

**PERMIT REPORT**

To: MCWD Board of Managers

From: Cole Thompson, Permitting Technician

Date: October 21st, 2021

Re: Permit 21-515; City of Minneapolis Park Lane Sanitary Sewer Replacement

Recommendation:

Approval of the requested variance from the 3 feet minimum clearance requirement of the Waterbody Crossings & Structures rule.

Approval of a permit under the Waterbody Crossings & Structures rule.

Introduction:

The City of Minneapolis (Applicant), by its Surface Waters and Sewers Department, has applied for a Minnehaha Creek Watershed District (MCWD) permit for replacement of an existing sewer pipe under the bed of the Kenilworth Channel, in Minneapolis. The project triggers MCWD's Waterbody Crossings & Structures rule. The project does not meet the rule criterion that the pipe maintain a vertical separation of at least 3 feet from the bed of the channel. This shortfall is the subject of a variance request. In accordance with the delegation of permitting authority to the District Administrator, a request for variance and the underlying permit application are to come to the Board of Managers for decision. A variance must be approved by a two-thirds majority vote.

Background:

The Applicant is proposing to replace the existing subsurface sanitary sewer pipe that crosses below the Kenilworth Channel. The existing 8-inch cast-iron pipe is proposed to be replaced with a new 8-inch, pre-insulated polyvinyl chloride (PVC) pipe surrounded by polyurethane foam, encased in concrete. The existing pipe is located 8-inches below the bed of the channel. The sewer pipe will be replaced in the same location and re-covered with 8-inches of course aggregate material. The reconstruction of this pipe will allow for consistent and efficient operation of the city's existing sewer network. The project proposes to occur within the project boundaries of separately approved and ongoing

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permit #20-624; issued to the Minneapolis Park & Recreation Board for the reconstruction and naturalization the Kenilworth Channel. As the scope of the pipe replacement is within the project boundaries of the Stormwater Pollution Prevention Plan (SWPPP) associated with Permit #20-624, this project will follow permit #20-624's SWPPP.

The District implements the Waterbody Crossings & Structures rule in the City of Minneapolis. The Waterbody Crossings & Structures rule is applicable as the project proposes to replace an existing structure in contact with the bed of a waterbody. The following rule analysis summarizes the application of the Waterbody Crossings & Structures rule and the variance request from the applicant.

The initial application and variance request were received by the District on September 1st, 2021. An initial incomplete letter was sent on September 17th, 2021. The Applicant provided updated submittals on October 3rd, 2021 and the application was deemed complete on October 4th, 2021. The project's public notice period and Board Meeting notice was issued on October 7th, 2021 and ended on October 21st, 2021.

This permit is before the Board of Managers in accordance with established policy requiring Board consideration of variance requests.

District Rule Analysis

Waterbody Crossings & Structures Rule

The District's Waterbody Crossings & Structures Rule is applicable to projects proposing to install a utility or associated structure on or below the bed or bank of a waterbody. The Applicant is proposing to replace 56-feet of sewer line crossing below and perpendicular to the bed of the Kenilworth Channel (waterbody). Additionally, the applicant is proposing to install 6-inches of additional granular material over the pipe to further bury it. As a result, this project is subject to review under the District's Waterbody Crossings & Structures rule.

Per section 3(a) of the rule, the project must demonstrate a public benefit. The applicant has noted that the Kenilworth Channel is often traversed by the public in the winter. However, the existing pipe warms the surrounding area and causes a thin-ice hazard for the public. Installing a more insulated pipe made of PVC pipe redundantly encased in concrete, and covering the pipe with 8-inches of aggregate material, would maintain the condition and function of the public sanitary line while also reducing the thin-ice hazard for the public.

Per section 3(b) the improvement shall retain adequate hydraulic capacity. The District engineer has determined that the in-kind pipe replacement, and placement of 8-inches of aggregate material over the pipe, will not affect existing hydraulic capacity of the channel.

Per section 3(c) of the rule, the project shall retain adequate navigational capacity of the waterbody. As the pipe will be replaced in its current location, and the placement of 6-inches of

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additional material over the pipe will not result in demonstrable reduction in ability to navigate the channel, the project will retain adequate navigational capacity of the waterbody.

Per section 3(d) of the rule, the project shall preserve aquatic and upland wildlife passage along each bank and within the waterbody. The District engineer has verified that the proposal will not adversely affect the ability of aquatic wildlife to navigate along or within the channel.

Per section 3(e) of the rule, the project shall not adversely affect water quality. As the structure is subsurface and not in contact with flows within the channel, there would be no adverse effects to water quality

Per section 3(f) of the rule, the proposal shall represent the “minimal impact” solution to a specific need with respect to all other reasonable alternatives. The applicant has provided an alternatives analysis outlining two alternatives. Alternative 1: The no-build scenario does not provide for the replacement of failing infrastructure in need of replacement. Alternative 2: Lowering the pipe to meet the District’s minimum separation from the channel bed would require extensive lift station modification and other structural modifications, and could result in standing wastewater within the pipe, which according to the Applicant is a maintenance and operation risk to surrounding homes and infrastructure.

Per section 3(g), the proposal shall provide for minimum clearance of 3 feet below the bed of a waterbody, and a minimum setback of 100 feet from any stream bank for pilot, entrance, and exit holes, for projects involving directional drilling. The project is not proposing directional drilling. It is proposing to install a replacement of the existing sanitary pipe in the existing pipe’s location, and is proposing to add 6-inches of coarse aggregate onto the pipe to better meet the intent of the rule and further insulate the pipe below the bed of the Kenilworth Channel.

Per section 3(h), the proposal shall provide a design for avoiding sanitary discharge to a surface water in the event of a sanitary sewer breakage through the use of valves, diversions, redundant pipes or other means. The existing pipe does not provide adequate redundancy as it was constructed in the 1940’s and does not provide redundancies that would meet the District’s rule. The proposed replacement pipe is constructed on polyvinyl chloride (PVC), which would be encased in concrete to ensure redundancy.

The proposed project meets the above criteria except, as above, criterion 3(g) requiring at least three feet of separation from the channel bottom.

Variance

The Applicant is requesting a variance from the Waterbody Crossings & Structures rule, specifically from the required minimum 3-foot separation from the bottom of the channel.

The existing sanitary sewer system was constructed in the 1940’s prior to any Waterbody Crossings & Structures requirements. Its location, material, and construction were considered

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adequate at the time. The applicant represents that the pipe was recently reviewed using a closed-circuit television to examine the condition of the pipe to determine the need for replacement. Per the footage reviewed by the City, the cast iron pipe was found to have sags as it crosses below the channel which results in built-up deposits of sewage, odors, and maintenance issues within the sewershed. The applicant represents that the proposed reconstruction of the pipe to newer, redundant materials would better protect the waterbody, and that the placement of 6-inches of additional aggregate material would further insulate the pipe to reduce thin-ice hazards, as well as further protect the pipe.

