RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

April 2022
Board Packet

****

Agenda

****

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

Regular Board Meeting Agenda

Wednesday, April 6, 2022
6:30 PM

NEW: This month's meeting will be held at the District office (2665 Noel Drive, Little Canada, MN) but also via the video conferencing platform Zoom. Board members, staff, consultants, and general public will be able to join in person OR via video and/or phone. In order to continue to be sensitive to the COVID-19 pandemic, we may need to limit the number of public in the board room. The public will be able to listen to meeting but not participate with the exception of the visitor comments portion of the agenda. Instructions for joining in on the Zoom meeting can be found after the agenda.

1. Call to Order – 6:30 PM
2. **Approval of Agenda *(pg. 3)***
3. **Consent Agenda: To all be approved with one motion unless removed from consent agenda for discussion.**
    A. Approval of Regular Meeting Minutes March 2, 2022 *(pg. 7)*
    B. Treasurer's Report and Bill List *(pg. 19)*
    C. Permit Program
        i. 22-08 SPRWS Soil Staging Site, St. Paul *(pg. 29)*
        ii. 22-09 Xcel Energy Lexington to County Road C, Roseville *(pg. 33)*
        iii. 22-10 Reuter Walton Apartments, Little Canada *(pg. 36)*
        iv. 22-11 St. Paul Wheelock Parkway Improvements, St. Paul *(pg. 40)*
    D. Stewardship Grant Program
        i. 22-09 CS Lakewood Hills, White Bear Lake *(pg. 44)*
4. Visitor Comments (limited to 4 minutes each)
5. Permit Program
    A. Applications
        i. 22-12 Victoria Shores, Roseville *(pg. 47)*
    B. Enforcement Action Report *(pg. 55)*
6. Stewardship Grant Program
    A. Applications – see consent agenda
    B. Budget Status Update *(pg. 58)*
7. Action Items
    A. **Lake Owasso Shoreline Restoration Project *(pg. 60)***
    B. **2022 Targeted Retrofit Projects *(pg. 121)***
    C. **West Vadnais Lake Next Steps *(pg. 164)***

8. Attorney Report
9. Board Issues, Policies and Operation (for discussion at meeting)
    A. Meeting Attendance
    B. Action Log
    C. Administrator Review Process
    D. Audit and Fraud
    E. Wetlands Policy
    F. CAC Representation
    G. West Vadnais Lake Follow-Up
10. Presentations - NONE
11. Administrator's Report *(pg. 193)*
    A. Meetings Attended
    B. Upcoming Meetings and Dates
    C. Ongoing Project Update
    D. Office COVID Update
    E. Board Appointment Process
    F. MAWD Updates
12. Project and Program Status Reports (pg. 196)
    A. Interim Emergency Response Planning
    B. Kohlman Creek/Wakefield Lake Diversion Flood Risk Feasibility Study
    C. County Ditch 17 Flood Risk Feasibility Study
    D. Phalen Village Flood Risk Feasibility Study
    E. Ames Lake Area Flood Risk Planning Study
    F. Owasso Basin/North Star Estates Flood Risk Improvements
    G. Annual Water Quality Report Assistance
    H. Special Project BMP Monitoring
    I. Shallow Lake Aeration Study
    J. Ryan Drive and Keller Parkway Conveyance Project
    K. Targeted Retrofit Projects
    L. Woodbury Target Stormwater Retrofits
    M. South Lake Emily Filtration BMP
    N. Beltline Five Year Inspection
    O. District Inspection Standardization
    P. CIP Maintenance and Repair Project 2022
    Q. Natural Resources Program Update
    R. Education Program Update
    S. Communications Program, Website Redesign, & WaterFest Update
13. Manager Comments and Next Month's Meeting
14. **Adjourn**

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

NOTICE OF BOARD MEETING
Wednesday, April 6, 2022
6:30 PM
Hybrid Meeting: In-Person and Web Conference

NEW: This month's meeting will be held at the District office (2665 Noel Drive, Little Canada, MN) AND via the video conferencing platform Zoom. Board members, staff, consultants, and general public will be able to join in person OR via Zoom. In order to continue to be sensitive to the COVID-19 pandemic, we may need to limit the number of public in the board room area. Masks are recommended but not required. The public will be able to listen to meeting but not participate with the exception of the visitor comments portion of the agenda. Visitor comment may be given in person or via Zoom. Instructions for joining in on the Zoom meeting can be found below.

To access the meeting via webcast, please use this link: https://us02web.zoom.us/j/87805726237?pwd=SUMvcDFxbEhFd0czY1ZEUU1EeXZjUT09

The meeting room will open at 6:20 pm with the meeting starting at 6:30 pm. To connect to audio you may choose to use your computer audio options or you may use your mobile device to call. The phone access number is **(312) 626-6799**. The Meeting ID is **878 0572 6237**. The meeting password is **080210**. If you have any questions, please contact Tina Carstens at tina.carstens@rwmwd.org.

****

Consent Agenda

****

Ramsey-Washington Metro Watershed District
Minutes of Regular Board Meeting
March 2, 2022

The Regular Meeting of March 2, 2022, was held via Zoom web conferencing. A video recording of the meeting can be found at https://youtu.be/ajRNb7kweWs. Video time stamps included after each agenda item in minutes.

PRESENT:
Larry Swope, President
Cliff Aichinger, Vice President
Dianne Ward, Treasurer
Dr. Pam Skinner, Secretary (arrived at 8:12 pm (1:42:23))
Val Eisele, Manager

ABSENT:

ALSO PRESENT:
Tina Carstens, District Administrator
Tracey Galowitz, Attorney for District
Nicole Soderholm, Permit Inspector
Dave Vlasin, Project Coordinator
Mary Fitzgerald, District Inspector
Burt Johnson, Resident
Phil Belfiori, VLAWMO Administrator
Jim Lindner, VLAWMO Board Chair
Melissa King, BWSR
Paige Ahlborg, Project Manager
Brad Lindaman, Barr Engineering
Bill Bartodziej, Natural Resource Specialist
Lindsey Provos, Water Quality Technician
Tyler Olsen, Barr Engineering
Sky Lohse, Resident
Patricia Youcker, VLAWMO Board Member
Dawn Tanner, VLAWMO Program Coordinator

1. CALL TO ORDER
The meeting was called to order by President Swope at 6:30 p.m.

The Board, staff, and guests introduced themselves.

2. APPROVAL OF AGENDA (04:55)
Motion: Manager Ward moved, Manager Eisele seconded, to approve the agenda as presented.

A roll call vote was performed:

Manager Aichinger	aye
Manager Ward	aye
Manager Eisele	aye
President Swope	aye

Motion carried unanimously.

3. RECOGNITION OF OUTGOING BOARD MEMBER – CLIFF AICHINGER (05:30)

President Swope noted that a certificate of recognition was included in the Board packet. He commented that Manager Aichinger has been an integral part of the watershed and water community. He reviewed some of the highlights that Manager Aichinger has accomplished in his time with the District as a consultant, staff person, and resident. He stated that the Board will miss his technical and historical insights.

Tracey Galowitz commented that she has worked with Manager Aichinger since 1987 and noted that he always conducted himself in an impeccable manner and could not ask for a better citizen to be a civil servant.

Manager Ward echoed the comments made, noting that Manager Aichinger has been a wonderful resource as she joined the Board.

Brad Lindaman commented that he has also worked with Manager Aichinger since 1987 and he appreciated his forward thinking and fearlessness in taking calculated risks. He commented that Manager Aichinger is known throughout the water resources community as a leader and has helped to make RWMWD a leader among watershed districts. He thanked Manager Aichinger for his years of service and noted that his presence will be missed.

Manager Aichinger appreciated the comments and noted that he will also miss all of the Board and staff members.

Tina Carstens commented that Manager Aichinger has been a mentor to her, and he has built the watershed staff from the ground up, many of which are still at the District. She appreciated the insights as both a staff member and Board member.

Manager Aichinger commented that there was a transition between staff member and Board member that he had to go through and has valued his time on the Board.

