

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5D. Consider Approval of 90% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley
BCWMC November 18, 2015 Meeting Agenda
Date: November 11, 2015
Project: 23270051 2015 632

5D. Consider Approval of 90% Plans for Honeywell Pond Expansion Project (BC-4), Golden Valley

Summary:

Proposed Work: 2016 Honeywell Pond Enhancement/Improvements (CIP BC-4)

Basis for Commission Review: 90% Design Review

Change in Impervious Surface: N.A

Recommendations:

- 1) Conditional approval of 90% drawings

The 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4) will be funded by the BCWMC's ad valorem levy (via Hennepin County). The City of Golden Valley provided the 90% design plans to the BCWMC for review and comment, as set forth in the BCWMC CIP project flow chart.

Feasibility Study Summary

The City of Golden Valley's *Feasibility Report for the Honeywell Pond Enhancement/Improvement Project* (WSB, July 14, 2015) examined the feasibility of several enhancement/improvement projects in the Honeywell Pond and nearby areas that will provide treatment of runoff from the watershed. Additional improvement alternatives were evaluated to reduce runoff rate, reduce runoff volume, and provide habitat enhancements in the area. The improvement options selected for implementation will be constructed as part of the Douglas Drive Improvement Project, scheduled for construction in 2016.

The feasibility report identified three improvement options for the Honeywell Pond and nearby areas, including:

- Option 1 – Expansion of Honeywell Pond, construction of a low flow diversion system from Douglas Drive, and establishment of a buffer/habitat around the perimeter of the pond.
- Option 2a – Construction of a lift station and force main to Sandburg Learning Center Ball Fields for irrigation, with a stub for irrigation at the Honeywell site and a force main to the south infiltration system (to be constructed as part of the Douglas Drive Project).

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- Option 2b – Construction of a lift station and force main to Sandburg Learning Center Ball Fields for irrigation and a force main to the south infiltration system (to be constructed as part of the Douglas Drive Project). Assumes no irrigation at the Honeywell site.
- Option 3 – Combination of Option 1 and either Option 2a or Option 2b

At their November 19, 2014 meeting, the Commission approved the City of Golden Valley's final feasibility study for this project, and selected implementation of Option 3 (combination of Option 1 and either Option 2a or Option 2b).

50% Design Review Summary

The BCWMC approved the 50% design plans for the Honeywell Pond Enhancement/Improvement Project at the September 17, 2015 commission meeting. The 50% design plans included the designs for Option 3 (Option 1 and Option 2b from the *Feasibility Report for the Honeywell Pond Enhancement/Improvement Project* (WSB, July 14, 2015)), which includes the expansion of the dead storage in Honeywell Pond, the low flow diversion from the storm sewer along Douglas Drive to the Honeywell Pond and the installation of a pump station and force main to irrigate 17 acres at the Sandburg Ball Field with water from Honeywell Pond. The proposed system will pump water from the normal water level (NWL) to 1.5 feet below the NWL in Honeywell Pond and use this water for irrigation, at a rate of approximately 1 inch per week during the typical irrigation season (May through September). Also included in the 50% design plan set were components of a larger city project (Douglas Drive project) that are outside the scope of the BCWMC CIP project and will require review as part of the BCWMC project review program, including a force main to pump water from Honeywell Pond to an infiltration system south of the pond along Douglas Drive

90% Design Review Summary

Many of the BCWMC's comments and recommendations provided in the 50% review were addressed as part of the 90% design submittal. Below is a comparison of the estimated water quality treatment (annual total phosphorus (TP) removal, pounds per year) as provided in the feasibility study, the 50% design plans, and the current 90% design plans:

| | Honeywell Pond Expansion | Irrigation of Sandburg Ball Fields | Pumping to Douglas Drive Infiltration System |
|-------------------------------|---------------------------------|---|---|
| Feasibility Study (July 2015) | 51.6 | 5.77-11.54 | 2.04-4.08 |
| 50% Design Plans | 60.9 | 12.3 | 2-4 |
| 90% Design Plans | 60.9 ¹ | 15.3 ² | |

1 – Based on the P8 model for the 90% design plans.

2 – Based on the water balance model (which combines both the Sandburg irrigation and the Douglas Drive pumped infiltration volumes into a single volume) and applies an assumed TP concentration of 160 ug/L. See comments below in relation to the water balance model provided.

