

July 11, 2018

Ms. Cindy Walsh
Operations & Recreation Director
City of St. Louis Park
3700 Monterey Drive
St. Louis Park, MN 55416

**Re: 50% Design Plans – Westwood Hills Nature Center Linear Stormwater Feature Project
City of St. Louis Park**

Dear Ms. Walsh:

Attached please find the 50% design plans for the Westwood Hills Nature Center (WHNC) Linear Stormwater Feature Project. The Bassett Creek Watershed Management Commission (BCWMC) is funding the WHNC Linear Stormwater Feature Project (BCWMC CIP project WST-2: Westwood Lake Water Quality Improvement Project) through a 2018 ad valorem levy (via Hennepin County). Per the future cooperative agreement between the City of St. Louis Park and the BCWMC, the city is to construct the project, with plans and specifications subject to approval by the Commission. Also, per the future cooperative agreement, the 50% design plans for this project must be submitted to the BCWMC for review and approval. If the attached 50% plans meet the city's approval, we recommend submitting them, along with this letter, to the BCWMC for inclusion in the meeting packet for their July 19th meeting. Barr staff will present the 50% plans to the BCWMC at the meeting and answer any questions from the BCWMC.

The remainder of this letter presents information about the feasibility study, the design features of the project, and approval/permitting needs.

Feasibility Study Summary and Selected Project

The BCWMC completed the *Feasibility Report for Westwood Lake Water Quality Improvement Project (May 2018)* to evaluate options improving water quality at the WHNC project site. The BCWMC selected completing concept 3 which is a linear stormwater feature on the north side of the building. The selected project will provide water quality improvement by (1) providing additional stormwater runoff storage, and (2) reducing runoff volume, and sediments and nutrients in the water, through infiltration, evaporation, or evapotranspiration. The project will also include educational benefits through signage, pedestrian bridges, and interactive pumps. WHNC receives over 40,000 visitors per year, many of whom are part of a programmed group. The City expects the number of visitors to rise, with the new facility being nearly five times the size of the existing facility.

Design features – 50% plans

The primary design features of the proposed work, as shown on the attached 50% plans, include:

1. Pumps, storm sewer, and structures. The storm sewer and structures will store stormwater runoff from a majority of the building roof and the surrounding areas on the north side of the building. Solar- and hand-powered pumps will be used to pump the water from the underground storage to the upstream end of the constructed intermittent stream.

2. Intermittent stream and small lined pools. The runoff and pumped water will flow through a series of lined pools, stream sections, and trench drains; four sidewalks will cross over these features. At the upstream end, the water will flow from the pump outlets into a level structure, concentrating the flow into a narrow, steep section of channel just one to two feet wide. The water will cross the sidewalk through a trench drain with a removable cover to view the flowing water, then drop from the trench drain into the upper pool. The upper pool will be 12" in depth and lined with a grade control structure at the downstream end. Water will flow over the grade control structure, into a six foot wide stream lined with various boulders and river rock, then through a second trench drain (with removable grate) crossing a sidewalk. Water will drop from the trench drain into the lower pool. The lower pool will have two outlets. Water can flow over the downstream grade control structure, or into the bog (see number 3 below). The stream channel downstream of the lower pool is identical to the stream channel upstream of the lower pool. There is a third sidewalk crossing at the downstream end of the channel. This crossing will be a trench drain which meets ADA requirements as the sidewalk is within the ADA accessible sidewalk route. The water will flow through the drain, drop onto some rocks, then infiltrate through a sand filter, into a drintile, and be returned to the underground storage.
3. Bog. A bog will be created near the building, adjacent to the lower pool. The bog is a modification from the feasibility study, but it furthers the BCWMC goals of increasing water quality treatment and providing educational opportunities, as well as unique habitat. There will be two sources of water for the bog: 1) a trench drain leading from the lower pool to the bog, and 2) a solar pump that will pump water from the underground storage to the bog, when needed.
4. Access points. The stream will have several access points for people to explore. Access will be achieved through stone steps leading to the bottom of the stream.
5. Signage. Educational signage will be installed near the pumps, with the exact content to be determined.
6. System overflow. When the underground storage and above ground sand filter area are full, water will overflow into a biofiltration basin to the west. If the biofiltration basin is full, water will overtop the trail to the west and flow into Turtle Pond or down to Westwood Lake. The building floor elevation is 896.0. The overflow into the biofiltration basin is 892.7, and the overflow over the trail is 893.4.

