ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURE TO REMAIN MUST BE REPLACED BY THE CONTRACTOR, TO OWNERS SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
- CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
- CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT, SPECIAL CONDITIONS AND PROVISIONS, ETC.) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IMPLEMENTATION AND ENFORCEMENT OF SAFE WORK PRACTICES, INCLUDING BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, SCAFFOLDING; MATERIALS HANDLING AND DRILLING; OPERATION OF EQUIPMENT; AND SAFETY OF PUBLIC DURING PROGRESS OF WORK.
- CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
- HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND OTHER HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, BY THE CONTRACTOR, INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MCPA REGULATIONS. CONTRACTOR SHALL REMOVE SPILL OF FUELS, OILS, OR OTHER CHEMICALS IMMEDIATELY UPON DETECTION.
- IF CONSTRUCTION IS ANTICIPATED TO OCCUR DURING COLD WEATHER, IN THE EVENT THAT SNOW REMOVAL IS REQUIRED FOR SITE ACCESS AND CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL COORDINATE WITH OWNER FOR ACCEPTABLE SNOW STORAGE AREAS ONSITE. SNOW REMOVAL AND STORAGE IS INCIDENTAL TO THE CONTRACT.
- CONTRACTOR SHALL DOCUMENT AND MAINTAIN AS-BUILT INFORMATION AS CONSTRUCTION PROGRESSES AND IS RESPONSIBLE FOR PROVIDING AS-BUILT DRAWINGS TO THE OWNER AS REQUIRED BY JURISDICTIONAL AGENCIES FOR CERTIFICATION. ALL AS-BUILT DATA MUST BE COLLECTED BY A STATE OF MN PROFESSIONAL LAND SURVEYOR WHOSE SERVICES ARE ENGAGED AND PAID FOR BY THE CONTRACTOR.
- NO IN-WATER WORK SHALL BE PERFORMED BETWEEN MARCH 15-JUNE 15 TO ALLOW FOR FISH SPAWNING AND MIGRATION PER THE MN DNR WORK EXCLUSION DATES. IF THE CONTRACTOR DESIRES TO WORK IN THE WATER DURING THIS TIME PERIOD, THEY MUST SEEK WRITTEN APPROVAL FROM THE MN DNR AREA FISHERIES MANAGER.

### REMOVAL/DEMOLITION NOTES

- SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR DEMOLITION, REMOVAL AND DISPOSAL.
- CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT CONFLICT WITH CONSTRUCTION WITH THE ENGINEER.
- MATERIALS REMOVED/DEMOLISHED BY CONTRACTOR BECOME PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL LOAD AND HAIL MATERIAL OFF-SITE AND PROPERLY DISPOSE OF MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. CONTRACTOR MUST LEAVE THE SITE IN A CONDITION

TO THE SATISFACTION OF THE OWNER AND ENGINEER.

- CONTRACTOR SHALL SAWCUT FULL DEPTH AT PAVEMENT REMOVAL LIMITS AND AS NECESSARY TO CREATE A SMOOTH FIT/TRANSITION ALONG MATCHING PAVEMENT AREAS.
- CONTRACTOR SHALL COORDINATE UTILITY REMOVAL WORK WITH APPROPRIATE UTILITY OWNER.
- CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF SIGNS ARE DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL SALVAGE AND REINSTALL FENCE IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF FENCE IS DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW FENCE, TO OWNERS SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
- IN THE EVENT THAT UNKNOWN CONTAINERS OR TANKS ARE ENCOUNTERED, THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY. ALL CONTAINERS OR TANKS MUST BE DISPOSED OF PROPERLY AT A REGULATED/PERMITTED FACILITY.
- CONTRACTOR SHALL REVIEW ALL TREE REMOVALS WITH THE OWNER AND ENGINEER PRIOR TO REMOVAL OPERATIONS.
- CLEARING AND GRUBBING OPERATIONS MUST COMPLY WITH THE FOLLOWING:
  - PROTECT ALL TREES AND PLANTS NOT DESIGNATED FOR REMOVAL.
  - CONDUCT OPERATIONS IN SUCH A MANNER THAT DOES NOT DAMAGE PROTECTED TREES AND VEGETATION.
  - CUT, REMOVE, AND DISPOSE OF TREES, BRUSH, SHRUBS, WINDFALLS, LOGS, STUMPS, ROOTS, FALLEN TIMBER, AND OTHER VEGETATION.
  - BACKFILL DEPRESSIONS WITH NATIVE SOILS OR SUITABLE FILL MATERIAL AS REQUIRED BY DESIGN OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND COMPACT BACKFILL AS DIRECTED.
  - DISPOSE OF DEBRIS IN ACCORDANCE WITH APPLICABLE REGULATIONS.
  - CONSIDER BENEFICIAL USE DESIGNATIONS FOR UNADULTERATED WOOD, WOOD CHIPS, BARK AND SAWDUST.
  - NO BURYING OF CLEARED AND GRUBBED WASTE WITHIN THE CONSTRUCTION LIMITS.

### TRAFFIC CONTROL NOTES

- SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- CONTRACTOR SHALL COORDINATE CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK. IF OFFSITE STAGING AREA IS REQUIRED, CONTRACTOR IS RESPONSIBLE TO FIND, OBTAIN, AND PAY FOR NECESSARY STAGING AREA AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A STAGING PLAN TO THE ENGINEER FOR REVIEW BEFORE STARTING WORK.
- CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL. TRAFFIC CONTROL MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MN MUTCD, INCLUDING LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. SUBMIT TRAFFIC CONTROL PLAN TO ENGINEER FOR REVIEW BEFORE CONSTRUCTION RELATED ACTIVITIES. PLANS MUST COMPLY WITH APPLICABLE PERMIT REQUIREMENTS.
- CONTRACTOR MUST SCHEDULE WORK IMPACTING HIGHWAY 55 WITH THE OWNER, MN/DOT AND ENGINEER. CLOSURES OR DETOURS MUST BE APPROVED BY OWNER AND MN/DOT PRIOR TO STARTING WORK.
- CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC ON HIGHWAY 55 AT ALL TIMES.

### EROSION CONTROL NOTES

- SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- CONTRACTOR SHALL CONFORM TO AND CONDUCT INSPECTIONS IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS.
- BEFORE SITE DISTURBANCE AND AS REQUIRED AS CONSTRUCTION PROGRESSES, CONTRACTOR SHALL INSTALL, MAINTAIN, REPAIR, AND REPLACE EROSION PREVENTION MEASURES AND SEDIMENT CONTROL DEVICES (INLET PROTECTION, CONSTRUCTION ENTRANCE, SILT FENCE, EROSION CONTROL BLANKET, ETC.) IN ACCORDANCE WITH THE NPDES PERMIT, AND CITY AND STATE PERMITS.
- ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITIONS DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
- CONTRACTOR SHALL STABILIZE ALL EXPOSED SOIL AREAS WITHIN THE CONSTRUCTION LIMITS WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE THAT HAS TEMPORARILY (WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS) OR PERMANENTLY CEASED. STABILIZATION MUST BE INITIATED PROMPTLY.
- CONTRACTOR SHALL REMOVE ANY SEDIMENT THAT HAS TRACKED ONTO PAVED SURFACES BOTH ON AND OFFSITE WITHIN 24 HOURS AND AS DIRECTED BY OWNER. SWEEP STREET IN ACCORDANCE WITH STATE AND NPDES PERMIT REQUIREMENTS.
- CONTRACTOR SHALL COMPLETE CONCRETE WASH-OUT OFF-SITE OR PROVIDE SELF-CONTAINED CONCRETE READY MIX TRUCKS.
- CONTRACTOR SHALL MINIMIZE DUST FROM CONSTRUCTION OPERATIONS BY PROVIDING WATER OR OTHER APPROVED METHOD ON A DAILY BASIS.
- CONTRACTOR SHALL PHASE GRADING WORK TO MINIMIZE THE DURATION THAT DISTURBED SOIL IS EXPOSED.
- CONTRACTOR SHALL PROVIDE/INSTALL DIVERSION DITCHES, SEDIMENT BASINS, AND OTHER EROSION PROTECTION/SEDIMENT CONTROL MEASURES AS NECESSARY DURING INTERIM PROJECT CONDITIONS (NOT SHOWN ON PLANS) TO MANAGE/DIVERT STORM WATER AWAY FROM SITE FEATURES AND CONTROL EROSION/SEDIMENT. CONTRACTOR SHALL ADJUST MEASURES AS NECESSARY THROUGHOUT PROJECT PHASING.
- CONTRACTOR SHALL LOCATE SOIL STOCKPILES NO LESS THAN 50 FEET FROM ROADWAYS, STORMWATER INLETS, PONDS, WETLANDS, DRAINAGE CHANNELS, AND OTHER SURFACE WATERS. IF REMAINING FOR MORE THAN 7 DAYS, STABILIZE THE STOCKPILES BY MULCHING, VEGETATED COVER, TARPS, OR OTHER MEANS IN ACCORDANCE WITH THE NPDES PERMIT. PLACE PERIMETER SEDIMENT CONTROLS AROUND STOCKPILES TO CONTROL EROSION. COVER TEMPORARY STOCKPILES LOCATED ON PAVED SURFACES IF LEFT FROM MORE THAN 24 HOURS.
- CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AFTER SITE HAS BEEN STABILIZED AND VEGETATION IS ESTABLISHED AS DIRECTED BY ENGINEER. EROSION CONTROL MEASURES USED FOR CONSTRUCTION MUST NOT BE REMOVED UNTIL AUTHORIZED BY OWNER OR ENGINEER.
- EROSION CONTROL SHALL MEET THE FOLLOWING REQUIREMENTS:
  - EROSION CONTROL BLANKET: MN/DOT SPECS 2575 AND 3885, CATEGORY 3N STRAW 2S (NATURAL NETTING ONLY)
  - TEMPORARY SEED: MN/DOT SPECS 2575 AND 3876, STATE SEED MIX 21-112 WINTER WHEAT COVER CROP
  - RIPRAP: MN/DOT SPECS 2511 AND 3801. GRANITE OR FIELDSTONE ONLY.
    - GEOTEXTILE FOR RIPRAP: MN/DOT SPEC 3733 GEOTEXTILES, TYPE IV
    - FLOTATION SILT CURTAIN: MN/DOT SPECS 2573 AND 3887, TYPE HEAVY DUTY