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The table above includes the proposed pumping to the Douglas Drive infiltration system (not part of the Honeywell Pond project) because the two systems are closely tied together and both use water from Honeywell Pond.

Additionally, the BCWMC received the Minnesota Department of Natural Resources (MnDNR) surface water appropriations permit application from the city's consultant. The appropriations permit application requested 7.725 million gallons per year to the infiltration system and 9.775 million gallons per year for irrigation of the Sandburg Ball Fields, for a total appropriation request of 17.5 million gallons per year. The estimated average annual volume to be used for irrigation and pumped to the infiltration system is 11.4 million gallons per year (see below for comments in relation to the water balance modeling and proposed infiltration system design).

Recommendations

A. Conditional approval of 90% drawings based on the following comments:

1) General Pond Design:

- a. Erosion control details must be shown on the plans. The SWPPP indicates the details are on Sheet 10, which does not appear to have been provided in the submittal.
- b. The erosion control plan showing the location of proposed erosion control devices must be provided for review. The SWPPP indicates this is on Sheets 218-222, which do not appear to have been provided in the submittal.
- c. The erosion and sediment control plan must incorporate the following notes and features:
 - i. Temporary or permanent mulch must be uniformly applied by mechanical or hydraulic means and stabilized by disc-anchoring or use of hydraulic soil stabilizers.

2) Pumping for irrigation of Sandburg Fields and infiltration for Douglas Drive Project (although the Douglas Drive infiltration system is not part of the Honeywell Pond project, the two systems are closely tied together and both use water from Honeywell Pond):

- a. Section VI of the hydraulic report submittal indicates that the soils are mostly hydrologic soil group (HSG) B; however, soil boring data is not included in the submittal. The water balance assumes an infiltration rate of 0.4 inch/hr, which is typical of HSG B. Soil boring data for the project needs to be provided, especially in the area of the proposed Douglas Drive infiltration basin.
- b. In the water balance model of the Sandburg Field irrigation system and the Douglas Drive infiltration system, it was stated that the daily infiltration volume for the Douglas Drive

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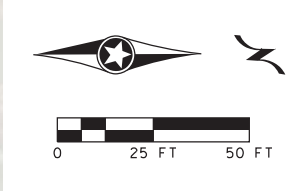
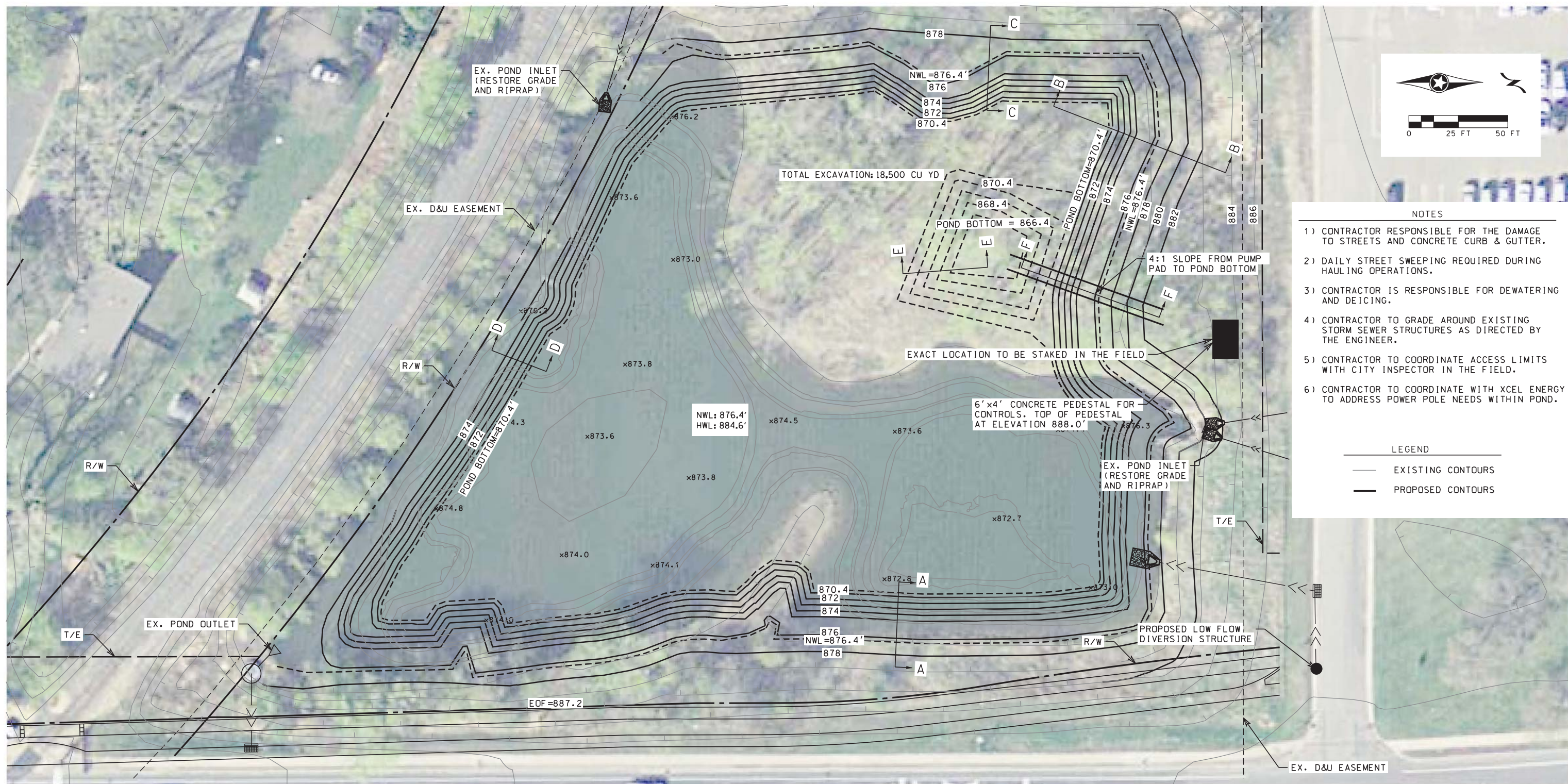
system is 12,000 gallons per day. It is unclear how this volume was estimated. Details need to be provided regarding the infiltration volume estimate.