The Applicant proposes to replace the existing sewer pipe with a new pipe in the same location. The material of the pipe would change from cast iron to polyvinyl chloride (PVC) surrounded by polyurethane foam insulation, encased in concrete. As the existing pipe is below the bottom of the waterbody by 7-inches or less, the applicant proposed to rebury the pipe in its current location and re-cover the pipe using coarse aggregate over the top of it to insulate the pipe and to attempt to meet the Rule's 3-foot (36-inches) minimum clearance requirement. As a result, the pipe would be placed 14-inches below the bottom of the waterbody; which is a shortfall of 21-inches from the 36-inch requirement. By providing 8-inches of coverage over the replacement pipe, the waterbody would result in a depth of 2-feet for water conveyance and navigational purposes.

The District's Variance and Exception Rule states that the Managers may grant a variance from a provision of the rules if the applicant demonstrates the following:

- Because of special conditions inherent to the property that do not apply generally to other land or structures in the District, strict compliance with a provision of the a District rule will cause undue hardship to the applicant;
- The hardship was not created by the applicant, its owner or representative, or a contractor. Economic hardship is not grounds for issuing a variance;
- Granting the variance will not serve merely as a convenience to the applicant;
- There is no feasible and prudent alternative to the proposed activity requiring the variance; and
- Granting the variance will not impair or be contrary to the intent of the rules.

The separation criterion is intended to protect against upward movement of structures installed under a waterbody to reduce obstruction or destabilization of the structure and waterbody. The Applicant cites limitations in its ability to reconstruct the lift station receiving sanitary discharge from the pipe subject to the variance request. Due to the inability of the pipe to properly provide positive drainage to the lift station, a reconstruction of the lift station and additional downstream infrastructure would be required and represent extensive planning, design, and additional impact to the waterbody to construct.

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To further support the request for a variance, the applicant has provided two alternative proposals. Alternative one represents the no-build scenario by leaving the existing pipe in-place. This alternative does not satisfy the objective of the proposal to replace the pipe with updated and redundant materials needed to ensure the aging infrastructure is replaced with pipes of modern standards to reduce the potential of a sewage leak. Alternative two includes lowering the pipe to meet the 3-foot minimum clearance requirement. This alternative has been deemed infeasible due to extensive modifications that would be required to the surrounding pipeshed, as well as to existing infrastructure such as the lift station receiving the sewage. Alternative two would also result in additional disruption to local resident utilities, and greater disturbance within the waterbody and surrounding area. Lastly, this alternative would result in standing wastewater within the pipe, increasing the need for maintenance from City staff.

Staff concurs in the factual statements and technical justifications stated above and in the variance application. Accordingly, staff finds there is an adequate technical basis and justification to grant the requested variance.

Summary:

The City of Minneapolis Surface Waters and Sewage Department has applied for a District permit under the Waterbody Crossings & Structures rule in order to reconstruct the existing sanitary sewer pipe that crosses the Kenilworth Channel, in the City of Minneapolis. The applicant has also applied for a variance from the requirement of the Waterbody Crossings & Structures rule that the pipe must maintain at least a three-foot separation from the channel bottom, due to surrounding existing infrastructure constraints that make it infeasible to lower the pipe below its existing elevation.

The proposed project does not meet the requirement that the pipe maintain at least a three-foot separation from the channel bottom, due to the location of existing lift station infrastructure and the need to ensure positive drainage to allow for sewage to properly flow through the pipeshed in the area. Leaving the pipe in its current state would not alleviate current maintenance concerns. Installing the pipe 3-feet or more below the channel bottom would result in negative drainage flow and therefore cause function and maintenance issues.

The permit application is complete. Staff recommends approval of the variance and approval of the permit.

Attachments:

- 1. Signed Application Form**
- 2. Variance Request Form**
- 3. Existing Site Conditions**
- 4. Proposed Site Conditions**

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REQUEST FOR VARIANCE AND STATEMENT OF HARDSHIP

MINNEHAHA CREEK WATERSHED DISTRICT (MCWD)
15320 MINNETONKA BLVD.
MINNETONKA, MN 55345

Phone: 952-471-0590
Fax: 952-471-0682

A request for a Variance must be accompanied by a MCWD Water Resources Application

Project Details:

Project address: _____ City: _____ State: _____ Zip: _____
County: _____ Property ID number (PID): _____

The Board of Managers may hear requests for variances from strict compliance with provisions of the District Rules in instances where strict enforcement of the rules would cause an undue hardship because of circumstances unique to the property under consideration. The Board of Managers may grant variances where it is demonstrated that such action will remain in spirit and with the intent of these rules. An applicant granted a variance from full compliance with a requirement of the rules would be required to meet the requirement to the greatest degree feasible short of full compliance. A variance must be approved by a two-thirds majority of managers voting.

To grant a variance, the Board of Managers must determine, based on a showing by the applicant:

- That because of special conditions inherent to the property, which do not apply generally to other land or structures in the District, strict compliance with a provision of a District rule will cause undue hardship to the applicant or property owner;
- That the hardship was not created by the landowner, the landowner's agent or representative, or a contractor. Economic hardship is not grounds for issuing a variance.
- That granting such variance will not merely serve as a convenience to the applicant.
- That there is no feasible and prudent alternative to the proposed activity requiring the variance.
- That granting the variance will not impair or be contrary to the intent of these rules.

A variance will remain valid only as long as the underlying permit remains valid.

A violation of any condition of approval of a permit subject to a variance shall constitute grounds for termination of the variance.

Variance Requested From MCWD Rule(s):

- Erosion Control
- Floodplain Alteration
- Wetland Protection
- Shoreline & Streambank Stabilization

- Waterbody Crossings & Structures
- Stormwater Management
- Appropriations
- Illicit Discharge

Provision(s) and Requirement(s) of the Rule(s):

Requested Variance:

Please complete the below narrative to be used as the variance justification that will be considered by the Board of Managers. Please note that economic hardship is not grounds for issuing a variance.

Describe the special conditions inherent to the property and how strict compliance with the rule will cause an undue hardship.

Describe how the special condition was not created by the applicant, the representative, or a contractor.

Provide a minimum of two alternatives that were considered and why they were rejected to demonstrate that there is no feasible and prudent alternative to the proposed activity requiring the variance.

Referring to the Policy of the Rule(s), describe how the intent of the rule(s) will be met.

30 7th Street East, Suite 2500
Saint Paul, MN 55101-2201

T: 651.298.0710



August 30, 2021

Variance Supplement

Mr. Cole Thompson
Minnehaha Creek Watershed District
15320 Minnetonka Boulevard
Minnetonka, MN 55345

[155588]

Subject: Variance Supplement: City of Minneapolis Surface Waters and Sewers
Park Lane Sanitary & Storm Sewer Improvements

Dear Mr. Thompson:

On behalf of the City of Minneapolis Surface Waters and Sewers (SWS), Brown and Caldwell (BC) is hereby submitting a variance request from the Minnehaha Creek Watershed District (MCWD) Board of Managers for the replacement of an existing sanitary sewer pipe buried across the Kenilworth Channel at a shallow depth in Minneapolis.

As stated in Section 3 (g) of the Rules

“Use of the bed or bank: (a) ...(g) Shall provide for minimum clearance of 3 feet below the bed of a waterbody and a minimum setback of 100 feet from any stream bank for pilot...”