4. CONSENT AGENDA (13:56)

A. Approval of Minutes from February 2, 2022
B. Treasurer's Report and Bill List
C. Permit Program
   i. 22-06 – Gold Line BRT – Woodland Park and Ride, Woodbury
   ii. 22-07 North St. Paul 2022 SIP, North St. Paul
D. Stewardship Grant Program
   i. 22-05 CS – McCoy, White Bear Lake, Rain garden and bee lawn
   ii. 22-06 CS – Goodrich Golf Course, St. Paul, Habitat restoration
   iii. 22-07 CS – Cope Avenue Improvements, Maplewood, Impervious surface reduction
   iv. 22-08 CS – Battle Creek Middle School, St. Paul, Filtration basin
E. 2022 CIP Maintenance and Repair – Change Order No. 2
F. Ryan Drive and Keller Parkway Conveyance – Changer Order No. 2

Motion: Manager Aichinger moved, Manager Ward seconded, to approve the consent agenda as presented.

Further discussion: President Swope asked for clarification on the incidental wetland mentioned for the gold line. Nicole Soderholm provided the definition of incidental wetland and noted that in this case both the parcels were mass graded during a common plan of development and the wetland areas were artificially created from those grading activities therefore they do not receive the same protections under the WCA.

Manager Eisele asked for more information on special provision bullet one. Nicole Soderholm stated that there would be a small increase and the rules require the discharge rates as a whole to be met or decreased. She stated that the project as proposed meets the District rules, but the District likes to have the extra checkpoint from the

entity receiving the water to ensure they can handle it. She stated that the gold line team does not believe it would be an issue, and if it were, the storage would need to be increased.

President Swope referenced change order No. 1 and thanked the District for accommodating the concerns of the resident, although technically not necessary.

A roll call vote was performed:

Manager Aichinger	aye
Manager Ward	aye
Manager Eisele	aye
President Swope	aye

Motion carried unanimously.

5. VISITOR COMMENTS (18:20)

Burt Johnson reviewed the founding principles of the Twin Lake Association. He stated that from a citizen perspective it does not matter which public entity holds the risk, but more the ability to prevent flooding and manage water to the best of their abilities. He did not believe there should be a border to prevent water management between West Vadnais and Twin Lake.

6. WEST VADNAIS LAKE DISCUSSION WITH VADNAIS LAKE AREA WATERSHED MANAGEMENT ORGANIZATION BOARD SUBCOMMITTEE (22:52)

Tina Carstens welcomed the members of VLAWMO present tonight. She stated that there have been conversations over the past several years related to flooding concerns in this area of West Vadnais Lake. She commented that it is unique that the water flows out of RWMWD into VLAWMO and then back into RWMWD. She commented that the management of West Vadnais Lake impacts the flooding risk and water quality management of RWMWD. She stated that background information was provided in the packet related to discussion the Board has had in recent months.

President Swope commented that the cooperation with VLAWMO has been very good. He stated that there were a few delays but this discussion is about the matter of process. He noted that everything the District has wanted to do, has been able to be completed, it just has to go through someone else's property. He stated that the two areas of interest are related to water quality and flood risk. He commented that it is hard to explain to citizens in the area as to why West Vadnais is not in the watershed district. He stated that the District has made investments in West Vadnais because of the benefit it provides to the other waters in the District. He was interested to gain input from VLAWMO about West Vadnais, which is at the foot of VLAWMO but in the middle of RWMWD. He asked about the plans for West Vadnais moving forward.

Manager Eisele stated that he is also interested in hearing the plans.

Phil Belfiori, VLAWMO Administrator, stated that in June of 2019 the VLAWMO Board discussed the EAW and the Board was also asked to consider a possible boundary change. He noted that the RWMWD decided not to pursue a joint meeting to discuss a boundary change and instead the groups moved forward in joint management which is how the groups have worked in the past two years. He reviewed some of the expanded partnership activities of the past two years including carp management, aquatic vegetation/contour survey, and dissolved oxygen monitoring. He advised of budget increases approved for West Vadnais in the 2022 budget for VLAWMO of 76 percent for West Vadnais partnership activities ($18,500). TMDL is targeted for 2024. He noted that the members of the VLAWMO Board subcommittee are present to listen and discuss. He noted that the subcommittee is also interested in learning the desired outcome of the potential boundary change, whether there would be additional

lake management elements that would be implemented with the potential boundary change, and whether there would be additional benefits to residents from a potential boundary change.

Manager Aichinger commented that from his perspective, as they included the Grass Lake WMO into the RWMWD and the wet period of the past five years occurred that caused flooding, some of those solutions involved West Vadnais. He stated that the flooding of Twin Lake also occurred, and the question arose as to why West Vadnais is not within the district boundaries as it receives water from and discharges water into the district. He recognized that it a common occurrence for district boundaries and therefore he was not a proponent of a boundary change unless there was a specific thing that the District desired to be accomplished that could not be done. He stated that from his perspective it would be a benefit to RWMWD for VLAWMO to address the TMDL. He stated that the District has been able to work with VLAWMO on the outlet of the lake and lake level reduction, both of which were accomplished and therefore he did not see a purpose in gaining West Vadnais.

Manager Ward stated that she has had questions because it does not seem logical for West Vadnais to not be a part of RWMWD. She commented that the District has invested funds into West Vadnais. She was interested in why VLAWMO would want to keep West Vadnais.

Patricia Youcker stated that for the City of Vadnais Heights, it is one less hoop to jump through in terms of development requests. She noted that she is present to listen and find out why this would be considered.

Jim Lindner stated that he is also interested in learning about the intentions and what the burdens would be on VLAWMO if it continues to manage the lake.

Manager Ward commented that the Board has been very concerned with maintenance because of the increase in precipitation. She noted that recent maintenance has been completed by RWMWD. She asked if VLAWMO would have a similar maintenance schedule or commitment that would help RWMWD get the water flowing from the top, through West Vadnais, into the lower part of the watershed.

Mr. Lindner asked if it would be possible for RWMWD to put together an information sheet with the maintenance that has been completed, the costs, and anticipated maintenance. He noted that would help VLAWMO in its discussions and budget building.

Tina Carstens confirmed that she could put together a map showing where future maintenance needs would be, noting that most of those are within RWMWD although one area is within West Vadnais were vegetation removal was completed along Rice Street. She stated that the District also put in twin pipes under Vadnais Boulevard that would have maintenance needs.

Mr. Belfiori referenced the connection between the lakes mentioned in the memo and asked if it is certain that there is no hydrological connection. Brad Lindaman stated that from the internal discussion last month there is a minimal connection between East Vadnais and West Vadnais. Mr. Belfiori asked if there is potential overflow, even at highest elevations of either lake. Brad Lindaman replied that there is not. Mr. Belfiori asked where the overflow bypass system is located. Brad Lindaman stated that the District created a defined overflow swale that worked its way to a low point that ultimately drains to Twin Lake. He noted that if that were to overflow, the District has a portable pumping system that would be used to pump that around Twin Lake. Mr. Belfiori asked if the whole thing would act as one big basin during high water years. He noted that it would seem this watershed connection is interconnected in some ways therefore there may be some years when there is no division between RWMWD and VLAWMO, just one large basin.

Manager Aichinger stated that while the waters may be at the same level between East and West Vadnais, there would be no mixing between the two. Mr. Belfiori explained that his comment was related to West Vadnais, Grass Lake, and the triangle wetland. He stated that during critical storm events there would be no demarcation

between the boundaries as it would become one big bathtub because of the outlet and drainage, both of which are in RWMWD.

Manager Eisele stated that in normal condition years, the current relationship has been successful, but the test of a system is not under normal conditions but situations where there are big inflows that stress the system. He noted that in those instances there would be benefit to the ability for quick decisive action and reducing the number of entities involved in the decisions would speed up the process.