Opinion of cost

The table below summarizes our opinion of costs, based on the 50% design plans:

Table 1 Opinion of Cost Summary

Item Description	Cost
Project costs eligible for BCWMC reimbursement:	
Mobilization and Erosion Control	\$14,500
Earthwork	\$19,000
Sand filter, Upper and Lower Pools	\$ 6,700
Sidewalk Crossings with Drop Structures	\$14,000
Storm Sewer (underground storage and draintile)	\$15,800
Storm Structures	\$12,500
Channel Rock and Access Points	\$39,400
Bog Soil, Plants, Liner, and Railing	\$31,300
Trees, Shrubs, Herbaceous Plants, and VRSS	\$27,800
Pumps, Solar Panels, Structure, Concrete Pad	\$31,500
Signage	\$ 6,000
Total estimated construction costs	\$218,500
Contingency (+20%)	\$43,700
Engineering, Design, Construction Observation costs	\$ 81,000
Total construction and engineering costs	\$343,200ⁱ

ⁱ This opinion of cost (Class 2, 50% design completion per ASTM E 2516-06) is based on partially complete designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of the completion of design, but are not included at this level of project definition. The estimated accuracy range for the Total Project Cost as the project is defined is -10% to +20%. The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency. Operation and Maintenance costs are not included.

Per the future cooperative agreement between the city and the BCWMC, the BCWMC's total reimbursement for this project may not exceed \$404,500, less Commission expenses. Commission expenses are expected to be around \$53,500, leaving \$351,000 for engineering design and construction expenses. The total estimated construction and engineering costs are within the reimbursable costs allowed for this project.

Approvals/permit requirements

In addition to BCWMC approval of the plans, other permits/approvals will be required for this project.

The project will not include any work below the Westwood Lake ordinary high water level (OHWL), so a MDNR Public Waters Work Permit is not required.

A USACE joint permit is not required.

A Minnesota Pollution Control Agency (MPCA) Construction Stormwater General Permit is required as part of the larger project and will be obtained by the general contractor after the city awards the project. In addition, a stormwater pollution prevention plan (SWPPP) will be included in the construction drawings.

Recommendations

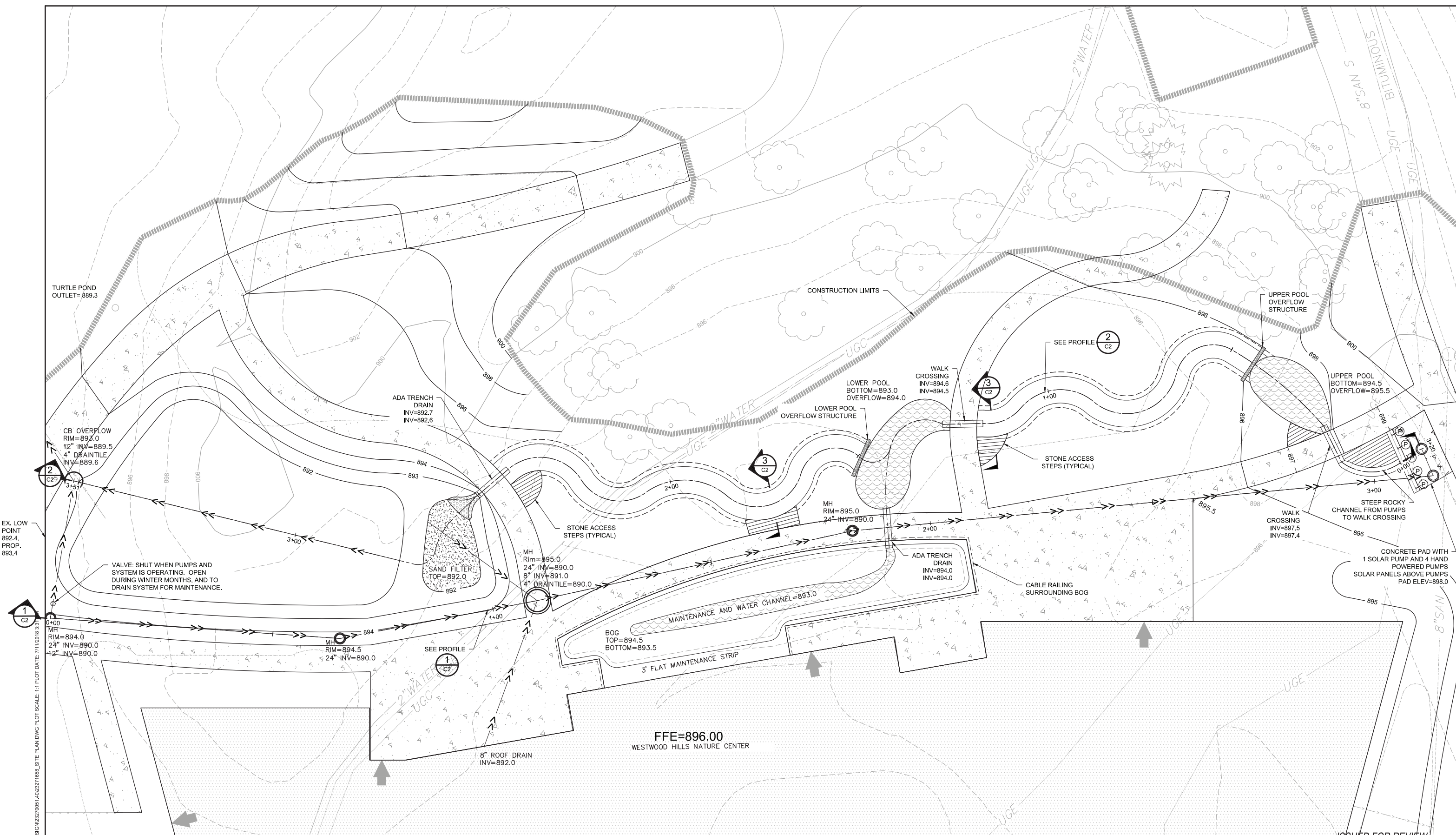
We recommend that the city request 1) BCWMC approval of the 50% drawings, and 2) BCWMC authorization for the city to proceed with 90% plans and contract documents.