The following supplemental information is being submitted for evaluation of potential alternatives for a Request for Variance and Statement of Hardship for the Waterbody Crossings & Structures Rule. This document is to serve as justification for the variance request.

Project Background

The City of Minneapolis SWS will be reconstructing a portion of an existing sanitary sewer system serving the Cedar-Isles Neighborhood along Park Lane and the Kenilworth Channel. The sanitary system was constructed in the early 1940s and now requires frequent maintenance. Inspections through closed-circuit television (CCTV) revealed that the existing pipes have sags and severe deposits that result in sewer backups, odors, and maintenance issues within the sewershed.

In addition to the SWS planned improvements, the Minneapolis Parks and Recreation Board (MPRB) also has a construction project for the naturalization and shoreline stabilization for the Kenilworth Channel between Cedar Lake and the Burnham Road bridge. For the MPRB improvements to occur, two cofferdams will be installed, and the channel will be entirely dewatered between the cofferdam locations for the construction duration, estimated at two months.

As the projects and their respective future construction sequencing and scheduling were discussed and coordinated, it became apparent that the dewatering of the channel presented an opportunity for SWS to replace the existing sanitary sewer channel crossing. Although CCTV does not suggest that the pipe is compromised, the 80-year-old pipe is well beyond its service life and its replacement is appropriate. The existing 8-inch cast iron pipe (CIP) is located immediately east of the Burnham Road bridge and its replacement is the subject of this Variance Request.

Project Summary

SWS is planning to replace or rehabilitate 1,025 lineal feet of existing 8- and 9-inch sanitary sewer on the south side of the Channel in the Cedar Isles neighborhood. The 1940's CIP and clay pipes run along Park Lane, parallel the south side of the Kenilworth Channel and ultimately discharge to the City of Minneapolis Lift Station 3 (LS3). The pipes within Park Lane right of way will be replaced via open cut construction, while pipes located on private property (through an existing easement) or along MPRB property will be rehabilitated using pipe bursting, a trenchless technology, to minimize disruption to the channel banks and residents. A short segment of failed storm sewer at the northeast corner of the Burnham Road Bridge will also be replaced. Extent of the proposed pipe replacement and rehabilitation is depicted in Figure 1.

Lift Station 3 Service Area

The 38-acre residential sanitary sewershed is fully built-out and serves 96 residential homes that convey flow through a series of gravity pipelines, originating from the north and south sides of the channel, and discharge to the lift station. From LS3, the flow is lifted to a discharge manhole on Burnham Road, approximately 125 feet south of the Burnham Bridge. From there, the wastewater is conveyed to the Metropolitan Council Environmental Services (MCES) Interceptor 1-MN-330 at the intersection of Lake Street West and Dean Parkway, and ultimately discharged to the Metropolitan Wastewater Treatment Plant in St Paul. Figure 2 depicts the sewershed limits and critical invert elevations.

MPRB' Kenilworth Channel Naturalization and Shoreline Stabilization

Through design coordination, it was discovered that the MPRB was planning for the rehabilitation of the Kenilworth Channel between Lake of the Isles and Cedar Lake, to the west of the Burnham Bridge. To allow for the channel rehabilitation to take place, two cofferdams will be constructed, and the channel will be completely dewatered. Through the projects' coordination process, it became apparent that the MPRB project presented an opportunity for SWS to replace the 80-year-old 8-inch sanitary pipe that crosses the channel, just east of the Burnham Bridge. As a result of this collaboration between MPRB and SWS, the public expenditures can be shared and diminished.

Partnering Opportunity

Much like the remaining of the sewershed, this pipe (shown in red in Figure 2) regularly requires maintenance. This sanitary sewer crossing serves 71 residential homes north of the channel and discharge by gravity on the north side of the lift station. While the pipe does not appear to be compromised, this 8-inch CIP and its shallow bury have been the subject of discussions, evaluation, and investigations.

The pipe is buried across the Channel bed with as little as 7 inches of cover for approximately 20-feet. That shallow depth of bury has been identified as a potential culprit or contributing factor for a thin-ice problem on the east side of the bridge. Both SWS and MPRB have a common interest in improving conditions at that location.

Based on the circumstances listed, SWS and MPRB have discussed the projects' respective needs and have concluded that the channel naturalization project presents an opportunity to renew the system, address or minimize the thin-ice problem, while minimizing impacts to the project area and its stakeholders.

Alternatives Analysis

Three alternatives were developed to enhance existing conditions at the crossing.

Alternative 1 – Do Nothing

Based on the project's 2020 detailed topographic survey, the existing channel bed at the pipe crossing is at elevation 850', while the top of the 8-inch CIP is at approximate elevation 849.3'. Based on that information, there is only 7- to 8-inches of clearance from the top of pipe to the channel bottom. Minimization of cost, pump station footprint, dewatering needs were likely the drivers behind the decision to install the pipe at this shallow depth in the early forties. Leaving the pipe as-is does not provide the adequate clearance required by MCWD.

Analysis:

It is recommended to reject the "Do Nothing" alternative for the following reasons:

- The crossing pipe does not meet cover requirements in its current state.
- MPRB will be dewatering the channel allowing for low environmental/cost impact opportunity to replace aging sewer infrastructure.
- It is possible the MPRB contractor may expose/damage the pipe as part of the channel construction activities, which would likely result in a pipe failure.

Alternative 2 – LS3 Modifications

The second alternative considered was to lower the pipe to meet MCWD's 3 feet minimum clearance below the channel. Achieving said cover would require both interior and exterior modifications. In 2012, the City completed major improvements at the station to improve station performance, operability, and maintenance. The outside structure remained as-is while some interior structural improvements were made, and all pumps, piping, and ancillary components were removed and replaced. The wet well was in partly filled with sand and capped with a concrete slab. Site access improvements were also included. The total construction cost for the 2012 improvements was \$725,000; this cost adjusted to 2021, is now close to \$950K.

Lowering of the pipe crossing to achieve the 3 feet of cover would require both interior and exterior structural modifications. The cost and risks associated with retrofitting the station a second time are high for the following reasons:

- Modifications to the structure exterior wall will be required.
- Increased channel and groundwater dewatering would be needed; the dewatering would be prolonged for this deeper and more extensive work and to allow time for the concrete to cure.
- Greater impacts to the local residents, and the general public.

- Reduction in performance of 2012 renovated pumping operations; the wet well was reconstructed to maximize pump performance, run time, and maintenance.