President Swope agreed. He stated that RWMWD is getting more into active flood management, completing work downstream and working on projects upstream. He stated that at some point the District will be in a position to look at how things can be balanced and to not have control of part of the flow stream could be a deficit. He stated that the District has implemented a lot of elements of flood control, and, in his opinion, this asset should be in the District portfolio in order to manage the system.

Manager Aichinger commented that there are very few private land parcels surrounding West Vadnais, and those properties that exist are fully developed, therefore VLAWMO would not be giving up tax base. He commented that if RWMWD took over that area, it would absorb a lot of additional cost for the TMDL and water quality activities which is a factor for the District to consider.

President Swope commented that there are only five to seven homes along Rice Street that are a part of VLAWMO.

Mr. Belfiori stated that they counted 45 parcels that would potentially be in question. He stated that they have focused on the last three years to increase the partnership of in lake quality. He stated that it seems that most of the interest is not related to water quality but water quantity which is interesting for VLAWMO to know.

Manager Ward commented that both issues have been a driver as the District has focused on water quality both upstream and downstream, but the quality in West Vadnais is not good. She understood there are plans for the future, but it has been a problem for a long time that impacts the District.

Mr. Lindner asked if Twin Lake and Grass Lake are impaired. Tina Carstens stated that in that system only West Vadnais is impaired.

Manager Eisele commented that the District is attempting to find proactive water conveyance measures and in years there are not those issues, water quality is an important focus.

Dawn Tanner commented that she has appreciated working with RWMWD staff and recognize that what VLAWMO has done is a small contribution. She wanted to ensure that appreciation to the District is expressed.

President Swope stated that the District has taken the position that they cannot not act just because it is not within the boundaries.

Mr. Belfiori commented that this would be a fairly unique TMDL to write because he would assume there is a significant external loading and internal loading, therefore there would have to be complex agreements.

President Swope appreciated the discussion. He recapped that Tina Carstens will provide an overview of the work RWMWD has done along with the West Vadnais and East Vadnais connection study.

Mr. Belfiori thanked the Board for the invitation noting that he was able to learn additional information and listen to the perspective of the District.

7. PERMIT PROGRAM (1:06:14)

A. Applications – See Consent Agenda

B. Monthly Enforcement Report
During February zero notices were sent.

Nicole Soderholm provided an update on a recent conference that she attended along with other members of District staff.

Mary Fitzgerald commented that it is fun to see Minnesota ahead of other states in terms of erosion and sediment control.

Paige Ahlborg confirmed that she helped with planning for the event and highlighted some of the events that were offered as part of the conference.

Manager Eisele asked if there is a way to bring the data forward for the BMP projects that can be easily understandable for readers and residents to show them the benefit. Tina Carstens confirmed that the data is used for educational purposes and within the annual report.

8. STEWARDSHIP GRANT PROGRAM (1:14:15)

A. Applications – See Consent Agenda

B. Budget Status Update
Paige Ahlborg commented that there are funds available and provided an updated total. She commented that there are some big projects coming through which were approved tonight and the final plans for the Lake Owasso shoreline project are in the hands of homeowners. She noted that once the homeowners approve the plans, staff will bring those forward to the Board to move forward on the project.

9. ACTION ITEMS (1:15:33)

A. Board of Managers Annual Meeting
Tina Carstens stated that there are four officer positions held by members of the Board and reviewed the current officer designations.

Manager Aichinger suggested appointing Manager Skinner to the position of Secretary again.

Tina Carstens noted that the four Board members that will be left could fill the positions and the new member that will fill the position to be vacated by Manager Aichinger will become a member without an officer title.

Manager Ward nominated Larry Swope for the position of President.

There were no other nominations.

A roll call vote was performed:

Manager Eisele	aye
Manager Ward	aye
Manager Aichinger	aye
President Swope	aye

Motion carried unanimously.

President Swope nominated Dianne Ward for the position of Vice President.

There were no other nominations.

A roll call vote was performed:

Manager Aichinger	aye
Manager Eisele	aye
Manager Ward	aye
President Swope	aye

Motion carried unanimously.

Manager Ward nominated Val Eisele for Treasurer and Pam Skinner for Secretary.

There were no other nominations.

A roll call vote was performed:

Manager Aichinger	aye
Manager Eisele	aye
Manager Ward	aye
President Swope	aye

Motion carried unanimously.

Manager Eisele asked for details on what would be required for quorum if Manager Aichinger's role is not immediately filled. Tina Carstens replied that three members would still be required for a quorum and believed the new member would be at the April meeting.

Tina Carstens stated that every two years the District is required to notice the solicitation of consultants. She stated that proposals were only received by the existing consulting staff and those were included in the Board packet.

Motion: Manager Ward moved, Manager Eisele seconded, to appoint Barr Engineering, Galowitz Olson, and Redpath and Company to continue as the consultants for 2022.

A roll call vote was performed:

Manager Aichinger	aye
Manager Eisele	aye
Manager Ward	aye
President Swope	aye

Motion carried unanimously.

Tracey Galowitz commented that it is an honor to continue to serve the District.

Brad Lindaman commented that Barr staff are always excited to work on the District projects and also appreciates the ability to continue to serve.

Motion: Manager Eisele moved, Manager Ward seconded, to approve the current Official Bank of Deposit and designate the *St. Paul Pioneer Press* as the Official Newspaper.

Further discussion: Manager Eisele commented that in the past there was discussion about including a digital notice along with written notice. He asked if that should be a part of this discussion or a future discussion topic. Tina Carstens replied that the District is required to provide written notice in a newspaper. Tracey Galowitz agreed that the written notice requirement is becoming outdated, but it is still required. She stated that nothing is stopping the District from using additional platforms to provide notice. Tina Carstens noted that all the notices are posted on the District website as well.

Brad Lindaman provided details on the public bidding process which utilizes a website contractors are familiar with, in addition to the newspaper posting.

A roll call vote was performed:

Manager Aichinger	aye
Manager Ward	aye
Manager Eisele	aye
President Swope	aye

Motion carried unanimously.

10. ATTORNEY REPORT (1:28:22)

Tracey Galowitz noted that it was a slower month, providing assistance for drafting a maintenance agreement.

11. BOARD ISSUES, POLICIES, AND OPERATION (FOR DISCUSSION AT MEETING) (1:29:02)

A. Future Meetings

President Swope stated that staff recommends a return to in-person/hybrid meetings at the April meeting. Tina Carstens stated that staff believes that it is time to return to in-person meetings, with an option for hybrid attendance. She confirmed that during the transition she would propose for staff and consultants to attend virtually.

President Swope asked if the Board would be required to wear masks when at a meeting. Tina Carstens stated that the CDC guidance was recently updated, and masks are no longer required indoors. She noted that there will be very few people in the room which will allow for social distancing, and it will be up to the person whether they would like to wear a mask. President Swope asked if there a limit on the number of meetings a member can attend virtually. Tracey Galowitz noted that she is not aware of that number and will review that.

Manager Aichinger commented that different people have different needs and vulnerabilities and urged the Board to remain flexible. Tina Carstens confirmed that she is attempting to be flexible over the next few months as she will be considering that as the transition period.

B. Administrator Review

President Swope noted the need to conduct a review of the Administrator.

Manager Eisele asked if that could be conducted the hour before the next regular Board meeting.

Manager Aichinger stated that he could meet with Tina Carstens and perhaps Manager Ward as well in the next few weeks in order to do the paperwork portion of that review. Manager Ward confirmed that she could attend.

C. West Vadnais Lake

President Swope commented that it was a good discussion tonight.

Manager Skinner joined the meeting.

Manager Eisele thanked Tina Carstens for all the prep work that went into getting to the point where they could have this discussion tonight.

Tina Carstens stated that she will complete the follow up discussed earlier, noting that she will have the Board review the information before she sends it to VLAWMO.

Manager Ward asked that the item be added to the agenda for the next meeting to continue discussions.