### GRADING NOTES

- SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- CONTRACTOR SHALL PROVIDE TOPSOIL, SEED/SOD, AND MULCH IN ACCORDANCE WITH THE EROSION CONTROL PLAN.
- ALL DISTURBED PVIOUS AREAS ARE TO RECEIVE 6 INCHES OF SALVAGED TOPSOIL, UNLESS NOTED OTHERWISE. CONTRACTOR SHALL SALVAGE TOPSOIL BEFORE GRADING, AND STOCKPILE FOR RESPREADING.
- CONTRACTOR SHALL EXCAVATE AND DISPOSE OF UNSUITABLE OR CONTAMINATED SOILS DISCOVERED ONSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND AS DIRECTED BY ENGINEER.
- EXISTING SPOT ELEVATIONS AT MATCH POINTS ARE BASED ON INTERPOLATED POINT TO POINT SURVEY DATA. CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONNECTION POINTS PRIOR TO INSTALLATION OF IMPROVEMENTS. CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING IMMEDIATELY OF ANY FIELD DISCREPANCIES. CONTRACTOR IS RESPONSIBLE FOR MAKING NECESSARY ADJUSTMENTS IN THE FIELD FOR CONSTRUCTABILITY. REGULATORY

COMPLIANCE (ADA), POSITIVE DRAINAGE, AND TO ENSURE SMOOTH TRANSITIONS TO FIELD CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR REWORK OF A DISCREPANCY THAT IS NOT COMMUNICATED TO THE ENGINEER IN WRITING.

### DEWATERING NOTES

- CONTRACTOR SHALL ANTICIPATE GROUND WATER AND SURFACE WATER THROUGHOUT THE DURATION OF THE PROJECT. A BID ITEM HAS BEEN PROVIDED FOR ALL DEWATERING AND TEMPORARY STREAM DIVERSION WORK NECESSARY FOR CONSTRUCTION.
- CONTRACTOR SHALL OBTAIN APPLICABLE REQUIRED PERMITS (INCLUDING MN DNR WATER APPROPRIATION PERMIT) AND SUBMIT DEWATERING PLAN TO ENGINEER FOR REVIEW. DEWATERING MUST MEET PERMIT REQUIREMENTS AND BE ACCEPTED BEFORE STARTING CONSTRUCTION ACTIVITIES.
- CONTRACTOR MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATER RELATED TO DEWATERING OR BASIN DRAINING (E.G. PUMPED DISCHARGES, TRENCH/DITCH CUTS FOR DRAINAGE) TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. CONTRACTOR MAY DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASINS TO THE SURFACE WATERS IF THE BASIN WATER HAS BEEN VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED IN THE BASIN AND THAT NUISANCE CONDITIONS (SEE MINNESOTA RULES CHAPTER 7050.0210, SUBPART 2) WILL NOT RESULT FROM THE DISCHARGE. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPs (E.G. SILT BAGS), SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM PROPERTIES. IF THE CONTRACTOR MUST DISCHARGE WATER THAT CONTAINS OIL OR GREASE, THE CONTRACTOR MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G. CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGING THE WATER. THE CONTRACTOR MUST ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SANDBAGS, PLASTIC SHEETING, OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES.
- CONTRACTOR MUST DISCHARGE WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING CHANNELS OR ON DOWN SLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.
- IF THE CONTRACTOR IS USING FILTERS WITH BACKWASH WATER, THE CONTRACTOR MUST HAIL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR MAY DISCHARGE BACKWASH WATER TO THE SANITARY SEWER IF PERMISSION IS GRANTED BY THE SANITARY SEWER AUTHORITY. THE CONTRACTOR MUST REPLACE AND CLEAN THE FILTER MEDIA USED IN DEWATERING DEVICES WHEN REQUIRED TO RETAIN ADEQUATE FUNCTION.

### TREE PRESERVATION NOTES

- CONTRACTOR SHALL PROTECT EXISTING TREES THAT ARE NOT TO BE REMOVED. INSTALL ORANGE MESH FENCING, 4 FEET HIGH, WITH STAKES EVERY 10 FEET, 5 FEET OUTSIDE OF THE DRIP LINE OF PRESERVED TREES, OR AT THE CONSTRUCTION LIMITS. DO NOT PERFORM ACTIONS WITHIN THE PROTECTED AREA THAT MAY HARM THE TREE AND COMPACT THE SOIL, INCLUDING EXCAVATION, STORING MATERIALS, PARKING AND TRAFFIC DURING CONSTRUCTION. WHERE CONSTRUCTION REQUIRES DISTURBANCE WITHIN THE PROTECTED AREAS, DISTURB THE ROOT ZONE AS LITTLE AS POSSIBLE.
- TREE PROTECTION MEASURES/FENCING MUST BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION AND MUST BE REVIEWED BY OWNER AND ENGINEER BEFORE STARTING CONSTRUCTION.
- WHEN TREE ROOTS ARE ENCOUNTERED THAT MUST BE REMOVED, CONTRACTOR SHALL CUT ROOTS CLEANLY AS FAR FROM THE TREE AS POSSIBLE AND IMMEDIATELY WATER AND BACKFILL OVER THE ROOTS TO PREVENT DRYING.

### HORIZONTAL AND VERTICAL CONTROL NOTES

- THE HORIZONTAL CONTROL FOR THIS PLAN IS NAD83 WRIGHT COUNTY COORDINATES SYSTEM US FOOT.
- THE VERTICAL CONTROL FOR THIS PLAN IS NAVD88

### PERMITS REQUIRED

- CONTRACTOR RESPONSIBLE TO SECURE ALL FEDERAL, STATE, COUNTY, AND CITY PERMITS NECESSARY FOR CONSTRUCTION. CONTRACTOR SECURED PERMITS MAY INCLUDE BUT ARE NOT LIMITED TO:
  - DNR WATER APPROPRIATION PERMIT FOR CONSTRUCTION DEWATERING
  - DNR PUBLIC WATERS PERMIT
  - USACE SECTION 401 PERMIT
  - WCA/USACE WETLAND PERMITS
  - CITY PERMITS
  - MNDOT PERMITS

### STREAM DIVERSION NOTES

- CONTRACTOR SHALL SUBMIT STREAM BYPASS PLAN TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO STARTING CONSTRUCTION. PLAN SHALL MINIMALLY IDENTIFY THE FOLLOWING:
  - TIME AND SEQUENCE OF CONSTRUCTION ACTIVITIES.
  - LIST OF MATERIALS AND EQUIPMENT.
  - SITE ACCESS PLAN.
- ALL STREAM BYPASS ITEMS TO BE PAID FOR BY BID ITEM "TEMPORARY STREAM BYPASS" BY LUMP SUM. THIS INCLUDES ANY AND ALL GRADING, DAMMING, PUMPING, DEWATERING, TEMPORARY CULVERTS, FILL MATERIAL, RIPRAP, ADDITIONAL EROSION CONTROL DEVICES AND EFFORTS, AND ANY OTHER STREAM BYPASS EFFORTS.
- CONTRACTOR SHALL TAKE INTO CONSIDERATION SITE ACCESS AND PROTECTING ANY DIVERSION MATERIALS FROM CONSTRUCTION EQUIPMENT AND TRAFFIC WHEN CREATING STREAM BYPASS PLAN.
- STREAM BYPASS PLAN SHALL CONFORM TO ANY AND ALL PERMITTING REQUIREMENTS. REFER TO SWPPP AND OTHER PERMITS WHEN CREATING STREAM BYPASS PLAN.
- THE TEMPORARY STREAM DIVERSION MUST BE CONSTRUCTED IN SUCH A MANNER AS TO NOT ADVERSELY IMPACT UPSTREAM PROPERTIES.
- DIVERSION STRUCTURES, SUCH AS STREAM BLOCKS, PLACED IN THE CHANNEL MUST BE CONSTRUCTED IN SUCH A MANNER THAT MINIMIZES SEDIMENT TRANSPORT DOWNSTREAM. ALL IN-STREAM MATERIALS MUST BE REMOVED UPON COMPLETION OF WORK WITHIN THE CHANNEL.
- THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE DEGREE OF PROTECTION NEEDED TO PROTECT THE WORK AREA FROM FLOODING. IN THE EVENT THAT THE WORK SITE IS COMPROMISED, THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANUP OF ANY DEBRIS OR MATERIALS CARRIED DOWNSTREAM.
- CONSTRUCTION WILL OCCUR WITHIN DELINEATED WETLANDS AND PUBLIC WATERS. THE CONTRACTOR SHALL LIMIT CONSTRUCTION ACTIVITIES TO THE LIMITS SHOWN ON THE DRAWINGS. ANY ADDITIONAL PERMITTING EFFORTS, MITIGATION REQUIREMENTS, RESTORATION, AND ASSOCIATED FEES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