Analysis:

It is recommended this alternative be rejected based on the following:

- Modifications to the lift station would extend the construction period beyond the MPRB' construction period.
- Impacts to the area will be greater to mobilize the larger construction equipment required by this work.
- The additional dewatering required by a lower pipe invert increases the risks of settlements to nearby homes and infrastructure.
- Lowering the pipe invert will modify how the station is being operated and maintained.
- Lowering the pipe invert will result in standing wastewater in the pipe and will require more frequent maintenance from SWS Operations Staff.
- The additional costs for the required improvements are difficult to estimate without completing a thorough hydraulic evaluation of the lift station, controls, and operation. It is anticipated that at a minimum, the pump performance would be affected by the improvements as lowering of the pipe would require changes to the controls, affecting the pump starts frequency, which ultimately affects the station performance, longevity of the mechanical equipment, and operation and maintenance costs. The complexity of the work would also prevent SWS from self-performing the construction work as currently planned. The additional costs associated with this work is estimated between \$100K and \$150K beyond the pipe replacement as presented in the next alternative. Additional construction related costs include:
 - Contractor insurances, bonding, and markups
 - Contractor mobilization and demobilization
 - Additional dewatering: lowering the groundwater elevation and overall time to complete the work. In addition to the added costs this represents, there are also added risks to nearby facilities which cannot be readily quantified.
 - Sanitary sewer bypass (or temporary conveyance) pumping will be required.
 - Additional sheeting and shoring for the coring connection at the north wall
 - Wet well modifications
- More impactful and expensive improvements at the lift station would be deferred as this pipe crossing was not budgeted or scheduled within SWS' Capital Improvements. Delaying the improvements at this location increases the risk of failure in the future and defers addressing the thin-ice problem.

Alternative 3 – Replace Crossing Pipe & Raise the Channel Bed

This alternative proposes to replace the pipe crossing with an 8-inch pre-insulated polyvinyl chloride (PVC) pipe, encased in concrete while keeping the original pipe profile. Both the pipe and the connecting manhole will be reinstalled at their original invert elevations. Through design discussions with MPRB, it was agreed that the channel bottom could be raised 6 inches at the crossing location to provide additional insulation and help mitigate the thin-ice issue. Although this alternative does not meet the minimum MCWD clearance requirement, it is recommended Alternative 3 be implemented based on the following:

Analysis:

- Although the pipe was not originally identified for replacement in the Park Lane Sanitary and Storm Sewer Improvements Project, the dewatering of the channel for the MPRB construction project presents an opportunity to repair the aging pipe crossing.
- Replacing the pipe with its original invert elevations will minimize disturbance to the channel bed, the lift station, and the connecting manhole.
- This alternative minimizes the required channel dewatering, and potential risks associated with dewatering to nearby homes and infrastructure.
- Although less than 3 ft of clearance the insulation will minimize heat transfer between the sewer and the Channel, better allowing the Channel to freeze over and potentially eliminating or minimizing the thin-ice issues in the area.
- The polyethylene jacketed polyurethane insulated pipe (Perma-Pipe) provides a low thermal conductivity (K-factor) and is more effective than the more frequent board insulation installed above the pipe crown. The insulation will minimize heat transfer between the sewer and the channel, better allowing the channel to freeze over (see Figure 3 for more details).
- The concrete encasement will provide redundancy per Waterbody Crossings & Structures, section 3 (h).

SWS is hereby requesting a variance for the reconstruction of the 8-inch sanitary sewer pipe as outlined in Alternative 3. As presented, the crossing will provide 14 inches of clearance between the top of pipe and the channel bottom.

If approved, SWS will reconstruct the pipe crossing concurrently with the construction Kenilworth Channel improvements. MPRB is under contract with Minnesota Native Landscapes (MNL) for their project and expects to start work on September 7, 2021.

Should you have any questions, please do not hesitate to contact me at 651.468.2055, jbenadum@brwnald.com or William Shutte at 612.673.3606, William.Shutte@minneapolismn.gov.

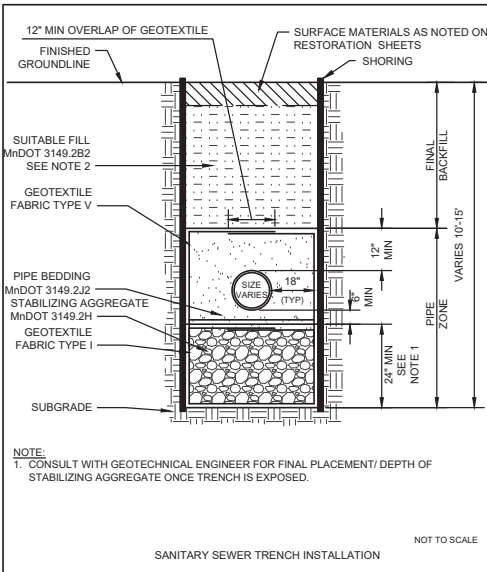


Julie E. Benadum, P.E.

cc: William Shutte, P.E., City of Minneapolis - SWS

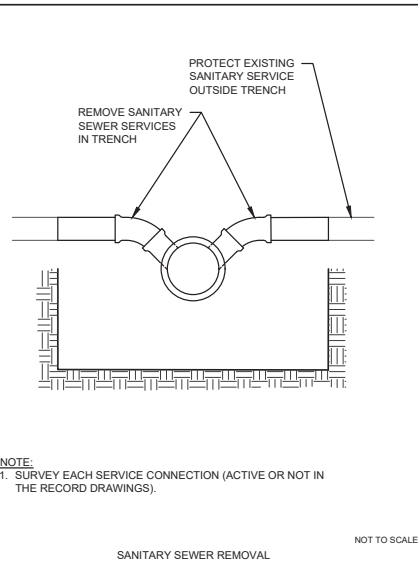
Attachments (5)

- Figure 1: Park Lane Sewershed
- Figure 2: Park Lane Project Extents
- Figure 3: Pipe Crossing Detail, Sheet 9 of 31
- Figures 4 & 5: Sanitary Sewer Plan and Profile Removal, Sheets 23 & 27 of 31



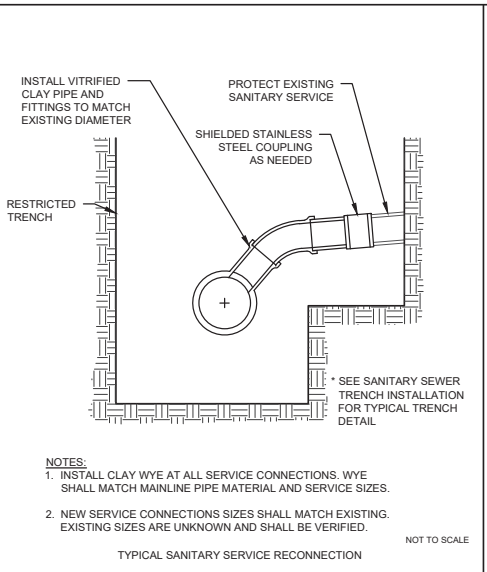
NOTE:
1. CONSULT WITH GEOTECHNICAL ENGINEER FOR FINAL PLACEMENT/DEPTH OF STABILIZING AGGREGATE ONCE TRENCH IS EXPOSED.

SANITARY SEWER TRENCH INSTALLATION NOT TO SCALE



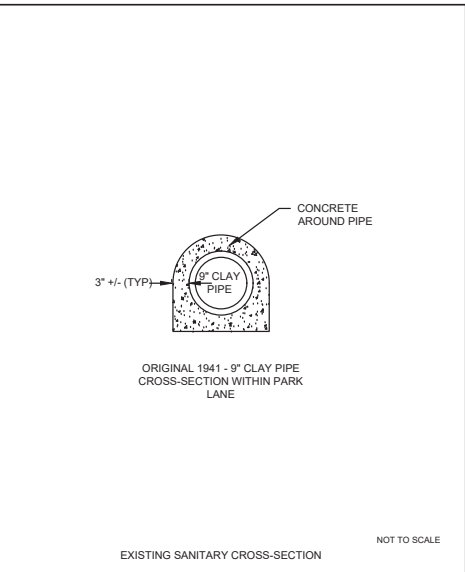
NOTE:
1. SURVEY EACH SERVICE CONNECTION (ACTIVE OR NOT IN THE RECORD DRAWINGS).