D. Wetland Policies and 10 Year Plan

President Swope stated that he reviewed some of the old Board packets and minutes. He noted that if a ten-year plan is regularly reviewed, there is less work required to update the plan when that time comes. He stated that he would like more information on the cost-benefit analysis between wetland creation and wetland protection. He stated that if the Board is going to work on wetland restoration, he would also like to see related policies reviewed. He stated that while ten-year plans provide benefit, things also change during that time period and therefore the plans often need adjustment. Tina Carstens recognized the need to define terms so that everyone is on the same page when those terms are used. She suggested that be the first step to ensure everyone is using the same language in these discussions. She noted that they could then have a good discussion on what may be lacking or desired in the plan.

Manager Aichinger stated that part of the strategy in the wetland rule was to avoid impacts from stormwater discharge. He stated that there could be further review of whether that rule does enough.

Manager Ward stated that she likes the idea of beginning the process earlier and the suggestion to begin with definitions. She stated that perhaps Barr could review the plan to determine how the plan could be broken up to review in manageable sections. She noted that the Board will have to decide how much time it would like to invest in that process in addition to the regular Board duties.

Manager Skinner commented that it is always good to review policies to determine if there are updates necessary.

Brad Lindaman agreed that it would be helpful to begin with the definitions. He stated that they could also have a discussion to understand where the threshold is for preserve and protect. He commented that wetland systems are dynamic with fluctuations over time and therefore he would not want to see policies that back the District into a corner.

12. PRESENTATIONS (1:58:20)

A. District Inspection Standardization Project Update

Tyler Olsen reviewed the purpose of developing a standardization of inspection processes in order to prioritize the framework for selection of the maintenance projects for the next year. He stated that during this process they obtained and reviewed previous inspection data, categorized the types of facilities, developed a scoring system for inspections, and creation of mobile data collection app that can be used in the field. He provided details on the category development, criteria development, and scoring system. He then reviewed an example of an inspection and how it would be scored. He provided additional details on the Field Map application that can be used during field inspections. He reviewed the next steps in the process noting that they are planning to do a trial run in the field using the application and scoring system in order to have the system ready to use for inspections later this summer/fall.

Manager Eisele thanked Barr for the presentation. He asked if there are plans to look at other extremes and solutions to determine the effect of high impact variables on a specific location. Tyler Olson confirmed that they could go to CIP sites included in the 2022 project to check the tool using professional insight.

Manager Aichinger commented that this is exciting as they have talked about this type of tool for some time. He hoped it would bring efficiency and more transparency.

President Swope commented that this could be an industry leading project and he is excited about it.

Manager Ward commented that she also likes the tool and stated that it will be interesting to see how this moves along.

Manager Eisele stated that in the future it may be nice to revisit this topic and how the data can be used to communicate to property owners and/or stakeholders.

B. Owasso Basin/North Star Estates Flood Improvement Scope Summary

Brad Lindaman recalled a prior discussion related to the Owasso Basin area and the desire to accomplish "low hanging fruit". He reviewed the activities that have been completed since that time to make incremental improvements to the Owasso Basin area. He stated that the next step would take what has been done so far to recharacterize the actual flood impact in that area and then move to the next step of possible improvements. He explained that information will be brought back to the Board for review in making determination as how to move forward.

Manager Eisele referenced task one and asked if additional modeling could be done for the different flood levels and not just the 100-year flood level.

Brad Lindaman recognized that there will be policy and rule discussions for the Board to have as to how those apply to the manufactured home community.

Manager Aichinger asked if research has been done on possible approaches to other mobile home communities by other entities, such as FEMA. Brad Lindaman stated that FEMA has some guidance but more directed towards development of a manufactured home community.

Manager Eisele referenced the stakeholder outreach and asked if staff would be engaging residents to determine if there are more flood prone areas that may not have been identified through modeling. Brad Lindaman stated that they have already been in those discussions with the property owner, and they will continue to have those conversations to identify areas the modeling may have missed or mischaracterized.

13. ADMINISTRATOR'S REPORT (2:34:46)

A. Meetings Attended

No comments.

B. Upcoming Meetings and Dates

No comments.

C. Office COVID Update

Tina Carstens welcomed any suggestions to her draft plan, noting that adjustments may need to occur throughout the transition period. She noted that most staff members have been coming into the office on a part-time basis and during the last field season, those staff members were still completing their needed work. She again noted that because of the changes to the CDC guidance, masks would be recommended but not required in an office setting.

D. Board Appointment Process

Tina Carstens stated that the application period has closed noting that the County was hoping to appoint someone in mid-March.

E. WaterFest Planning

Tina Carstens stated that staff has begun planning for the event to be held in person on June 4th.

F. MAWD Legislative Event

Tina Carstens stated that managers should have received messages about the upcoming event. She asked that managers let her know if they would like to attend so that staff could register them. She highlighted the different events that will be held.

Tina Carstens provided an update on Phalen Freeze Fest.

14. PROJECT AND PROGRAM STATUS REPORTS (2:40:40)

A. Ongoing Project and Program Updates

i. Interim Emergency Response Planning
ii. Kohlman Creek and Phalen Chain of Lakes Flood Risk Reduction Feasibility Study
iii. Owasso Basin/North Star Estates Improvements
iv. Shallow Lake Aeration Study
v. North St. Paul Target Store
vi. East St. Paul Target Store
vii. Targeted Retrofit Projects
viii. Ryan Drive and Keller Parkway Conveyance Project
ix. District Inspection Standardization
x. CIP Maintenance and Repair Project 2022
xi. New Technology Review: Beet Juice and Salt Mixtures for Deicing
xii. Natural Resources Program Update
xiii. Education Program Update
xiv. Communications Program and Website Update
xv. CAC Meeting Update

President Swope asked why Roseville is reluctant to participate on Frog Pond. Tina Carstens replied that the city was hesitant because they were going to install their own system. She noted that residents have been requesting this for a while and explained that the system proposed by the District was different than what residents were expecting.

Bill Bartodziej explained that the residents were wanting a big fountain and the city granted their wishes and installed a massive fountain in the pond, which is not what the District wanted for that pond. He stated that they spoke with the city multiple times in attempt to turn off the fountain and try the aeration system, but the city is not interested. He stated that plan B would be to aerate Bennett Lake, which would be a bigger process. He noted that it sounds like the city is interested in partnering on that project. He confirmed that there has been carp removal in Bennett Lake.

President Swope referenced the targeted retrofits and noted that the two projects proposed are dramatically different in the cost per pound for removal. He asked for details on the cost per pound for the Target projects. Paige Ahlborg stated that staff can gather those details but believed those projects were on the higher end.

15. MANAGER COMMENTS AND NEXT MONTH'S MEETING (2:49:00)

The group wished Manager Aichinger well in his next adventures.

16. ADJOURN

Motion: Manager Skinner moved, Manager Eisele seconded, to adjourn the meeting at 9:20 p.m. Motion carried unanimously.

RWMWD BUDGET STATUS REPORT
Administrative & Program Budget
Fiscal Year 2022
3/31/2022