- c. The proposed Douglas Drive infiltration basin must be designed in accordance with the Minnesota Stormwater Manual or as otherwise approved by the BCWMC, as outlined in the BCWMC's *Requirements for Improvements and Development Proposals*.
- d. The dimensions of the Douglas Drive underground infiltration system must be clarified. Based on the plans and cross section, it appears to have a bottom area of 200 feet by 12 feet and a top area of 220 feet by 36 feet (7,920 square feet or 0.18 acres). This does not match the site area of 0.11 acres (4,790 square feet) as stated in the water balance provided by the city's consultant.
- e. Based on the cross section provided on Sheet 180 of 340 and length of the system shown on the plans on Sheet 174 of 340, and assuming 40% voids in the clear rock section, it appears the storage volume in the Douglas Drive infiltration system is 5,027 gallons. This is smaller than the daily infiltration volume reported in the water balance model of 12,000 gallons per day. Based on the water balance model, it appears that the assumption is to pump from Honeywell Pond once every two days from May to September; however, it is unclear how the proposed pumping scheme will balance with available storage and infiltration rates to achieve the reported infiltration volume over the two-day time frame. Additional details need to be provided regarding the proposed pumping scheme for both the Douglas Drive infiltration system and the Sandburg Field irrigation system.
- f. Typically, infiltration systems are designed to draw down within 48 hours. The proposed design includes a clear rock cross section with 40% voids at the proposed infiltration rate (0.4 in/hr). Based on these parameters, the maximum depth of the infiltration system would be 4 feet so that the water levels can draw down within 48-hours. However, the cross section provided on Sheet 180 of 340, shows a depth of 8 feet. How will the Douglas Drive infiltration system be managed to draw down within 48 hours?
- g. If pumping will occur every two days for a volume to infiltrate within 48 hours, has consideration been given to the surface restoration of the system to account for the underground system always having standing water (i.e. what is the "compacted suitable material" shown in the cross section and will it be vegetated?)?
- h. The MnDNR appropriations permit application for pumping water from Honeywell Pond to the Douglas Drive underground infiltration system indicates an appropriation of 7.725 million gallons per year. The narrative summarizing the expected annual treatment volume by the Douglas Drive infiltration system indicates that it will treat 5 acre-feet per

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year, which is equivalent to 1.6 million gallons. Please explain the discrepancy between these two values.