# EXHIBIT B



now part of



7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:  
  
MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

MAPLE LAKE LEVEL CONTROL  
STRUCTURE IMPROVEMENTS  
4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA

PROJECT TITLE	ISSUE NO.	DESCRIPTION	DATE
MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS	1	60% PLANS	07/16/2021

CERTIFICATION:  
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PROJECT NO. (NUMBER)  
DATE (DATE)

PROJECT NO.: 227701760

DWN BY: DTE    CHKD BY: RSM    APPD BY: ---  
ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:  
GENERAL NOTES

SHEET NO.:  
C-002

### WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG

### GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166



### LEGAL / BOUNDARY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY BOUNDARY	
	LOT LINE	
	EASEMENT LINE	
	SETBACK LINE	
	RIGHT OF WAY LINE	
	SECTION LINE	
	QUARTER LINE	

### SITE / MISC. LEGEND

EXISTING	DESCRIPTION	PROPOSED
	RAILROAD TRACK	
	FENCE LINE	
	GUARD RAIL	
	RETAINING WALL	
	BUILDING	
	DITCH CENTERLINE	
	WETLAND BOUNDARY	
	WETLAND	
	SIGN	
	BOLLARD/POST	
	UTILITY POLE	
	ANCHOR CABLE	
	LIGHT POLE	
	DECORATIVE LIGHT	
	ANTENNA	
	BENCH	
	AIR CONDITIONER	
	SOIL BORING	
	MAILBOX	
	HANDICAP PARKING SPACE	
	RAILROAD CROSSING SIGNAL	
	STOP LIGHT	
	HAND HOLE	
	PARKING COUNT	

### GRADING / TOPOGRAPHY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	MINOR CONTOUR	
	MAJOR CONTOUR	
	GRADING LIMITS	
	CONSTRUCTION LIMITS	
	SPOT ELEVATION	
	SURFACE GRADE & FLOW DIRECTION	
	SURFACE SLOPE (H:V) & FLOW DIRECTION	

### PAVEMENT LEGEND

EXISTING	DESCRIPTION	PROPOSED
	EDGE OF PAVEMENT / GRAVEL	
	ROAD CENTERLINE	
	CURB AND GUTTER	
	TIP-OUT CURB AND GUTTER	
	CONCRETE PAVEMENT	
	HEAVY DUTY CONCRETE PAVEMENT	
	BITUMINOUS PAVEMENT	
	LIGHT DUTY BITUMINOUS PAVEMENT	
	HEAVY DUTY BITUMINOUS PAVEMENT	
	GRAVEL SURFACE	

### UTILITY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	FORCEMAIN	
	WATERMAIN	
	IRRIGATION LINE	
	UNDERGROUND GAS LINE	
	UNDERGROUND COMMUNICATION LINE	
	UNDERGROUND FIBER OPTIC LINE	
	UNDERGROUND ELECTRIC LINE	
	OVERHEAD UTILITY LINE	
	DRAINTILE	
	PIPE CASING	
	SANITARY MANHOLE	
	CLEANOUT	
	STORM SEWER MANHOLE	
	STORM SEWER INLET	
	FLARED END SECTION	
	CURB STOP	
	HYDRANT	
	WATER VALVE	
	REDUCER	
	FIRE DEPARTMENT CONNECTION	
	WATER WELL	
	AUTO SPRINKLER	
	POST INDICATOR VALVE	
	WATER METER	
	SPRINKLER HEAD	
	IRRIGATION CONTROL VALVE	
	GAS MARKER	
	GAS VALVE	
	GAS METER	
	COMMUNICATIONS PEDESTAL	
	TELEPHONE MANHOLE	
	ELECTRICAL PEDESTAL	
	ELECTRIC METER	
	TRANSFORMER	
	ELECTRIC MANHOLE	

### VEGETATION / LANDSCAPING LEGEND

EXISTING	DESCRIPTION	PROPOSED
	TREE LINE	
	STUMP	
	SHRUB/PERENNIAL PLANT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	ORNAMENTAL TREE	
	ROCK MULCH	
	WOOD MULCH	
	SEED	
	SOD	

### REMOVALS LEGEND

DESCRIPTION	PROPOSED
REMOVE EXISTING BUILDING	
CLEAR AND GRUB AREA	
REMOVE TREE/SHRUB/STUMP	
REMOVE CURB AND GUTTER	
REMOVE CONCRETE PAVEMENT	
REMOVE BITUMINOUS PAVEMENT	
REMOVE GRAVEL SURFACING	
SAWCUT PAVEMENT	

### EROSION CONTROL LEGEND

DESCRIPTION	PROPOSED
ROCK CONSTRUCTION EXIT	
EROSION CONTROL BLANKET	
TURF REINFORCEMENT MAT	
SEED	
SOD	
RIPRAP	
VEGETATED RIPRAP	
SILT FENCE	
FLOTATION SILT CURTAIN	
BIOLOG (OR DITCH CHECK)	
INLET PROTECTION	
HAY BALES	
CULVERT PROTECTION	
TREE PROTECTION	
TEMPORARY DIVERSION DITCH	
TEMPORARY SEDIMENT TRAP DISCHARGE	

### ABBREVIATIONS

BV	BUTTERFLY VALVE	OC	ON CENTER
BW	BOTTOM OF WALL (AT GRADE)	OCS	OUTLET CONTROL STRUCTURE
BVC	BEGIN VERTICAL CURVE	MAX	MAXIMUM
BOT	BOTTOM	MH	MANHOLE
CB	CATCH BASIN	ME	MATCH EXISTING
CBMH	CATCH BASIN MANHOLE	MIN	MINIMUM
CO	CLEANOUT	NWL	NORMAL WATER LEVEL
CF	CUBIC FEET	OFF	OFFSET
CFS	CUBIC FEET PER SECOND	PC	POINT OF CURVATURE
CL	CENTERLINE	PI	POINT OF INTERSECTION
CL	CLASS	PL	PROPERTY LINE
CMP	CORRUGATED METAL PIPE	PR	PROPOSED
CY	CUBIC YARDS	PT	POINT OF TANGENCY
DIP	DUCTILE IRON PIPE	PVC	POLYVINYL CHLORIDE
EG	EXISTING GRADE	PVI	POINT OF VERTICAL INTERSECTION
EOF	EMERGENCY OVERFLOW	R	RADIUS
EL	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EP	EDGE OF PAVEMENT	RIM	STRUCTURE TOP OF CASTING/GRATE
EVC	END VERTICAL CURVE	ROW	RIGHT OF WAY
EX	EXISTING	SF	SQUARE FEET
F/F	FACE TO FACE	SS	SANITARY SEWER
FFE	FINISHED FLOOR ELEVATION	SSMH	SANITARY SEWER MANHOLE
FES	FLARED END SECTION	ST	STORM SEWER
FM	FORCEMAIN	STA	STATION
FNH	FRONT NOZZLE OF HYDRANT	STD	STANDARD
FG	FINISHED GRADE	STMH	STORM SEWER MANHOLE
FL	FLOW LINE	SW	SIDEWALK
GV	GATE VALVE	SY	SQUARE YARDS
GPM	GALLONS PER MINUTE	TC	TOP OF CURB
HDPE	HIGH-DENSITY POLYETHYLENE	TNH	TOP NUT OF HYDRANT
HP	HIGH POINT	TOE	TOE OF DITCH
HYD	HYDRANT	TOP	TOP OF DITCH
HWL	HIGH WATER LEVEL	TP	TOP OF PIPE
INV	INVERT	TW	TOP OF WALL
LF	LINEAL FEET	TYP	TYPICAL
LFE	LOW FLOOR ELEVATION	VCP	VITRIFIED CLAY PIPE
LP	LOW POINT	WM	WATERMAIN
LVC	LENGTH OF VERTICAL CURVE		

# EXHIBIT B



now part of  
**Stantec**  
 7500 OLSON MEMORIAL HWY  
 SUITE 300  
 GOLDEN VALLEY, MN 55427  
 PHONE: 763-252-6800  
 FAX: 952-831-1268  
 WWW.WENCK.COM