Budget Category	Budget Item	Account Number	Original Budget	Budget Transfers	Current Month Expenses	Year-to-Date Expenses	Current Budget Balance	Percent of Budget
Manager	Per diems	4355	$8,500.00	-	-	84.10	$8,415.90	0.99%
	Manager expenses	4360	4,000.00	-	-	-	4,000.00	0.00%
Committees	Committee/Bd Mtg. Exp.	4365	3,500.00	-	300.00	827.00	2,673.00	23.63%
	Sub-Total: Managers/Committees:		**$16,000.00**	**$0.00**	**$300.00**	**$911.10**	**$15,088.90**	**5.69%**
Employees	Staff salary/taxes/benefits	4010	1,660,000.00	-	121,511.14	358,787.93	1,301,212.07	21.61%
	Employee expenses	4020	15,000.00	-	228.30	777.19	14,222.81	5.18%
	District training & education	4350	75,000.00	-	2,354.20	3,524.64	71,475.36	4.70%
	Sub-Total: Employees:		**$1,750,000.00**	**$0.00**	**$124,093.64**	**$363,089.76**	**$1,386,910.24**	**20.75%**
Administration/ Office	GIS system maint. & equip.	4170	10,000.00	-	374.00	1,361.02	8,638.98	13.61%
	Data Base/GIS Maintenance	4171	40,000.00	-	-	98.94	39,901.06	0.25%
	Equipment maintenance	4305	3,000.00	-	-	-	3,000.00	0.00%
	Telephone	4310	4,000.00	-	59.34	178.02	3,821.98	4.45%
	Office supplies	4320	7,000.00	-	770.74	824.36	6,175.64	11.78%
	IT/Internet/Web Site/Software Lic.	4325	75,000.00	-	6,470.03	19,149.56	55,850.44	25.53%
	Postage	4330	3,000.00	-	-	143.55	2,856.45	4.79%
	Printing/copying	4335	5,000.00	-	294.00	955.00	4,045.00	19.10%
	Dues & publications	4338	11,000.00	-	7,598.94	7,643.94	3,356.06	69.49%
	Janitorial/Trash Service	4341	15,000.00	-	1,479.85	3,402.85	11,597.15	22.69%
	Utilities/Bldg.Contracts	4342	30,000.00	-	2,213.48	3,632.67	26,367.33	12.11%
	Bldg/Site Maintenance	4343	150,000.00	-	7,377.67	10,236.31	139,763.69	6.82%
	Miscellaneous	4390	5,000.00	-	-	-	5,000.00	0.00%
	Insurance	4480	55,000.00	-	-	-	55,000.00	0.00%
	Office equipment	4703	150,000.00	-	1,500.00	1,500.00	148,500.00	1.00%
	Vehicle lease, maintenance	4810-40	20,000.00	-	221.94	476.39	19,523.61	2.38%
	Sub-Total: Administration/Office:		**$583,000.00**	**$0.00**	**$28,359.99**	**$49,602.61**	**$533,397.39**	**8.51%**
Consultants/ Outside Services	Auditor/Accounting	4110	70,000.00	-	2,412.79	6,697.31	63,302.69	9.57%
	Engineering-administration	4121	125,000.00	-	6,652.50	19,124.50	105,875.50	15.30%
	Engineering-permit I&E	4122	10,000.00	-	-	-	10,000.00	0.00%
	Engineering-eng. review	4123	60,000.00	-	5,927.50	18,459.50	41,540.50	30.77%
	Engineering-permit review	4124	55,000.00	-	4,664.00	15,074.50	39,925.50	27.41%
	Project Feasibility Studies	4129	410,000.00	-	17,711.00	26,923.00	383,077.00	6.57%
	Attorney-permits	4130	10,000.00	-	-	-	10,000.00	0.00%
	Attorney-general	4131	40,000.00	-	1,933.60	5,537.60	34,462.40	13.84%
	Outside Consulting Services	4160	20,000.00	-	-	-	20,000.00	0.00%
	Sub-Total: Consultants/Outside Services:		**$800,000.00**	**$0.00**	**$39,301.39**	**$91,816.41**	**$708,183.59**	**11.48%**
Programs	Educational programming	4370	75,000.00	-	885.25	4,036.44	70,963.56	5.38%
	Communications & Marketing	4371	50,000.00	-	-	100.00	49,900.00	0.20%
	Events	4372	46,000.00	-	6,500.00	6,500.00	39,500.00	14.13%
	Water QM-Engineering	4520-30	180,000.00	-	8,667.11	13,074.92	166,925.08	7.26%
	Project operations	4650	200,000.00	-	539.41	1,072.19	198,927.81	0.54%
	SLMP/TMDL Studies	4661	125,000.00	-	1,076.00	4,861.50	120,138.50	3.89%
	Natural Resources/Keller Creek	4670-72	120,000.00	-	125.01	311.96	119,688.04	0.26%
	Outside Prog.Support/Weed Mgmt.	44683	57,000.00	-	-	12,500.00	44,500.00	21.93%
	Research Projects	4695	225,000.00	-	6,308.50	9,660.50	215,339.50	4.29%
	Health and Safety Program	4697	3,000.00	-	-	-	3,000.00	0.00%
	Sub-Total: Programs:		**$1,081,000.00**	**$0.00**	**$24,101.28**	**$52,117.51**	**$1,028,882.49**	**4.82%**
GENERAL FUND TOTAL			**$4,230,000.00**	**$0.00**	**$216,156.30**	**$557,537.39**	**$3,672,462.61**	13.18%
CIP's	CIP Project Repair & Maintenance	516	1,500,000.00	-	33,144.00	208,759.13	1,291,240.87	13.92%
	Targeted Retrofit Projects	518	1,500,000.00	-	27,990.00	56,691.96	1,443,308.04	3.78%
	Flood Risk Reduction Fund	520	5,200,000.00	-	3,663.63	7,931.93	5,192,068.07	0.15%
	Debt Services-96-97 Beltline/MM/Battle Creek	526	394,710.00	-	-	276,190.20	118,519.80	69.97%
	Stewardship Grant Program Fund	529	1,000,000.00	-	7,202.04	13,842.41	986,157.59	1.38%
	Wetland Restoration Projects	540	500,000.00	-	-	-	500,000.00	0.00%
CIP BUDGET TOTAL			**$10,094,710.00**	**-**	**$71,999.67**	**$563,415.63**	**$9,531,294.37**	5.58%
TOTAL BUDGET			**$14,324,710.00**	**$0.00**	**$288,155.97**	**$1,120,953.02**	**$13,203,756.98**	**7.83%**

Current Fund Balances:

Fund:	Unaudited Beginning Fund Balance @ 12/31/21	Fund Transfers	Year to date Revenue	Current Month Expenses	Year to Date Expense	Unaudited Fund Balance @ 03/31/22
101 - General Fund	$2,382,780.48	-	2,616.56	216,156.30	557,537.39	1,827,859.65
516 - CIP Project Repair & Maintenance	461,820.89	-	118,886.14	33,144.00	208,759.13	371,947.90
518 - Targeted Retrofit Projects	866,004.98	-	-	27,990.00	56,691.96	809,313.02
520 - Flood Damage Reduction Fund	3,093,746.70	-	67.06	3,663.63	7,931.93	3,085,881.83
526 - Debt Services-96-97 Beltline/MM/Beltline-Battle Creek Tunnel Repair	944,949.78	-	-	-	276,190.20	668,759.58
529 - Stewardship Grant Program Fund	854,748.21	-	-	7,202.04	13,842.41	840,905.80
536 - Stormwater Impact Fund	309,836.56	-	-	-	-	309,836.56
540 - Wetland Restoration Projects	498,035.60	-	-	-	-	498,035.60
580 - Contingency Fund	1,435,341.00	-	-	-	-	1,435,341.00
Total District Fund Balance	**$10,847,264.20**	**$0.00**	**$ 121,569.76**	**$ 288,155.97**	**$1,120,953.02**	**$9,847,880.94**

Ramsey Washington Metro Watershed Dist.
Check Register
For the Period From Mar 1, 2022 to Mar 31, 2022