SANITARY SEWER REMOVAL NOT TO SCALE

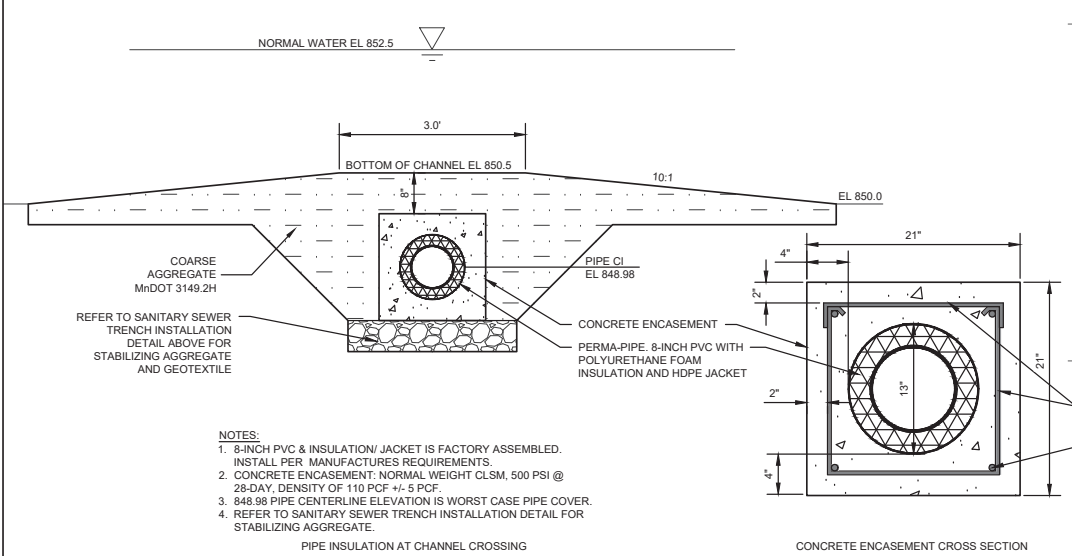


NOTES:
1. INSTALL CLAY WYE AT ALL SERVICE CONNECTIONS. WYE SHALL MATCH MAINLINE PIPE MATERIAL AND SERVICE SIZES.
2. NEW SERVICE CONNECTIONS SIZES SHALL MATCH EXISTING. EXISTING SIZES ARE UNKNOWN AND SHALL BE VERIFIED.

TYPICAL SANITARY SERVICE RECONNECTION NOT TO SCALE

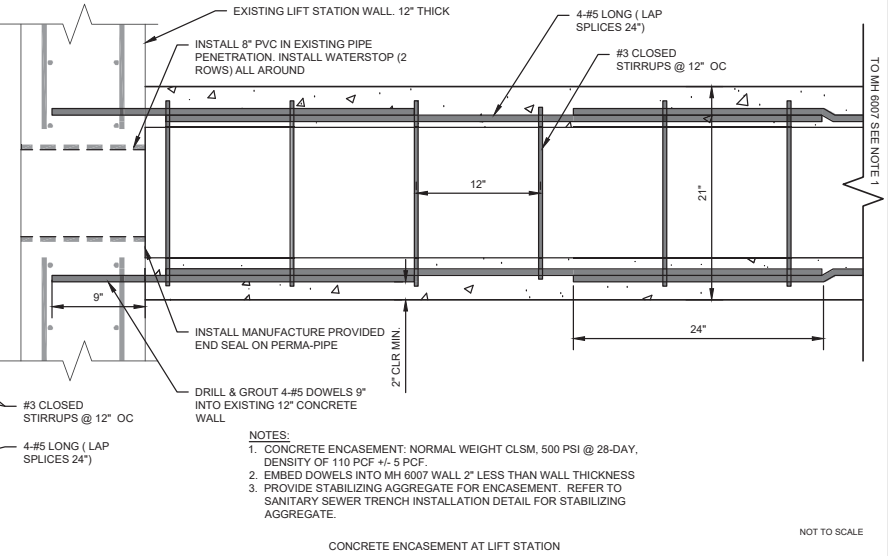


EXISTING SANITARY CROSS-SECTION NOT TO SCALE



NOTES:
1. 8-INCH PVC & INSULATION/ JACKET IS FACTORY ASSEMBLED. INSTALL PER MANUFACTURERS REQUIREMENTS.
2. CONCRETE ENCASEMENT: NORMAL WEIGHT CLSM, 500 PSI @ 28-DAY. DENSITY OF 110 PCF +/- 5 PCF
3. 848.98 PIPE CENTERLINE ELEVATION IS WORST CASE PIPE COVER.
4. REFER TO SANITARY SEWER TRENCH INSTALLATION DETAIL FOR STABILIZING AGGREGATE.

PIPE INSULATION AT CHANNEL CROSSING CONCRETE ENCASEMENT CROSS SECTION



NOTES:
1. CONCRETE ENCASEMENT: NORMAL WEIGHT CLSM, 500 PSI @ 28-DAY, DENSITY OF 110 PCF +/- 5 PCF
2. EMBED DOWELS INTO MH 6007 WALL 2\"/>

CONCRETE ENCASEMENT AT LIFT STATION NOT TO SCALE

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NO.	DATE	DRW	CKD	APP	REVISION
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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.