CLIENT:  
 MAPLE LAKE  
 IMPROVEMENT DISTRICT  
 PO BOX 460  
 MAPLE LAKE, MN 55358

PROJECT TITLE  
**MAPLE LAKE LEVEL CONTROL  
 STRUCTURE IMPROVEMENTS**  
 4860 HIGHWAY 55  
 WRIGHT COUNTY, MINNESOTA

ISSUE NO.	DESCRIPTION	DATE
1	60% PLANS	07/16/2021

CERTIFICATION:  
 I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PROJECT NO.: 227701760

DWN BY: DTE  
 CHKD BY: RSM  
 APPD BY: ---

ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:  
 LEGEND

SHEET NO.:  
**C-003**

**WARNING:**  
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.  
 THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.  
 CALL BEFORE YOU DIG  
**GOPHER STATE ONE CALL**  
 TWIN CITY AREA: 651-454-0002  
 TOLL FREE 1-800-252-1166



# EXHIBIT B



now part of



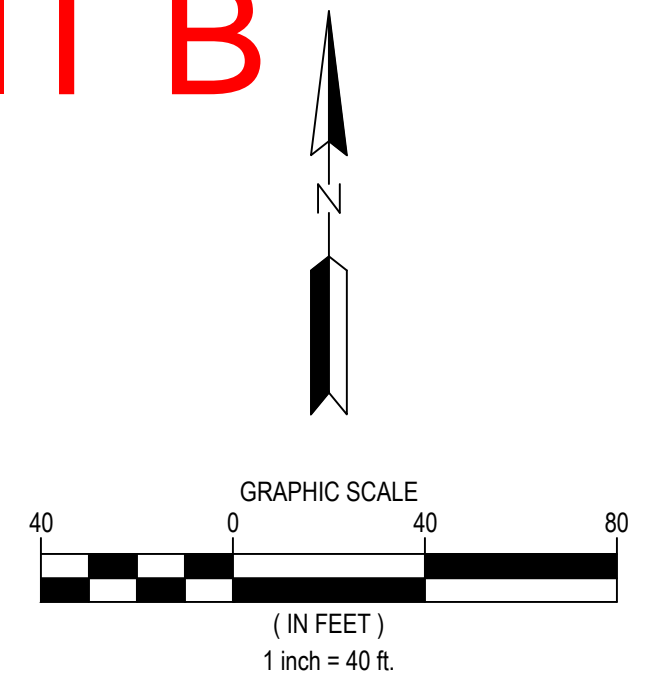
7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:

MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

## MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS

4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA



MAPLE LAKE  
OHW=1002.2 NAVD88  
PER MNDNR DETERMINATION SEPTEMBER 15, 2020  
APPROX. 100YR HWL=1002.8 NAVD88



### NOTES

- SEE SHEET C-002 FOR ADDITIONAL PROJECT NOTES.
- COORDINATE WITH MAPLE LAKE IMPROVEMENT DISTRICT AND ADJACENT LANDOWNERS FOR SITE ACCESS AND STAGING AREA.
- CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES SHOWN PRIOR TO BEGINNING ANY OTHER CONSTRUCTION.
- CLEAR BRUSH AS NECESSARY TO ACCESS THE PROJECT SITE.

### KEYNOTES

- REMOVE BEAVER HUT
- REMOVE ROCK OVERFLOW STRUCTURE
- DOUBLE ROW OF FLOTATION SILT CURTAIN
- ACCESS SITE WITHIN EXISTING CHANNEL, OR COORDINATE ACCESS WITH MAPLE LAKE LID AND ADJACENT PROPERTY OWNERS. RESTORE SITE TO EXISTING CONDITIONS. VEGETATED AREAS SHALL BE RESTORED WITH MN/DOT SEED MIX 34-261 RIPARIAN SOUTH & WEST MIX AND MN/DOT CATEGORY 3N TYPE 2S EROSION CONTROL BLANKET.
- CONSTRUCT TEMPORARY COFFERDAM FROM ONSITE MATERIALS AND DIVERT STREAM AROUND PROJECT AREA.

PROJECT TITLE

ISSUE NO.:

DESCRIPTION:

DATE:

CERTIFICATION:

HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

LICENSE NO. (NUMBER)

DATE: (DATE)

PROJECT NO.:

DWN BY:

CHKD BY:

APPD BY:

ISSUE DATE:

ISSUE NO.:

SHEET TITLE:

SHEET NO.:

### WARNING:

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CALL BEFORE YOU DIG

### GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166

ESC AND REMOVALS

C-004



# EXHIBIT B



now part of



7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:

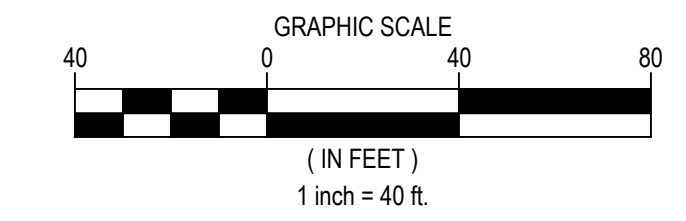
MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

## MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS

4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA



MAPLE LAKE  
OHW=1002.2 NAVD88  
PER MNDNR DETERMINATION SEPTEMBER 15, 2020  
APPROX. 100YR HWL=1002.8 NAVD88



### NOTES

- SEE SHEET C-002 FOR ADDITIONAL PROJECT NOTES.
- COORDINATE WITH MAPLE LAKE IMPROVEMENT DISTRICT AND ADJACENT LANDOWNERS FOR SITE ACCESS.
- CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.

### KEYNOTES

- PROPOSED OUTLET STRUCTURE, LOCATION A. SEE DETAIL 1/C-801
- PROPOSED OUTLET STRUCTURE, LOCATION B. SEE DETAIL 1/C-801

PROJECT TITLE

ISSUE NO.:

1

DESCRIPTION:

60% PLANS

DATE:

07/16/2021

CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PROJECT NO. (NUMBER)

DATE: (DATE)

PROJECT NO.: 227701760

DWN BY: DTE

CHKD BY: RSM

ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:

PROPOSED CONDITIONS

SHEET NO.:

C-101

### WARNING:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

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CALL BEFORE YOU DIG

### GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166

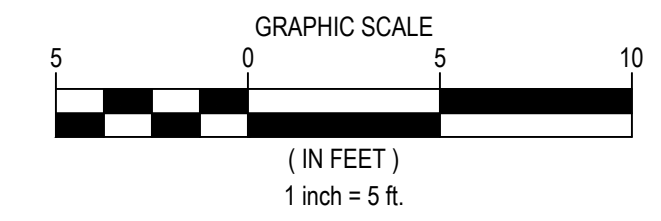
# EXHIBIT B



now part of



7500 OLSON MEMORIAL HWY  
SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM



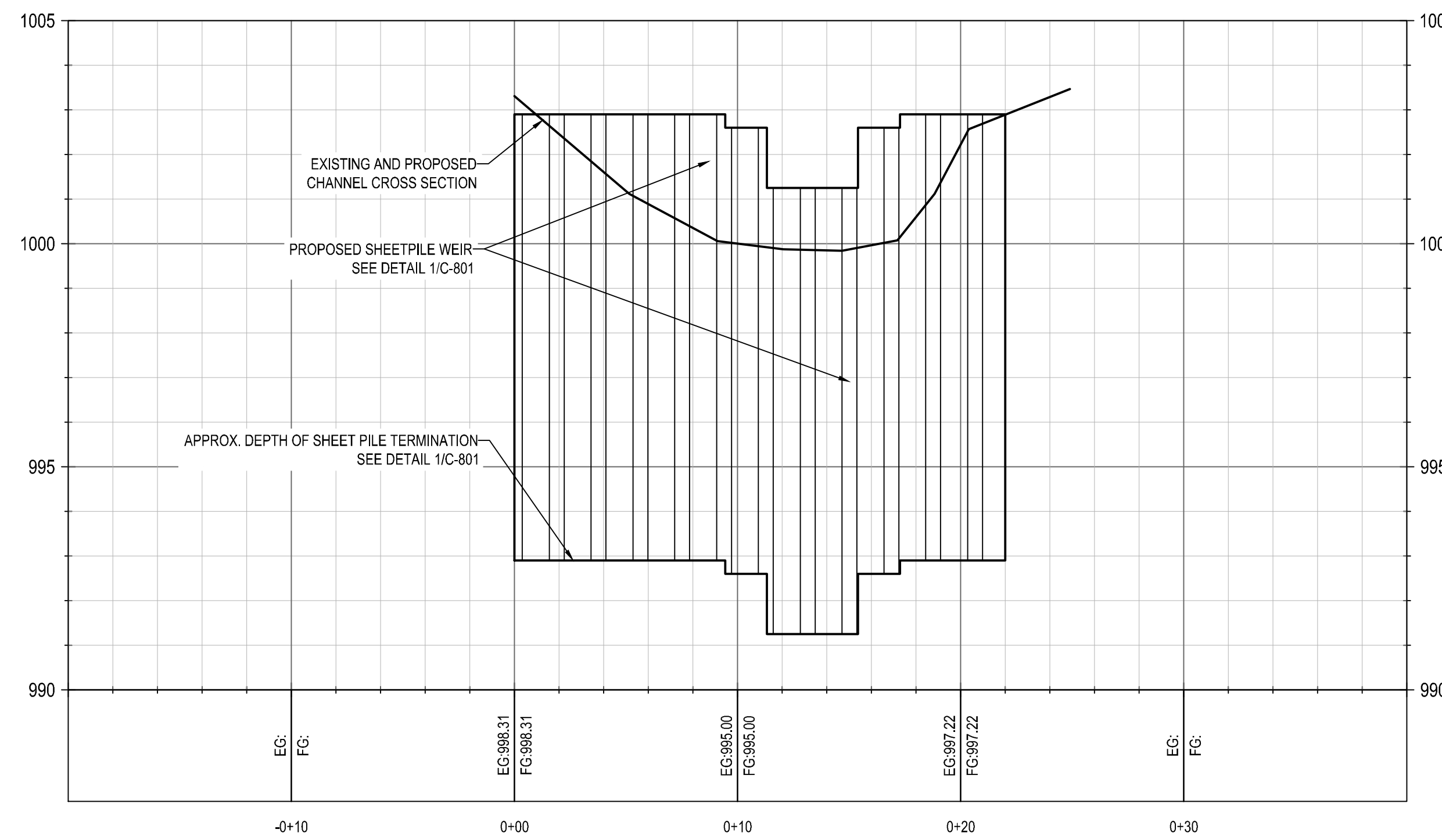
CLIENT:

MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

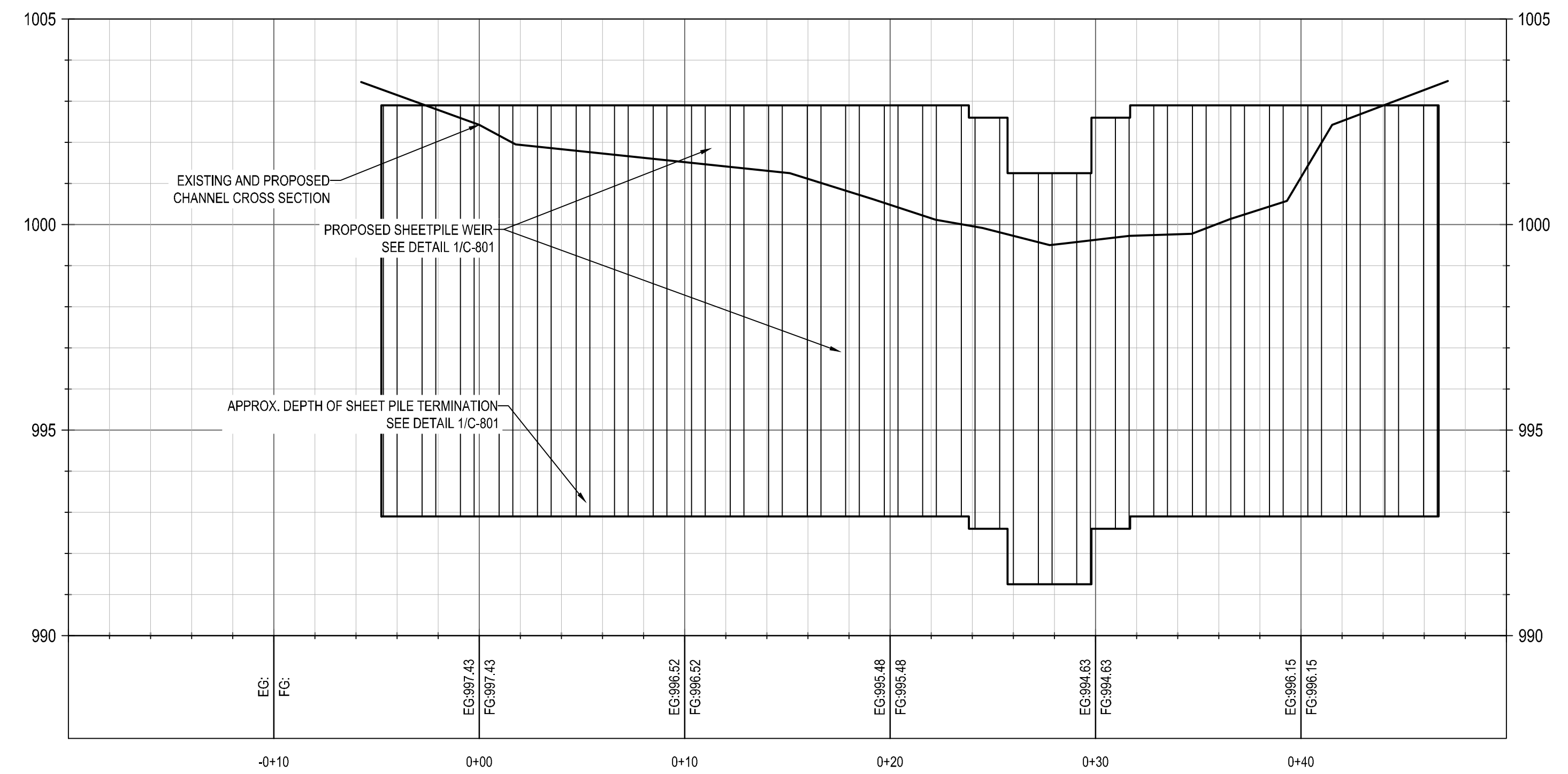
## MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS

4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA

### OUTLET STRUCTURE LOCATION A PROFILE



### OUTLET STRUCTURE LOCATION B PROFILE



#### WARNING:

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CALL BEFORE YOU DIG

#### GOPHER STATE ONE CALL

TWIN CITY AREA: 651-454-0002  
TOLL FREE 1-800-252-1166

PROJECT TITLE

ISSUE NO.: 1

DATE: 07/16/2021

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DATE: (DATE)

PROJECT NO.: 227701760

DWN BY: DTE

CHKD BY: RSM

ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:

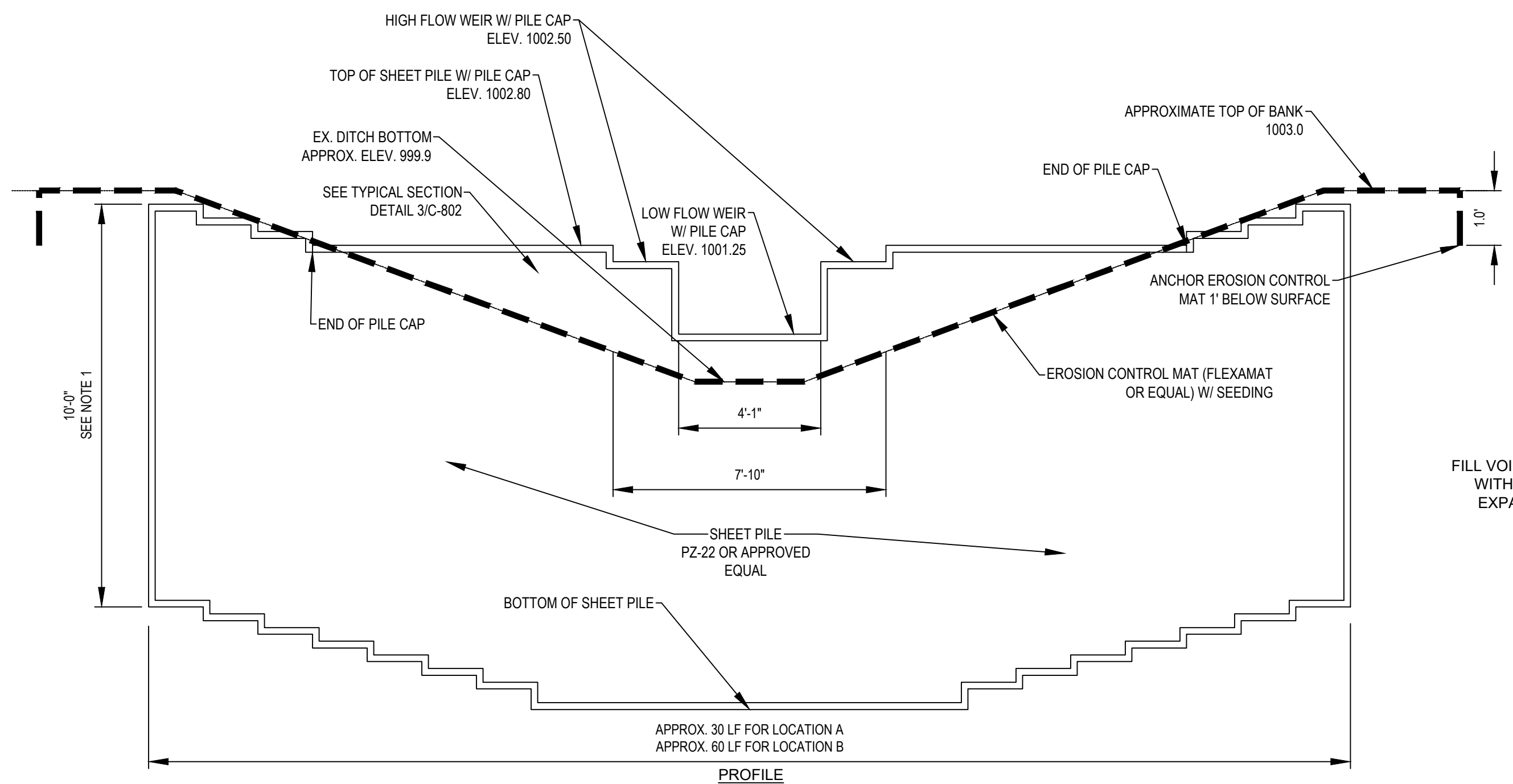
WEIR CROSS SECTIONS

SHEET NO.:

C-102

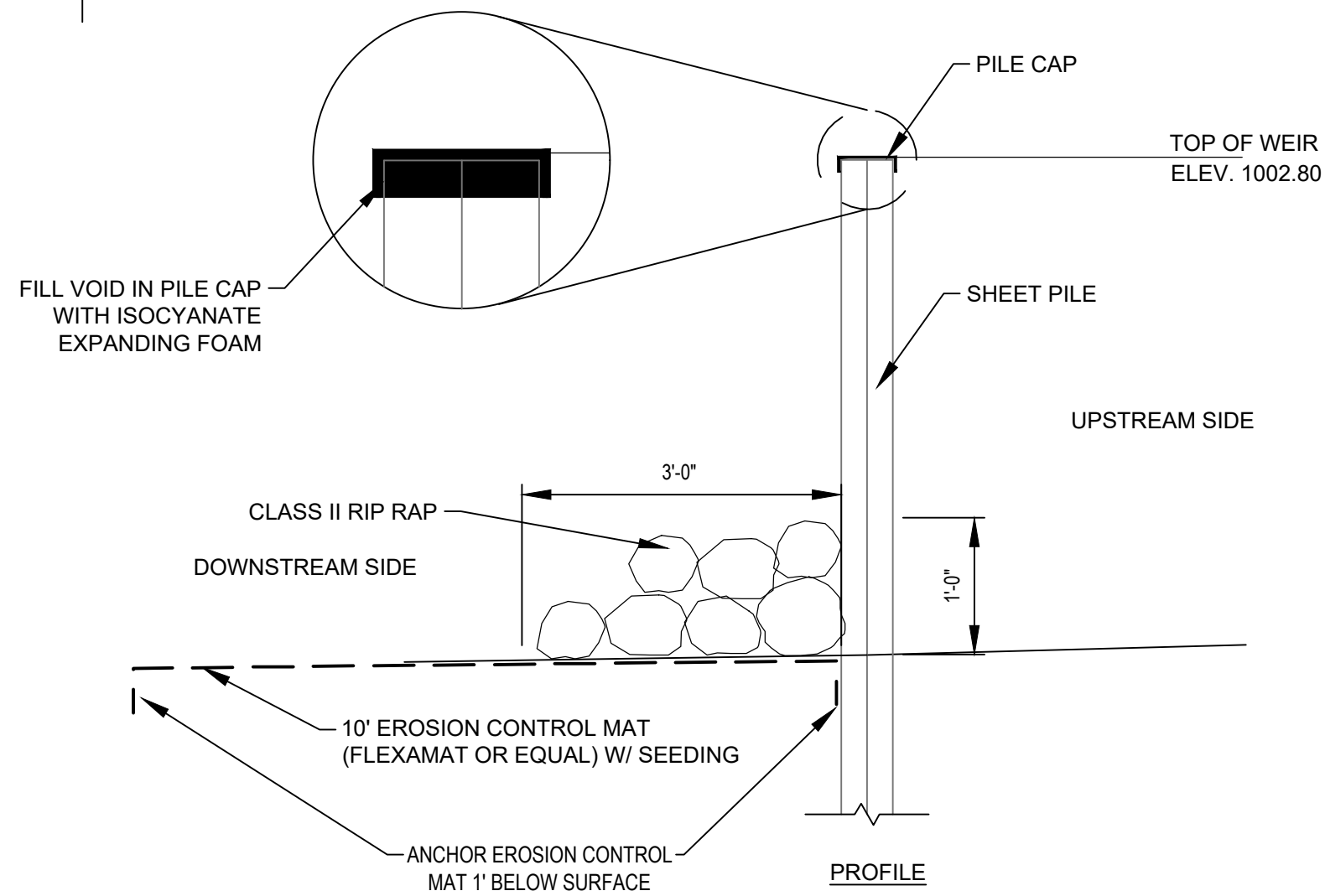
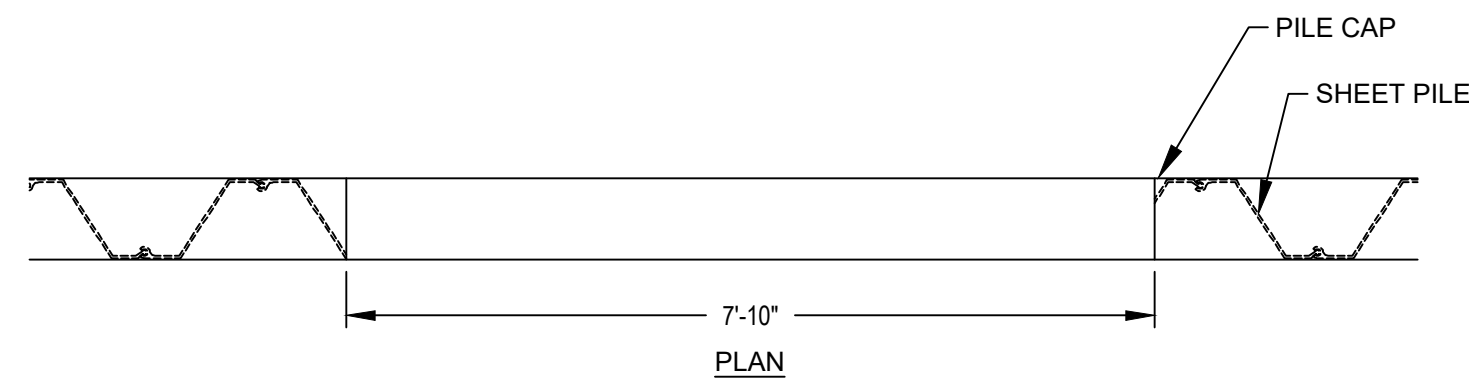


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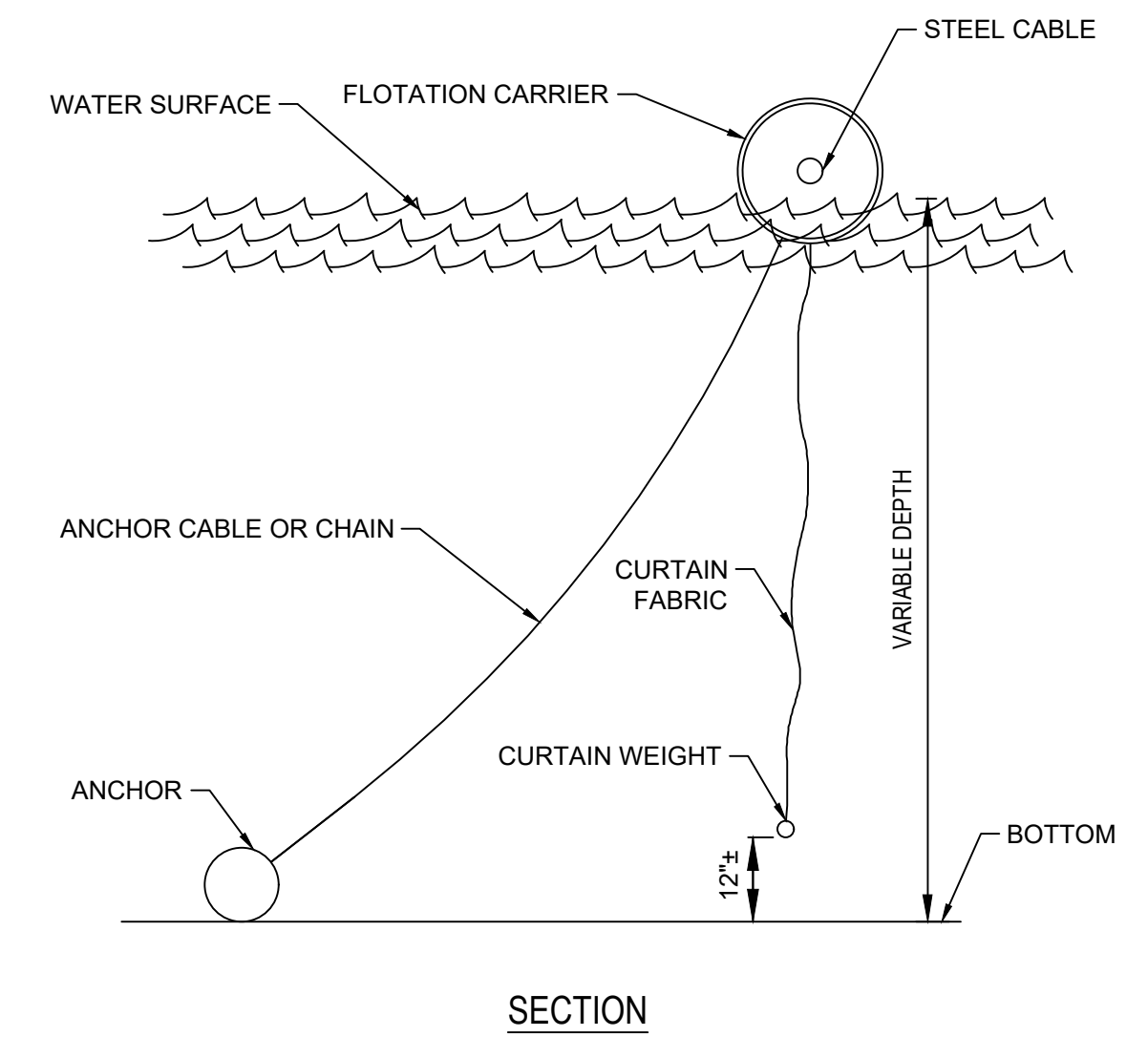