Check #	Date	Payee ID	Invoice #	Payee	Description	Amount
EFT	03/01/22	met008	Mar 2022	MetLife	Employee Benefits	$1,759.77
EFT	03/09/22	hea002	Apr 2022	HealthPartners	Employee Benefits	12,563.83
72857V	03/09/22	tro002	22-1	Cathy Troendle	Educational Program	(1,103.44)
72862	03/14/22	att002	287256653401X02252022	AT & T Mobility - ROC	Water QM/IT/Project Operations	166.34
72863	03/14/22	aws001	S1335957-030122	AWS Service Center	Janitorial/Trash Service	280.85
72864	03/14/22	gil001	214428	Gilbert Mechanical Contractors, Inc.	Bldg/Site/Water QM Staff	7,666.62
72865	03/14/22	han008	1753	Hanna Enterprises, LLC	Janitorial/Trash Service	605.00
72866	03/14/22	mid001	6623703	Quicksilver Express Courier	Office Supplies	33.32
72867	03/14/22	mid003	580992	Roseville Midway Ford	Vehicle Maintenance	221.94
72868	03/14/22	ncp001	Feb 2022	NCPERS Group Life Ins.	Employee Benefits	16.00
72869	03/14/22	nsp001	768588110	Xcel Energy	Project Operations/Utilities/Bldg.	2,114.33
72870	03/14/22	pre003	318647780	Premium Waters, Inc.	Utilities/Bldg. Contracts	28.00
72871	03/14/22	tes002	5629	Testing Services, Inc.	Water QM Staff	150.00
72872	03/14/22	tro002	22-2	Cathy Troendle	Educational Program	560.94
72873	03/14/22	usb005	466488491	US Bank Equipment Finance	Printing Expense	294.00
72874	03/30/22	ada002	3439305	Adam's Pest Control, Inc.	Utilities/Bldg. Contracts	21.33
72875	03/30/22	att002	287256653401X0252022	AT & T Mobility - ROC	Water QM/IT/Project Operations	166.74
72876	03/30/22	bar001	2/12-3/18/22	Barr Engineering	February/March Engineering	112,635.64
72877	03/30/22	bfg001	1987358-00	BFG Supply Co., LLC	Educational Program	38.22
72878	03/30/22	blo001	Mar 2022	Simba Blood	Employee Reimbursement	145.80
72879	03/30/22	boa001	Matt/Mary	Board of Water & Soil Resources	Training & Education	850.00
72880	03/30/22	bre003	2nd Qtr - 2022	Bremer Bank	Employee Benefits	8,668.75
72881	03/30/22	cad001	18231615	Allstream	Water QM Staff	78.35
72882	03/30/22	cit011	230758	City of Roseville	IT/Website/Software	6,264.21
72883	03/30/22	com004	Mar 2022	Comcast	Utilities/Bldg. Contracts	81.49
72884	03/30/22	don001	Mar 2022	Matthew Doneux	Employee Reimbursement	74.33
72885	03/30/22	gal001	03/23/22	Galowitz Olson, PLLC	March Legal Fees	1,933.60
72886	03/30/22	gru001	01-13656	Gruber's Power Equipment	Natural Resources Projects	125.01
72887	03/30/22	huo001	21-04 CS	Kathleen Huonder	Stewardship Grant Fund	1,171.12
72888	03/30/22	inn002	IN3714460	Innovative Office Solutions LLC	Office Supplies	555.35
72889	03/30/22	int001	W22020492	Office of MN, IT Services	Telephone Expense	59.34
72890	03/30/22	irc001	15-33	IRC Retail Centers	Dev Escrow-General	9,250.00
72891	03/30/22	joh006	18-09 MTN	Skip Johnson	Stewardship Grant Fund	892.60
72892	03/30/22	joh007	21-41-CS	Burt Johnson	Stewardship Grant Fund	2,217.82
72893	03/30/22	kub001	Mar 2022	Kyle W. Kubitza	Employee Reimbursement	51.70
72894	03/30/22	maw002	2022 Dues	MAWD	2022 Dues	7,500.00
72895	03/30/22	mbc001	1126	MB Consulting	Events	5,000.00
72896	03/30/22	mel001	Feb/Mar 2022	Michelle L. Melser	Employee Reimbursement	131.33
72897	03/30/22	min008	32185	Minnesota Native Landscapes, Inc.	Construction Imp.-Maint. & Repair	185.00
72898	03/30/22	ncp001	Mar/Apr 2022	NCPERS Group Life Ins.	Employee Benefits	16.00
72899	03/30/22	nsp001	770911426	Xcel Energy	Project Operations/Utilities/Bldg.	765.14
72900	03/30/22	pac001	22100365986	Pace Analytical Services, Inc.	Water QM Staff	1,123.00
72901	03/30/22	pas002	Mar 2022	Sage Passi	Employee Reimbursement	244.55
72902	03/30/22	qwe001	03/10/22	CenturyLink	Project Operations-General	280.87
72903	03/30/22	red002	150468543	Redpath & Company	February Accounting Services	2,278.54
72904	03/30/22	sel001	1500	Tim Melser	Bldg/Site Maintenance	337.50
72905	03/30/22	shi001	B14891921	SHI International Corp.	Office Equipmet-General	1,470.00
72906	03/30/22	sim001	Mar 2022	Emily Simmons	Employee Reimbursement	223.26
72907	03/30/22	sod001	Mar 2022	Nicole Soderholm	Employee Reimbursement	77.67
72908	03/30/22	stu001	2019537	Studio Lola	BMP Cost Share Program	3,472.50
72909	03/30/22	tie002	13-16	Tier 2 Funding Group, Inc.	Dev Escrow-General	11,820.00
72910	03/30/22	tim002	M27101	Timesaver Off-Site Secretarial, Inc.	Committee/Board Meeting Expense	300.00
72911	03/30/22	tro002	22-3	Cathy Troendle	Educational Program	1,347.43
72912	03/30/22	usb002	Mar 2022	U.S. Bank	March Credit Card	2,340.87
72913	03/30/22	van001	82601	Vanguard Cleaning Systems of Minnesota	Janitorial/Trash Service	594.00
72914	03/30/22	wil002	60757	Wilderness Inquiry	Events	1,500.00
Total						**$211,646.56**

Ramsey Washington Metro Watershed Dist.
Check Register
For the Period From Mar 1, 2022 to Mar 31, 2022

Check #	Date	Payee ID	Invoice #	Payee	Description	Amount
EFT	03/04/22	myp001	03/04/21	March 4th Payroll Fees	4110-101-000	66.15
EFT	03/18/22	myp001	03/18/22	March 18th Payroll Fees	4110-101-000	68.10
Dir.Dep.	03/04/22	---	Payroll Expense-Net	March 4th Payroll	4010-101-000	27,195.75
EFT	03/04/22	int002	Internal Rev.Serv.	March 4th Federal Withholding	2001-101-000	9,748.60
EFT	03/04/22	mnd001	MN Revenue	March 4th State Withholding	2003-101-000	1,744.74
EFT	03/04/22	per001	PERA	March 4th PERA	2011-101-000	5,977.63
EFT	03/04/22	emp002	Empower Retirement	Employee Def.Comp. Contributions	2016-101-000	2,420.00
EFT	03/04/22	emp002	Empower Retirement	Employee IRA Contributions	2018-101-000	400.00
Dir.Dep.	03/18/22	---	Payroll Expense-Net	March 18th Payroll	4010-101-000	27,567.97
EFT	03/18/22	int002	Internal Rev.Serv.	March 18th Federal Withholding	2001-101-000	9,811.11
EFT	03/18/22	mnd001	MN Revenue	March 18th State Withhholding	2003-101-000	1,749.18
EFT	03/18/22	per001	PERA	March 18th PERA	2011-101-000	5,977.63
EFT	03/18/22	emp002	Empower Retirement	Employee Def.Comp. Contributions	2016-101-000	2,420.00
EFT	03/18/22	emp002	Empower Retirement	Employee IRA Contributions	2018-101-000	400.00
					Payroll/Benefits:	**$95,546.86**
Total					**Accounts Payable/Payroll/Benefits:**	**$307,193.42**

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From March 1, 2022 - March 31, 2022