If you have any questions, please contact me at 952-832-2724 or mkimble@barr.com.

Sincerely,

Michelle Kimble, P.E.
Sr. Civil Engineer

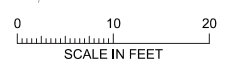




EX. LOW POINT
892.4,
PROP.
893.4

0+00
MH
RIM=894.0
24" INV=890.0
12" INV=890.0

1 PLAN: LINEAR STORMWATER FEATURE
AS SHOWN



ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
A	JPP	MAK	KAL	7/11/18	FOR CLIENT AND BCWMC 50% REVIEW

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.

PRINTED NAME: _____
SIGNATURE: _____
DATE: _____ LICENSE #: _____

CLIENT	7/11						
END							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277
Fax: (952) 832-2801
www.barr.com

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
Suite 200
MINNEAPOLIS, MN 55433
Ph: 1-800-632-2277
Fax: (952) 832-2801
www.barr.com

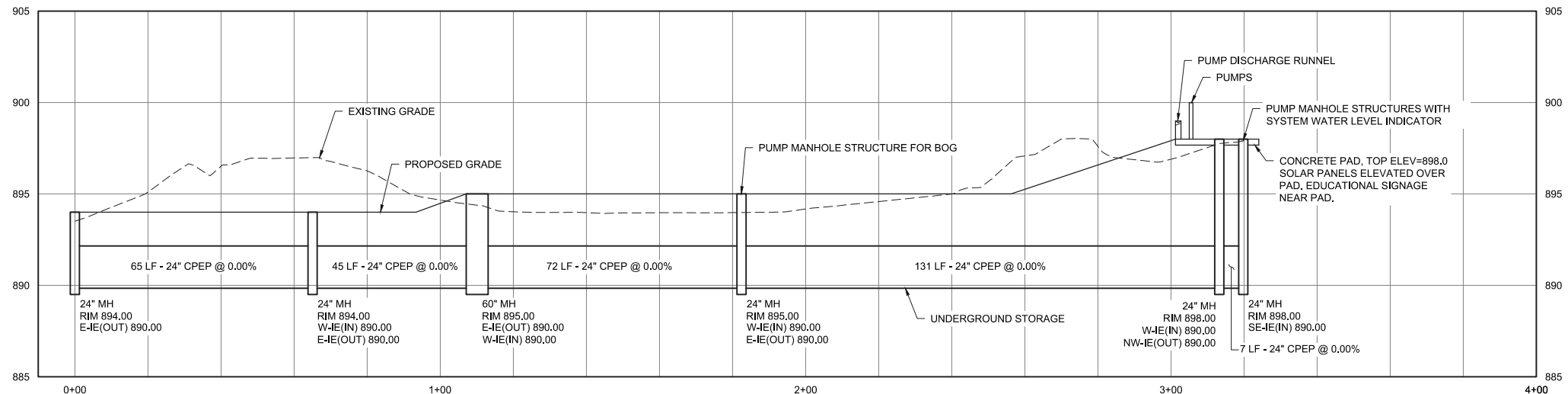
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Checked	MAK
Designed	MAK
Approved	KAL