- NOTES:**
1. PILE CAP MATERIAL SHALL BE STANDARD STEEL C-CHANNEL. PILE CAP SHALL INCLUDE 1 WELD PER FT EACH SIDE MINIMUM.
  2. FILL VOID IN PILE CAP WITH ISOCYANATE EXPANDING FOAM.
  3. CENTER LOW FLOW WEIR IN MIDDLE OF CREEK.

**1 SHEETPILE WEIR WITH CAP**  
C-801 NOT TO SCALE

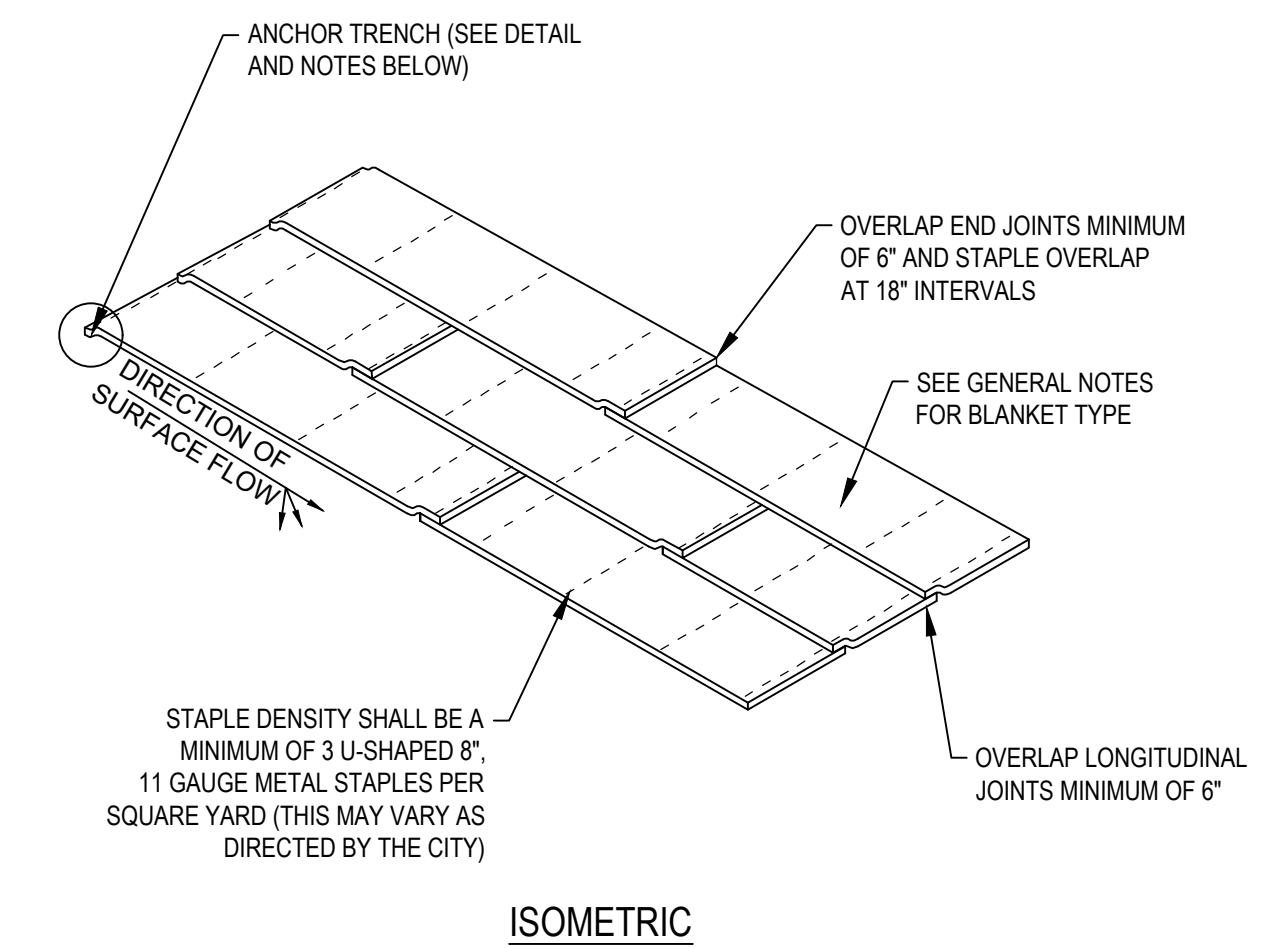


# EXHIBIT B



- NOTES:**
1. DOUBLE FLOTATION SILT CURTAIN SHOULD BE SPACED 10' APART.
  2. CURTAIN LENGTH TO MATCH BOTTOM PROFILE AS CLOSELY AS POSSIBLE.
  3. MAXIMUM INTERVAL FOR SPACING OF WEIGHT IS 15'.

**2 FLOTATION SILT CURTAIN**  
C-801 NOT TO SCALE



ANCHOR TRENCH (SEE DETAIL AND NOTES BELOW)

OVERLAP END JOINTS MINIMUM OF 6" AND STAPLE OVERLAP AT 18" INTERVALS

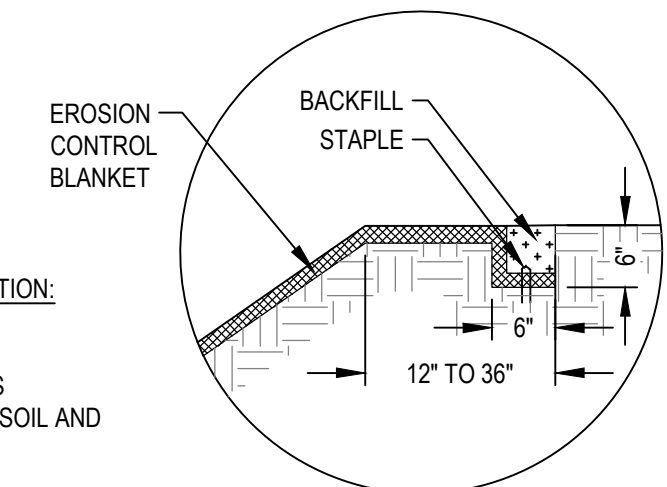
SEE GENERAL NOTES FOR BLANKET TYPE

OVERLAP LONGITUDINAL JOINTS MINIMUM OF 6"

STAPLE DENSITY SHALL BE A MINIMUM OF 3 U-SHAPED 8", 11 GAUGE METAL STAPLES PER SQUARE YARD (THIS MAY VARY AS DIRECTED BY THE CITY)

**ISOMETRIC**

- ANCHOR TRENCH INSTALLATION:**
1. DIG 6" X 6" TRENCH
  2. LAY BLANKET IN TRENCH
  3. STAPLE AT 1.5' INTERVALS
  4. BACKFILL WITH NATURAL SOIL AND COMPACT



**ANCHOR TRENCH DETAIL**

**3 EROSION CONTROL BLANKET INSTALLATION**  
C-801 NOT TO SCALE



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SUITE 300  
GOLDEN VALLEY, MN 55427  
PHONE: 763-252-6800  
FAX: 952-831-1268  
WWW.WENCK.COM

CLIENT:

MAPLE LAKE  
IMPROVEMENT DISTRICT  
PO BOX 460  
MAPLE LAKE, MN 55358

**MAPLE LAKE LEVEL CONTROL  
STRUCTURE IMPROVEMENTS**

4860 HIGHWAY 55  
WRIGHT COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.:

1

DESCRIPTION:

60% PLANS

DATE:

07/16/2021

CERTIFICATION:

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LICENSE NO. (NUMBER)

DATE: (DATE)

PROJECT NO.: 227701760

DWN BY: DTE    CHKD BY: RSM    APP'D BY: ---

ISSUE DATE: 07/16/2021

ISSUE NO.: 1

SHEET TITLE:

DETAILS

SHEET NO.:

**C-801**

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# EXHIBIT C

**EXHIBIT C: DETAILED OPINION OF PROBABLE CONSTRUCTION COST  
MAPLE LAKE IMPROVEMENT DISTRICT  
MAPLE LAKE LEVEL CONTROL STRUCTURE IMPROVEMENTS  
227701760  
60% PLANS FOR BIDDING  
JULY 16, 2021**

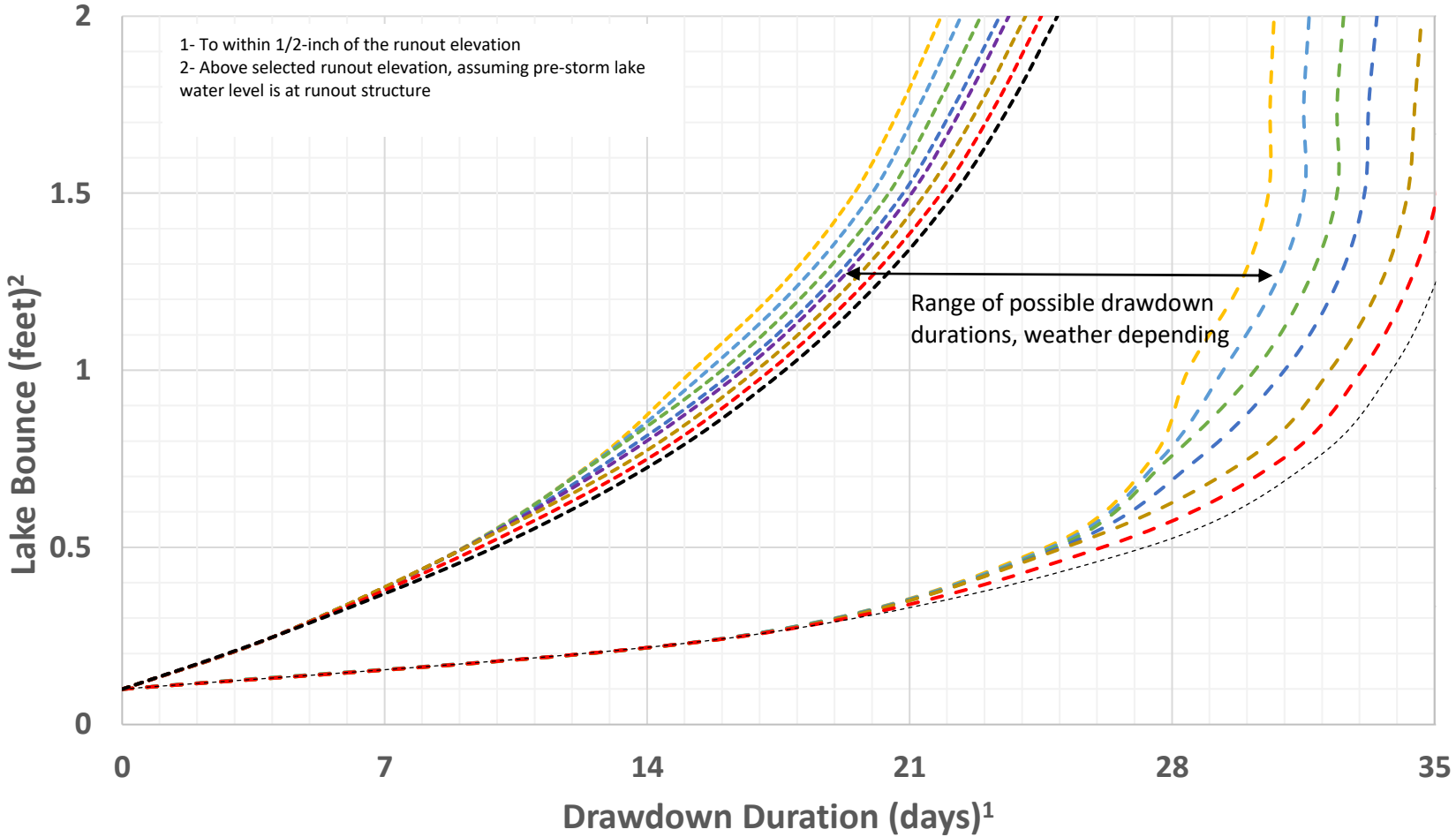
NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
<b>LOCATION A, FULL DEPTH SHEETPILE</b>					
1.01	MOBILIZATION	LS	1	\$ 5,000.00	\$ 5,000.00
1.02	TEMPORARY STREAM DIVERSION	LS	1	\$ 5,000.00	\$ 5,000.00
1.03	FLOTATION SILT CURTAIN	LF	100	\$ 20.00	\$ 2,000.00
1.04	CLEARING	SY	650	\$ 10.00	\$ 6,500.00
1.05	STREET SWEEPING	HR	8	\$ 150.00	\$ 1,200.00
1.06	SHEETPILE WEIR WITH CAP	SF	300	\$ 40.00	\$ 12,000.00
1.07	FLEXAMAT EROSION CONTROL MAT	SY	50	\$ 20.00	\$ 1,000.00
1.08	CLASS II RIPRAP	CY	10	\$ 150.00	\$ 1,500.00
1.09	SITE RESTORATION	LS	1	\$ 5,000.00	\$ 5,000.00
1.10	MNDOT SEED MIX 34-261 AND CAT 3N TYPE 2S EROSION CONTROL BLANKET	SY	650	\$ 10.00	\$ 6,500.00
<b>SUBTOTAL</b>					\$ 45,700.00
<b>ESTIMATED PERMITTING COST</b>					\$ 15,000.00
<b>CONTINGENCY [10%]</b>					\$ 7,000.00
<b>TOTAL PROJECT COST</b>					\$ 67,700.00

NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
<b>LOCATION B, FULL DEPTH SHEETPILE</b>					
2.01	MOBILIZATION	LS	1	\$ 6,000.00	\$ 6,000.00
2.02	TEMPORARY STREAM DIVERSION	LS	1	\$ 5,000.00	\$ 5,000.00
2.03	FLOTATION SILT CURTAIN	LF	100	\$ 20.00	\$ 2,000.00
2.04	CLEARING	SY	650	\$ 10.00	\$ 6,500.00
2.05	STREET SWEEPING	HR	8	\$ 150.00	\$ 1,200.00
2.06	SHEETPILE WEIR WITH CAP	SF	600	\$ 40.00	\$ 24,000.00
2.07	FLEXAMAT EROSION CONTROL MAT	SY	100	\$ 20.00	\$ 2,000.00
2.08	CLASS II RIPRAP	CY	20	\$ 150.00	\$ 3,000.00
2.09	SITE RESTORATION	LS	1	\$ 5,000.00	\$ 5,000.00
2.10	MNDOT SEED MIX 34-261 AND CAT 3N TYPE 2S EROSION CONTROL BLANKET	SY	650	\$ 10.00	\$ 6,500.00
<b>SUBTOTAL</b>					\$ 61,200.00
<b>ESTIMATED PERMITTING COST</b>					\$ 15,000.00
<b>CONTINGENCY [10%]</b>					\$ 8,000.00
<b>TOTAL PROJECT COST</b>					\$ 84,200.00

# EXHIBIT D

**Exhibit D: Lake Drawdown Times for Various Lake Runout Elevations**

- 1000.7' NAVD88/ 1000.35' NGVD29 Drawdown Time days (Cool Weather)
- 1000.8' NAVD88/ 1000.45' NGVD29 Drawdown Time days (Cool Weather)
- 1000.9' NAVD88/ 1000.55' NGVD29 Drawdown Time days (Cool Weather)
- 1001.0' NAVD88/ 1000.65' NGVD29 Drawdown Time days (Cool Weather)
- 1001.05' NAVD88/ 1000.6' NGVD29 Drawdown Time days (Cool Weather)
- 1001.15' NAVD88/ 1000.8' NGVD29 Drawdown Time days (Cool Weather)
- 1001.25' NAVD88/ 1000.9' NGVD29 Drawdown Time days (Cool Weather)
- 1001.35' NAVD88/ 1001.0' NGVD29 Drawdown Time days (Cool Weather)
- 1000.7' NAVD88/ 1000.35' NGVD29 Drawdown Time (mid-Summer) days
- 1000.8' NAVD88/ 1000.45' NGVD29 Drawdown Time (mid-Summer) days
- 1000.9' NAVD88/ 1000.55' NGVD29 Drawdown Time (mid-Summer) days
- 1001.0' NAVD88/ 1000.65' NGVD29 Drawdown Time (mid-Summer) days
- 1001.05' NAVD88/ 1000.7' NGVD29 Drawdown Time (mid-Summ
- 1001.15' NAVD88/ 1000.8' NGVD29 Drawdown Time (mid-Summr
- 1001.25' NAVD88/ 1000.9' NGVD29 Drawdown Time (mid-Summ
- 1001.35' NAVD88/ 1001.0' NGVD29 Drawdown Time (mid-Summ



## Exhibit E: Uncalibrated, Modeled Maple Lake Water Surface Elevations