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
03/01/22	EFT	met008	MetLife-Group Benefits	4040-101-000	Employee Benefits-General	$1,759.77	
03/08/22	EFT	hea002	HealthPartners	4040-101-000	Employee Benefits-General	12,563.83	
03/09/22	72857V	tro002	Cathy Troendle			(1,103.44)	
				4370-101-000	Educational Program-General		(1,102.50)
				4370-101-000	Educational Program-General		(0.94)
03/14/22	72862	att002	AT & T Mobility - ROC			166.34	
				4530-101-000	Water QM Staff-General		27.44
				4325-101-000	IT/Website/Software		54.80
				4650-101-000	Project Operations-General		84.10
03/14/22	72863	aws001	AWS Service Center	4341-101-000	Janitorial/Trash Service	280.85	
03/14/22	72864	gil001	Gilbert Mechanical Contractors			7,666.62	
				4343-101-000	Bldg/Site Maintenance		6,643.00
				4530-101-000	Water QM Staff-General		1,023.62
03/14/22	72865	han008	Hanna Enterprises, LLC	4341-101-000	Janitorial/Trash Service	605.00	
03/14/22	72866	mid001	Quicksilver Express Courier	4320-101-000	Office Supplies-General	33.32	
03/14/22	72867	mid003	Roseville Midway Ford	4820-101-000	Vehicle Maint.-General	221.94	
03/14/22	72868	ncp001	NCPERS Group Life Insurance	4040-101-000	Employee Benefits-General	16.00	
03/14/22	72869	nsp001	Xcel Energy			2,114.33	
				4650-520-000	Project Operations-General		31.67
				4342-101-000	Utilities/Bldg. Contracts		2,082.66
03/14/22	72870	pre003	Premium Waters, Inc.	4342-101-000	Utilities/Bldg. Contracts	28.00	
03/14/22	72871	tes002	Testing Services, Inc.	4530-101-000	Water QM Staff-General	150.00	
03/14/22	72872	tro002	Cathy Troendle	4370-101-000	Educational Program-General	560.94	
03/14/22	72873	usb005	US Bank Equipment Finance	4335-101-000	Printing-General	294.00	
03/30/22	72874	ada002	Adam's Pest Control, Inc.	4342-101-000	Utilities/Bldg. Contracts	21.33	
03/30/22	72875	att002	AT & T Mobility - ROC			166.74	
				4530-101-000	Water QM Staff-General		27.54
				4325-101-000	IT/Website/Software		54.76
				4650-101-000	Project Operations-General		84.44
03/30/22	72876	bar001	Barr Engineering			112,635.64	
				4121-101-000	Engineering Admin-General Fund		6,652.50
				4123-101-000	Engineering-Review		5,927.50
				4129-101-000	Project Feasability-General		7,664.50
				4129-101-000	Project Feasability-General		2,318.00
				4129-101-000	Project Feasability-General		306.00
				4129-101-000	Project Feasability-General		580.00
				4129-101-000	Project Feasability-General		340.00
				4129-101-000	Project Feasability-General		487.50
				4129-101-000	Project Feasability-General		434.50
				4129-101-000	Project Feasability-General		481.50
				4129-101-000	Project Feasability-General		252.00
				4129-101-000	Project Feasability-General		4,847.00
				4170-101-000	GIS System Maint. & Equipment		374.00
				4520-101-000	Engineering-WQM		4,266.00
				4520-101-000	Engineering-WQM		1,745.00
				4520-101-000	Engineering-WQM		75.00
				4124-101-000	Engineering-Permit Review		4,664.00
				4661-101-000	SLMP/TMDL Studies		350.00

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From March 1, 2022 - March 31, 2022

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
				4661-101-000	SLMP/TMDL Studies		156.00
				4661-101-000	SLMP/TMDL Studies		570.00
				4695-101-000	Research Projects-General		2,391.00
				4695-101-000	Research Projects-General		3,917.50
				4650-101-000	Project Operations-General		90.00
				4128-518-000	Engineering-Targeted Retrofit		13.00
				4128-520-000	Engineering-Flood Damage		3,349.14
				4128-518-000	Engineering-Targeted Retrofit		14,407.00
				4128-518-000	Engineering-Targeted Retrofit		10,097.50
				4682-529-000	Engineering-Stewardship Grant Program		2,920.50
				4128-516-000	Engineering-Maint. & Repair		5,021.00
				4128-516-000	Engineering-Maint. & Repair		14,442.00
				4128-516-000	Engineering-Maint. & Repair		2,851.00
				4128-516-000	Engineering-Maint. & Repair		10,645.00
03/30/22	72877	bfg001	BFG Supply Co. LLC	4370-101-000	Educational Program-General	38.22	
03/30/22	72878	blo001	Simba Blood			145.80	
				4020-101-000	Employee Expenses-General		25.80
				4040-101-000	Employee Benefits-General		120.00
03/30/22	72879	boa001	Board of Water & Soil Resources	4350-101-000	Training & Education-General	850.00	
03/30/22	72880	bre003	Bremer Bank	4040-101-000	Employee Benefits-General	8,668.75	

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From March 1, 2022 - March 31, 2022

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
03/30/22	72881	cad001	Allstream	4530-101-000	Water QM Staff-General	78.35	
03/30/22	72882	cit011	City of Roseville	4325-101-000	IT/Website/Software	6,264.21	
03/30/22	72883	com004	Comcast	4342-101-000	Utilities/Bldg. Contracts	81.49	
03/30/22	72884	don001	Matthew Doneux			74.33	
				4020-101-000	Employee Expenses-General		5.85
				4040-101-000	Employee Benefits-General		68.48
03/30/22	72885	gal001	Galowitz Olson, PLLC	4131-101-000	Attorney General-General	1,933.60	
03/30/22	72886	gru001	Gruber's Power Equipment	4670-101-000	Natural Resources Project-General	125.01	
03/30/22	72887	huo001	Kathleen Huonder	4682-529-000	Stewardship Grant Program	1,171.12	
03/30/22	72888	inn002	Innovative Office Solutions	4320-101-000	Office Supplies-General	555.35	
03/30/22	72889	int001	Office of MN, IT Services	4310-101-000	Telephone-General	59.34	
03/30/22	72890	irc001	IRC Retail Centers	2024-101-000	Dev Escrow-General	9,250.00	
03/30/22	72891	joh006	Skip Johnson	4682-529-000	Stewardship Grant Program	892.60	
03/30/22	72892	joh007	Burt Johnson	4682-529-000	Stewardship Grant Program	2,217.82	
03/30/22	72893	kub001	Kyle W. Kubitza			51.70	
				4040-101-000	Employee Benefits-General		40.00
				4020-101-000	Employee Expenses-General		11.70
03/30/22	72894	maw002	MAWD	4338-101-000	Dues & Publications-General	7,500.00	
03/30/22	72895	mbc001	MB Consulting	4372-101-000	Events	5,000.00	
03/30/22	72896	mel001	Michelle L. Melser			131.33	
				4020-101-000	Employee Expenses-General		24.57
				4040-101-000	Employee Benefits-General		40.00
				4320-101-000	Office Supplies-General		66.76
03/30/22	72897	min008	Minnesota Native Landscapes, Inc.	4630-516-000	Construction Imp.-Maint & Rep	185.00	
03/30/22	72898	ncp001	NCPERS Group Life Insurance	4040-101-000	Employee Benefits-General	16.00	
03/30/22	72899	nsp001	Xcel Energy			765.14	
				4530-101-000	Water QM Staff-General		121.69
				4650-520-000	Project Operations-Flood		282.82
				4343-101-000	Bldg/Site Maintenance		360.63
03/30/22	72900	pac001	Pace Analytical Services, Inc.	4530-101-000	Water QM Staff-General	1,123.00	
03/30/22	72901	pas002	Sage Passi			244.55	
				4020-101-000	Employee Expenses-General		99.45
				4040-101-000	Employee Benefits-General		103.00
				4370-101-000	Educational Program-General		42.10
03/30/22	72902	qwe001	CenturyLink	4650-101-000	Project Operations-General	280.87	
03/30/22	72903	red002	Redpath & Company, Ltd.	4110-101-000	Auditor/Accounting	2,278.54	
03/30/22	72904	sel001	Tim Melser	4343-101-000	Bldg/Site Maintenance	337.50	
03/30/22	72905	shi001	SHI International Corp	4703-101-000	Office Equipment-General	1,470.00	
03/30/22	72906	sim001	Emily Simmons			223.26	
				4020-101-000	Employee Expenses-General		23.26
				4040-101-000	Employee Benefits-General		40.00
				4350-101-000	Training & Education-General		160.00

Ramsey Washington Metro Watershed Dist.
Cash Disbursements Journal
For the Period From March 1, 2022 - March 31, 2022