- i. Based on the additional data and clarification requested above in relation to the Douglas Drive infiltration system, the water balance model must be revised to reflect the final design.
 - j. Details provided on sheet 178 of 340 in relation to the pump in the Honeywell Pond, indicates there is an intake screen on the pumps in Honeywell Pond. However, beyond this, review of Sheets related to the irrigation system forcemain (Sheets 173-176 of 340), does not indicate any additional treatment before irrigation. Provide details of the proposed treatment (e.g. filtration, UV) prior to use for irrigation. The level of treatment for particulate removal should be based on the existing irrigation equipment needs and nozzle sizes, and to address public health risk concerns. Additionally, we recommend the incorporation of an online UV treatment system sized for the expected flow rate to address any public safety concerns in relation to pathogens. Other items to consider are timing of irrigation to minimize contact with stormwater and signage indicating that water being used to irrigate the fields is non-potable.
 - k. Sheet 176 of 340 indicates that a reduced pressure zone (RPZ) device will be used from the water main to prevent cross contamination; however no additional details were provided in the review documents. The plan sheets need to be provided that show the details regarding the connection to the existing irrigation system, including details for features addressing plumbing code requirements that prevent cross contamination of the potable water supply.
- 3) Section XI.D of the submittal includes improvement plans for the Sandburg Learning Center Athletic Fields, which are dated May 18, 2015. The BCWMC reviewed improvements for the Sandburg Learning Center Athletic Fields as Application #2015-12. The approved plans are dated June 16, 2015. The approved/most recent set of plans needs to be included with the submittal.
- B. Authorize the City of Golden Valley to proceed with final plans.
- C. The final plans must be submitted to the BCWMC Engineer for administrative review and approval after modifications have been completed.

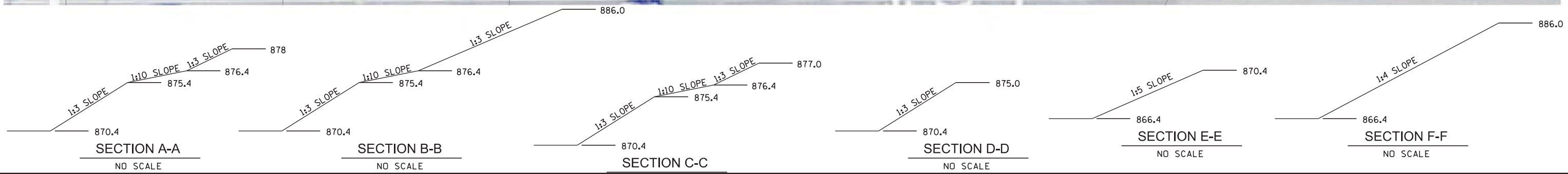


- NOTES
- 1) CONTRACTOR RESPONSIBLE FOR THE DAMAGE TO STREETS AND CONCRETE CURB & GUTTER.
 - 2) DAILY STREET SWEEPING REQUIRED DURING HAULING OPERATIONS.
 - 3) CONTRACTOR IS RESPONSIBLE FOR DEWATERING AND DEICING.
 - 4) CONTRACTOR TO GRADE AROUND EXISTING STORM SEWER STRUCTURES AS DIRECTED BY THE ENGINEER.
 - 5) CONTRACTOR TO COORDINATE ACCESS LIMITS WITH CITY INSPECTOR IN THE FIELD.
 - 6) CONTRACTOR TO COORDINATE WITH XCEL ENERGY TO ADDRESS POWER POLE NEEDS WITHIN POND.

LEGEND

— EXISTING CONTOURS

— PROPOSED CONTOURS



Date Printed: 10/28/2015
File Name: K:\010-10-Coord\Plan\701hw01.dgn

| NO. | DATE | BY | CHK | REVISIONS |
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Design By: **QOP**
 Plan By: **BOV**
 Checked By: **BRS**
 Approved By: **QOP**

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

CERTIFIED BY: **L. ANDREW OSBORN**
 LICENSE NO. **48290**
 DATE: **10/22/15**
 LIC. NO. **48290**

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city of golden valley
Douglas Drive Improvements
 Golden Valley, Minnesota

GOLDEN VALLEY, MINNESOTA
HONEYWELL POND PLAN
 S.P. 2723-117/C.P. 10-04/S.A.P. 027-702-021/S.A.P. 128-020-016/S.A.P. 128-020-017/
 S.A.P. 128-410-001/S.A.P. 128-411-006/S.A.P. 128-420-001/S.A.P. 027-666-018

SHEET
172
 OF
340
 SHEETS