Julie E. Benadum 47295 04/19/21
JULIE E. BENADUM LIC. NO. DATE

Brown and Caldwell

Minneapolis Public Works

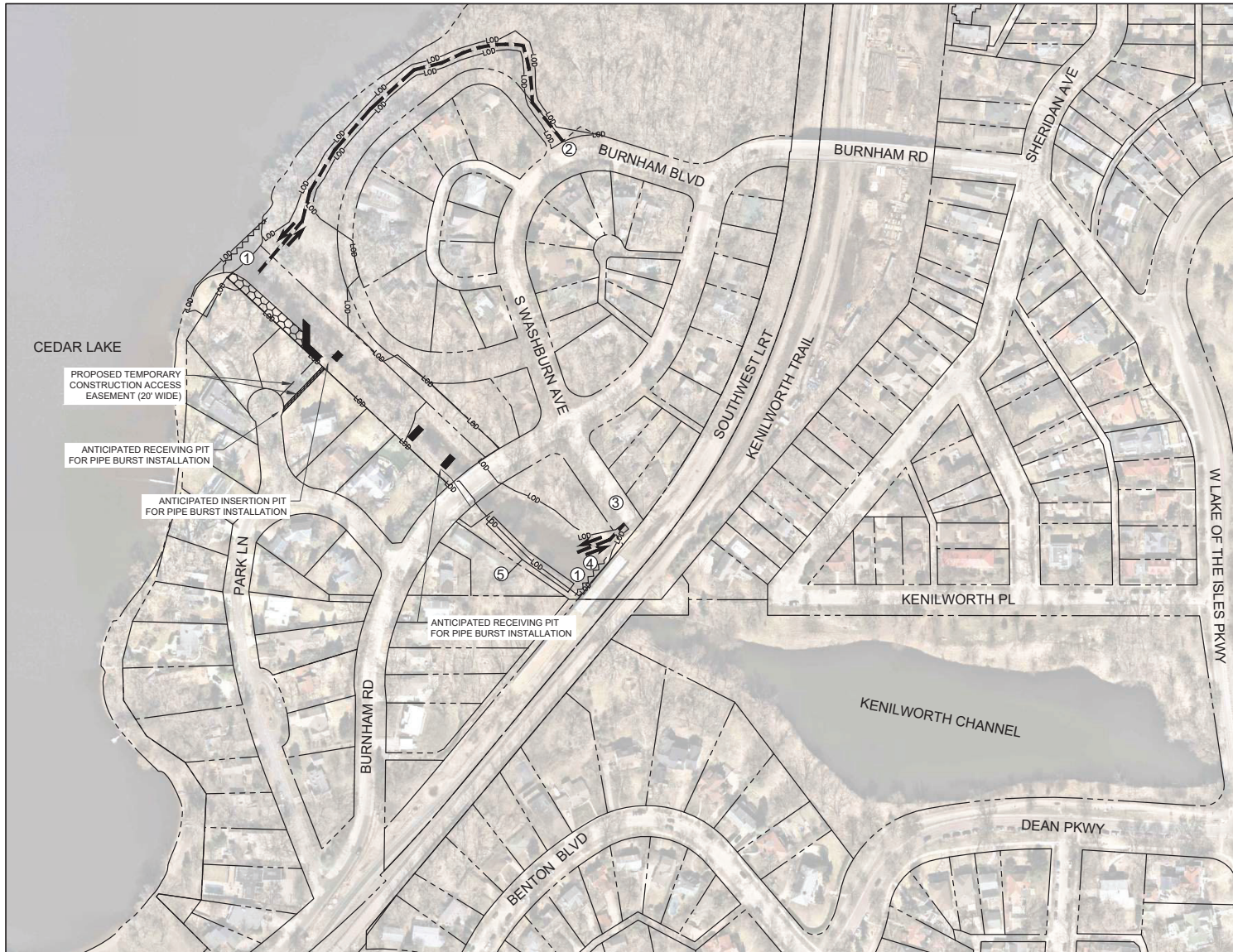
CONSTRUCTION DETAILS

DRW: TMS	DATE: 04/19/21
CHK: CDL	DATE: 04/19/21
APP: JEB	DATE: 04/19/21

PARK LANE SANITARY & STORM SEWER IMPROVEMENTS

PROJECT NUMBER ###

9 OF 31

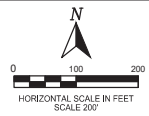


LEGEND	
ITEM	DESCRIPTION
	COFFERDAM (MPRB)
	ACCESS TO CHANNEL (MPRB)
	IN-CHANNEL ACCESS (SWS)
	CONTRACTOR STAGING AREA
	MPRB LIMITS OF DISTURBANCE
	EXISTING 6' WIDE EASEMENT
	SITE ACCESS AND SEQUENCING NOTES BELOW

SITE ACCESS AND SEQUENCING NOTES

1. MINNEAPOLIS PARK AND RECREATION BOARD (MPRB) CONTRACTOR TO CONSTRUCT COFFERDAM AND DEWATER CHANNEL IN ADVANCE OF SURFACE WATERS AND SEWERS (SWS) CONSTRUCTION, IF CHANNEL STABILIZATION MATS ARE REQUIRED TO MOBILIZE IN CHANNEL, MPRB CONTRACTOR TO INSTALL PRIOR TO SWS WORK.
2. MPRB PROJECT ACCESS. WEST CHANNEL ACCESS FROM BURNHAM BLVD VIA MPRB EASEMENT. SEE MPRB KENILWORTH CHANNEL STABILIZATION AND SHORELINE NATURALIZATION DRAWINGS FOR EXACT LOCATION. ACCESS ROUTE TO BE SETUP BY MPRB CONTRACTOR, SWS MAY UTILIZE DURING AGREED UPON TIME.
3. MPRB PROJECT ACCESS. EAST CHANNEL ACCESS FROM S WASHBURN AVE. SEE MPRB KENILWORTH CHANNEL STABILIZATION AND SHORELINE NATURALIZATION DRAWINGS FOR EXACT LOCATION. ACCESS ROUTE TO BE SETUP BY MPRB CONTRACTOR, SWS MAY UTILIZE DURING AGREED UPON TIME.
4. ANTICIPATED LOCATION FOR MPRB CHANNEL DEWATERING PUMPING EQUIPMENT.
5. SWLRT PROJECT WILL BE RESTORING THE EXISTING MASONRY RETAINING WALL.

FILE NAME = 10-SITE ACCESS.DWG DATE PRINTED = 4/21/2021 8:47 AM



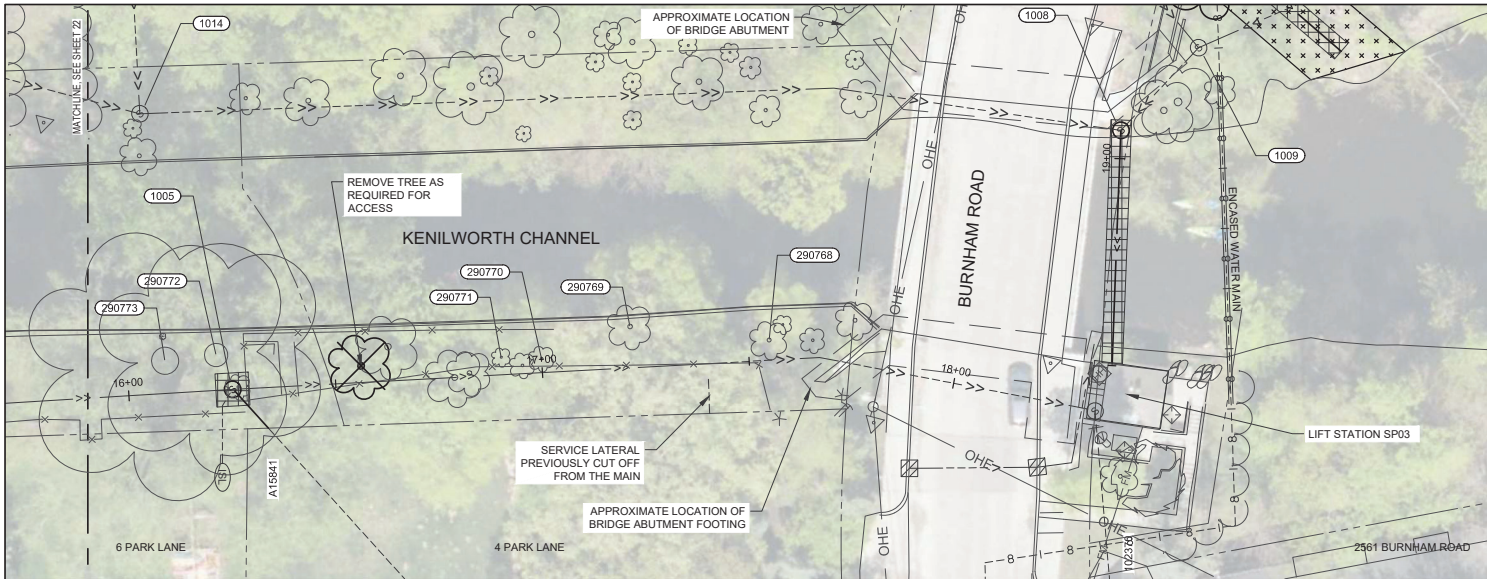
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Julie E. Benadum 47295 04/19/21
 JULIE E. BENADUM LIC. NO. DATE