CITY OF ST. LOUIS PARK

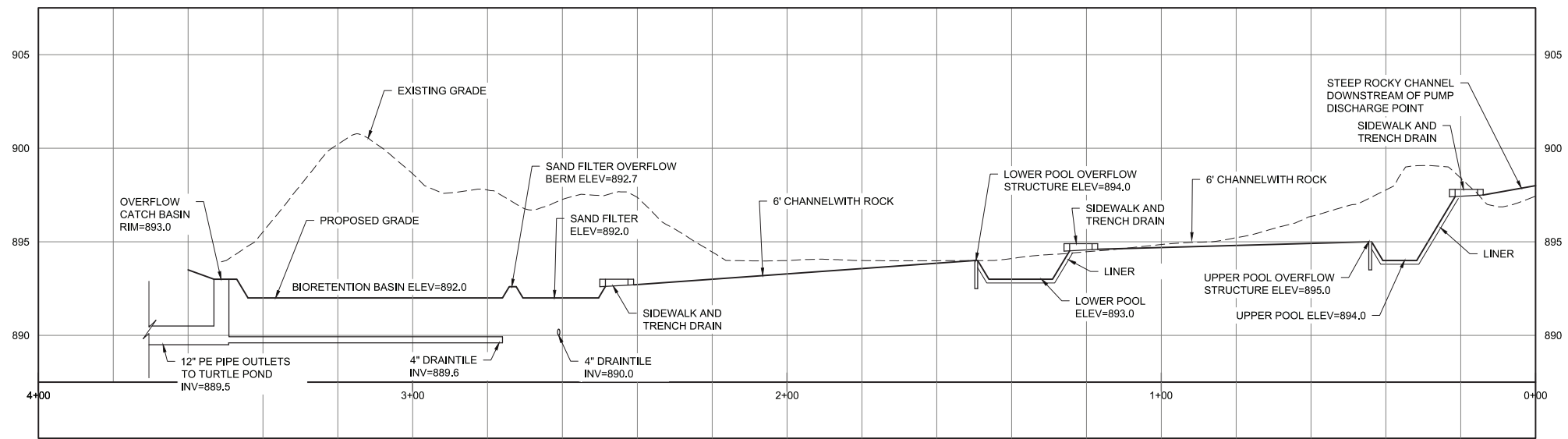
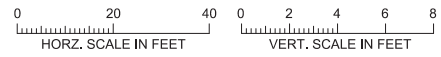
WESTWOOD HILLS NATURE CENTER
LINEAR STORMWATER FEATURE
PLAN
LINEAR STORMWATER FEATURE

BARR PROJECT No. 23/27-0051.40	REV. No. A
CLIENT PROJECT No.	
DWG. No. C1	

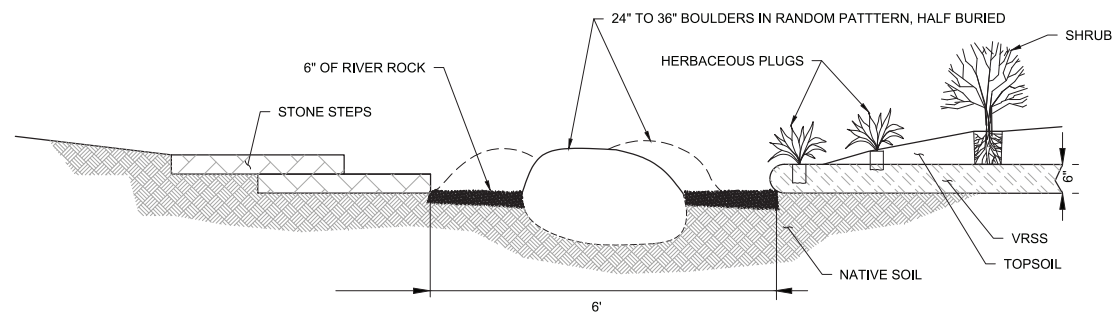
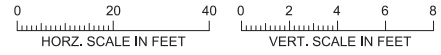
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1 PROFILE: STORM SEWER STORAGE
AS SHOWN



2 PROFILE: STREAM CENTERLINE
AS SHOWN



3 SECTION: CHANNEL
AS SHOWN

ISSUED FOR REVIEW
NOT FOR CONSTRUCTION

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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
A	PEB	MAK	KAL	7/11/18	FOR CLIENT AND BCWMC 50% REVIEW

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CLIENT	7/11						
END CONSTRUCTION							
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DATE RELEASED							

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
Suite 200
MINNEAPOLIS, MN 55433

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	07/11/2018
Drawn	PEB
Checked	MAK
Designed	MAK
Approved	KAL

CITY OF ST. LOUIS PARK

WESTWOOD HILLS NATURE CENTER
LINEAR STORMWATER FEATURE

PROFILES AND SECTIONS

BARR PROJECT No. 23/27-1658	
CLIENT PROJECT No.	
DWG. No. C2	REV. No. A

Westwood Hills Nature Center Linnear Stormwater Feature - 50% Design

Existing Topography and Building Linework Provided by HGA

July 11, 2018