SITE ACCESS - 1	
DRW: TMS	DATE: 04/19/21
CHK: CDL	DATE: 04/19/21
APP: JEB	DATE: 04/19/21

PARK LANE SANITARY & STORM SEWER IMPROVEMENTS	10
PROJECT NUMBER ###	OF
	31

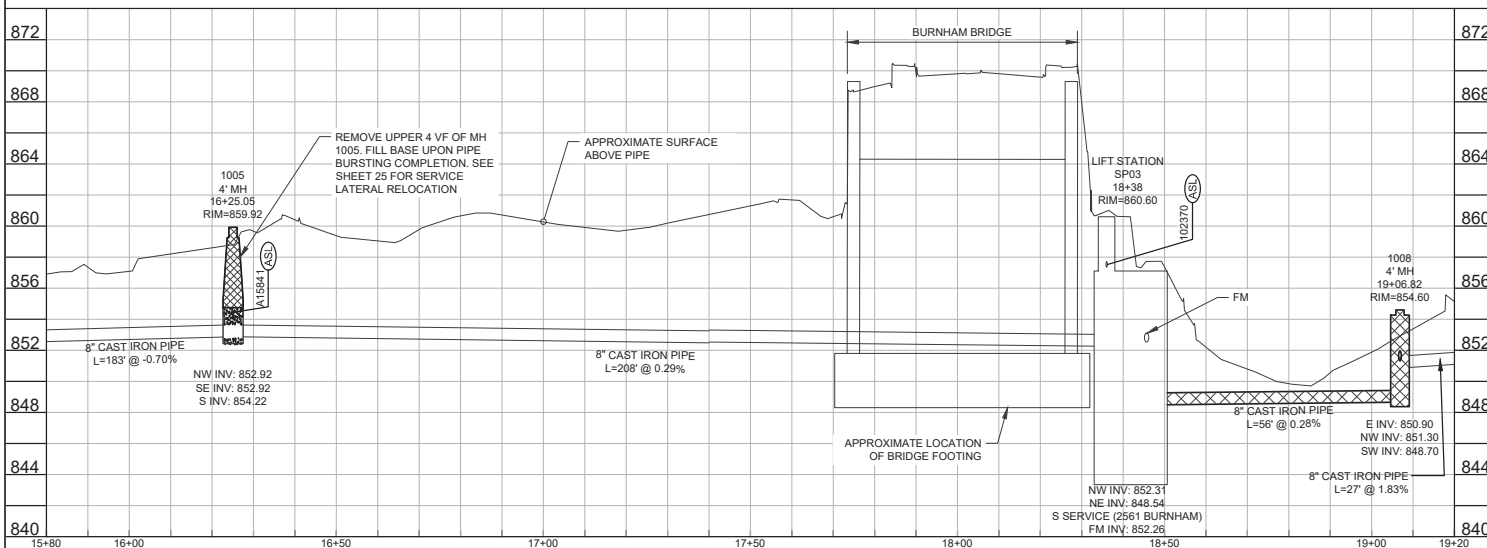


KENILWORTH CHANNEL TO BURNHAM ROAD - 15+90 TO END				
LEGEND	ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED TOTAL
	2104.502	REMOVE SANITARY MANHOLE	EACH	2
	2104.503	REMOVE SANITARY SEWER PIPE	LIN FT	56
	S-26	CAP AND PLUG INACTIVE SANITARY SEWER SERVICE	EACH	1
	2101.505	TREE REMOVAL (INCIDENTAL TO CLEARING AND GRUBBING)	EACH	1

ASL: ACTIVE SERVICE LATERAL
 ISL: INACTIVE SERVICE LATERAL
 DBH: DIAMETER AT BREAST HEIGHT

MPRB TAGGED TREES (HIGH VALUE)			
NUMBER	SIZE (DBH)	SCIENTIFIC NAME	CLASSIFICATION
290766	10	CELTIS OCCIDENTALIS	HACKBERRY
290769	13	CELTIS OCCIDENTALIS	HACKBERRY
290770	6	CELTIS OCCIDENTALIS	HACKBERRY
290771	5	CELTIS OCCIDENTALIS	HACKBERRY
290772	55	POPULUS DELTOIDES	COTTONWOOD
290773	40	POPULUS DELTOIDES	COTTONWOOD

NOTES:
 1. COORDINATE WORK REQUIRED AT 4 PARK LANE WITH MPRB AND HOME OWNER. FENCE AND ARTIFICIAL GRASS REMOVAL ARE REQUIRED TO PERFORM THE WORK.



NO.	DATE	DRW	CKD	APP	REVISION
1					
2					
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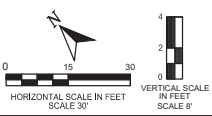
Julie E. Benadum 47295 04/19/21
 JULIE E. BENADUM LIC. NO. DATE

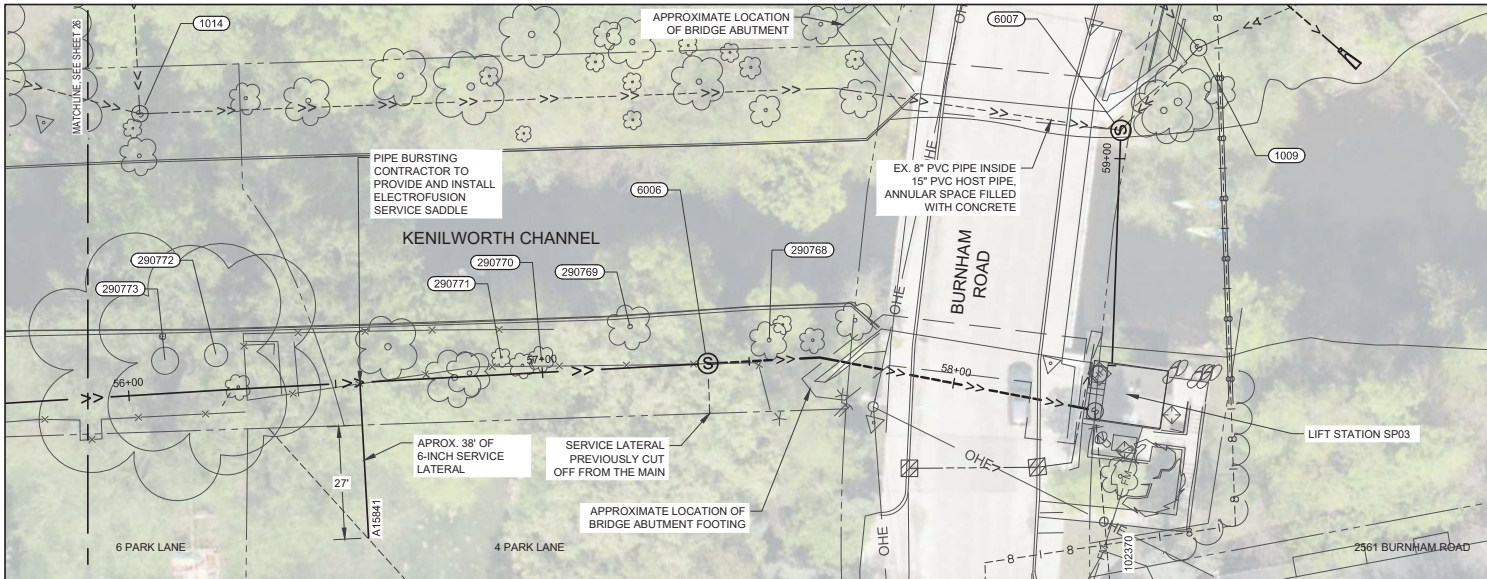
SANITARY REMOVAL PLAN AND PROFILE - 4

	DRW: TMS	DATE: 04/19/21
	CHK: CDL	DATE: 04/19/21
	APP: JEB	DATE: 04/19/21

PARK LANE SANITARY & STORM SEWER IMPROVEMENTS	23 OF 31
PROJECT NUMBER ###	

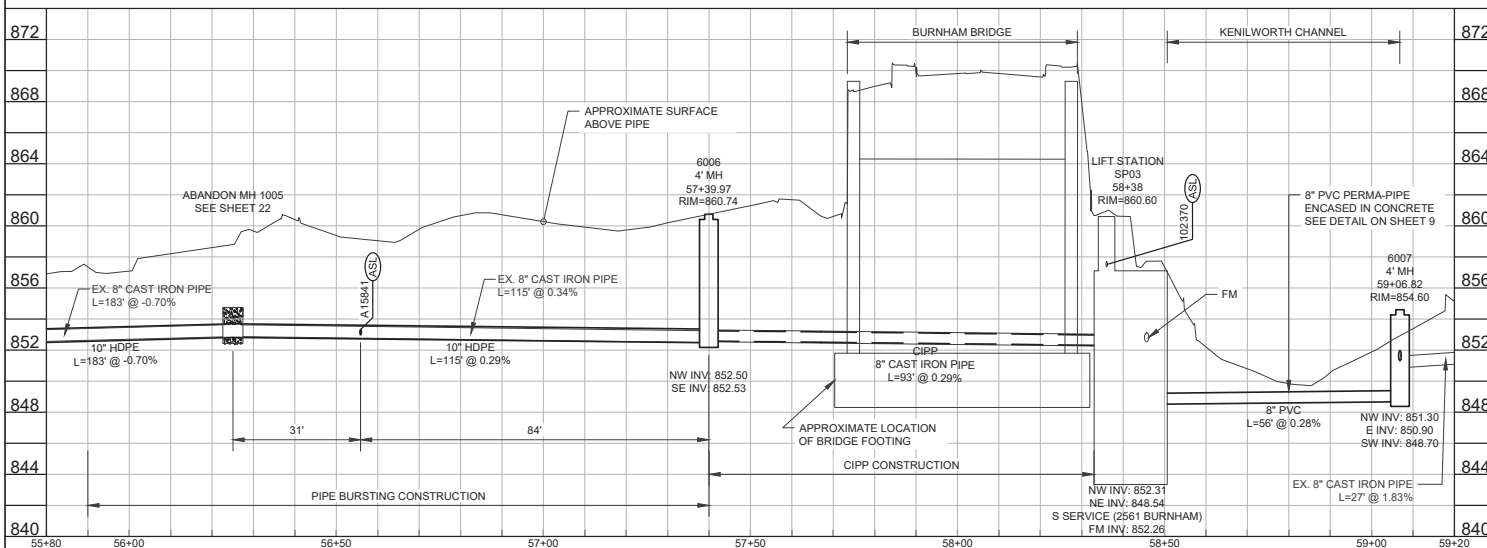
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 FILE NAME = 23-REMOVAL 4.DWG





KENILWORTH CHANNEL - 55+90 TO END				
LEGEND	ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED TOTAL
→	2503.503	8" PVC PERMA-PIPE CONCRETE ENCASED SANITARY SEWER	LIN FT	56
→	2503.503	10" HDPE SANITARY SEWER (PIPE BURST CONSTRUCTION)	LIN FT	150
→	2503.503	SERVICE LATERAL - 4 PARK LANE (6-INCH)	LIN FT	38
→	2503.603	LINING SEWER PIPE 8"	LIN FT	93
⊙	2506.502	CONSTRUCT SANITARY MANHOLE, DESIGN 48-4020	EACH	2
S-26		RECONNECT ACTIVE SANITARY SEWER SERVICE (ELECTROFUSION SADDLE)	EACH	1

- NOTES:
- REFER TO SHEET 22 FOR TAGGED TREE TABLE.
 - COORDINATE WORK REQUIRED AT 4 PARK LANE WITH MPRB AND HOME OWNER. AGREEMENT TO ENTER PROPERTY FOR SERVICE LATERAL A15841 REQUIRED. FENCE AND ARTIFICIAL GRASS REMOVAL ARE REQUIRED TO PERFORM THE WORK.



KENILWORTH - 55+90 TO END												
M H N U M B E R	A L I G N M E N T	S T A T I O N	O F F S E T		T Y P E	S I Z E	C O N S T R U C T	D R A I N S T O	P I P E S I Z E	P I P E T Y P E	P I P E L E N G T H	C A S T I N G
			LEFT	RIGHT								
6005	P	54+42.35		-	PC	48	X	6006	10	HDPE	298	A-8D
		57+39.97		-	PC	48	X	SP03	8	CIPP	93	A-8D
6007	P	59+06.82		-	PC	48	X	SP03	8	PVC	56	A-8D

PC: PRECAST CONCRETE
ASL: ACTIVE SERVICE LATERAL

NO.	DATE	DRW	CKD	APP	REVISION
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Julie E. Benadum 47295 04/19/21
 JULIE E. BENADUM LIC. NO. DATE

PROPOSED SANITARY PLAN AND PROFILE - 4

DRW: TMS	DATE: 04/19/21
CHK: CDL	DATE: 04/19/21
APP: JEB	DATE: 04/19/21

Brown and Caldwell **Minneapolis Public Works**

PARK LANE SANITARY & STORM SEWER IMPROVEMENTS

PROJECT NUMBER ###

27 OF 31

FILE NAME = 27-SSWR-LDWG DATE PRINTED = 4/19/2021 11:50 AM