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
03/30/22	72907	sod001	Nicole Soderholm			77.67	
				4040-101-000	Employee Benefits-General		40.00
				4020-101-000	Employee Expenses-General		37.67
03/30/22	72908	stu001	Studio Lola	4682-518-000	BMP Cost Share Program	3,472.50	
03/30/22	72909	tie002	Tier 2 Funding Group, Inc.	2024-101-000	Dev Escrow-General	11,820.00	
03/30/22	72910	tim002	Timesaver Off-Site Secretarial, Inc.	4365-101-000	Committee/Board Meeting Expense	300.00	
03/30/22	72911	tro002	Cathy Troendle			1,347.43	
				4370-101-000	Educational Program-General		1,330.00
				4370-101-000	Educational Program-General		17.43
03/30/22	72912	usb002	U.S. Bank			2,340.87	
				4703-101-000	Office Equipment-General		30.00
				4320-101-000	Office Supplies-General		56.79
				4325-101-000	IT/Website/Software		96.26
				4320-101-000	Office Supplies-General		22.00
				4343-101-000	Bldg/Site Maintenance		36.54
				4320-101-000	Office Supplies-General		36.52
				4338-101-000	Dues & Publications-General		97.00
				4040-101-000	Employee Benefits-General		334.45
				4040-101-000	Employee Benefits-General		9.95
				4040-101-000	Employee Benefits-General		74.95
				4350-101-000	Training & Education-General		575.00
				4040-101-000	Employee Benefits-General		9.95
				4040-101-000	Employee Benefits-General		65.90
				4350-101-000	Training & Education-General		32.00
				4350-101-000	Training & Education-General		275.00
				4350-101-000	Training & Education-General		462.20
				4040-101-000	Employee Benefits-General		94.95
				4530-101-000	Water QM Staff-General		29.47
				4338-101-000	Dues & Publications-General		1.94
03/30/22	72913	van001	Vanguard Cleaning Systems of Minnesota	4341-101-000	Janitorial/Trash Service	594.00	
03/30/22	72914	wil002	Wilderness Inquiry	4372-101-000	Events	1,500.00	
			Accounts Payable Total:			**$211,646.56**	
EFT	03/04/22	myp001	Payroll Fees	4110-101-000	March 4th Payroll Fees	66.15	
EFT	03/18/22	myp001	Payroll Fees	4110-101-000	March 18th Payroll Fees	68.10	
Dir.Dep.	03/04/22	---	Payroll Expense-Net	4010-101-000	March 4th Payroll	27,195.75	
EFT	03/04/22	int002	Internal Rev.Serv.	2001-101-000	March 4th Federal Withholding	9,748.60	
EFT	03/04/22	mnd001	MN Revenue	2003-101-000	March 4th State Withholding	1,744.74	
EFT	03/04/22	per001	PERA	2011-101-000	March 4th PERA	5,977.63	
EFT	03/04/22	emp002	Empower Retirement	2016-101-000	Employee Def.Comp. Contributions	2,420.00	
EFT	03/04/22	emp002	Empower Retirement	2018-101-000	Employee IRA Contributions	400.00	

Ramsey Washington Metro Watershed Dist.

Cash Disbursements Journal

For the Period From March 1, 2022 - March 31, 2022

Date	Check #	Vendor ID	Name	Account ID	Account Description	Amount	Check Detail
Dir.Dep.	03/18/22	---	Payroll Expense-Net	4010-101-000	March 18th Payroll	27,567.97	
EFT	03/18/22	int002	Internal Rev.Serv.	2001-101-000	March 18th Federal Withholding	9,811.11	
EFT	03/18/22	mnd001	MN Revenue	2003-101-000	March 18th State Withhholding	1,749.18	
EFT	03/18/22	per001	PERA	2011-101-000	March 18th PERA	5,977.63	
EFT	03/18/22	emp002	Empower Retirement	2016-101-000	Employee Def.Comp. Contributions	2,420.00	
EFT	03/18/22	emp002	Empower Retirement	2018-101-000	Employee IRA Contributions	400.00	
			Payroll/Benefits			**$95,546.86**	
			TOTAL:			**$307,193.42**	

Summary of Professional Engineering Services During the Period
February 12, 2022 through March 18, 2022

	Total Engineering Budget (2022)	Total Fees to Date (2022)	Budget Balance (2022)	Fees During Period	District Accounting Code	Plan Implementation Task Number
Engineering Administration						
General Engineering Administration	$80,000.00	$19,124.50	$60,875.50	$6,652.50	**4121-101**	DW-13
RWMWD Health and Safety/ERTK Program	$2,000.00	$0.00	$2,000.00		**4697-101**	DW-13
Educational Program/Educational Forum Assistance	$20,000.00	$1,190.00	$18,810.00	$0.00	**4129-101**	DW-11
Topical Workshop, Education, and Planning	$25,000.00	$0.00	$25,000.00		**4129-101**	DW-13
Engineering Review						
Engineering Review	$60,000.00	$18,459.50	$41,540.50	$5,927.50	**4123-101**	DW-13
Project Feasibility Studies						
Interim emergency response plan funds for top priority District flooding areas	$30,000.00	$11,472.50	$18,527.50	$7,664.50	**4129-101**	DW-19
Groundwater/Surface Water Next Steps	$50,000.00	$0.00	$50,000.00	$0.00	**4129-101**	DW-10, DW-16
Hillcrest Golf Course	$20,000.00	$72.00	$19,928.00	$0.00	**4129-101**	DW-6
Kohlman Creek flood damage reduction feasibility study	$75,000.00	$2,318.00	$72,682.00	$2,318.00	**4129-101**	DW-9, KC-2, BELT-3
Kohlman Creek- Wakefield Lake Diversion Planning and Design	$111,600.00	$306.00	$86,010.00	$306.00	**4129-101**	DW-9, KC-2, BELT-3
Improvements to County Ditch 17	$20,000.00	$580.00	$19,420.00	$580.00	**4129-101**	DW-9, BELT-3
Improvements to Phalen Village	$20,000.00	$340.00	$19,660.00	$340.00	**4129-101**	DW-9, BELT-3
Ames Lake Technical Assisstance and Project Planning with St. Paul	$25,000.00	$1,660.50	$23,339.50	$487.50	**4129-101**	DW-9, BELT-3
694/494/94 WQ treatment feasibility study	$30,000.00	$0.00	$30,000.00		**4129-101**	BCL-3
Double Driveway Optimization Study	$25,000.00	$434.50	$24,565.50	$434.50	**4129-101**	FC-2
Carver Pond Improvements Study (Fish Creek Subwatershed)	$25,000.00	$481.50	$24,518.50	$481.50	**4129-101**	FC-2
Evaluate compliance with South Metro Mississippi River TSS TMDL	$30,000.00	$252.00	$29,748.00	$252.00	**4129-101**	MR-2
Owasso Basin area/North Star Estates improvements (with City of Little Canada)	$50,000.00	$4,847.00	$45,153.00	$4,847.00	**4129-101**	GC-3
Wetland Restoration Workshop, Education, and Planning	$5,000.00	$2,969.00	$2,031.00	$0.00	**4129-101**	DW-8
Contingency*	$45,000.00	$0.00	$45,000.00		**4129-101**	
GIS Maintenance						
GIS Maintenance	$5,000.00	$374.00	$4,626.00	$374.00	**4170-101**	DW-13
Monitoring Water Quality/Project Monitoring						
Lake Water Quality Monitoring (Misc QA/QC)	$10,000.00	$0.00	$10,000.00		**4520-101**	DW-2
Annual WQ Report Assistance	$10,000.00	$5,514.00	$4,486.00	$4,266.00	**4520-101**	DW-2
Special Project BMP Monitoring	$25,000.00	$2,357.66	$22,642.34	$1,745.00	**4520-101**	DW-12
Grass Lake Berm Wetland Monitoring	$10,000.00	$503.50	$9,496.50	$75.00	**4520-101**	DW-5
Permit Processing, Inspection and Enforcement						
Permit Application Inspection and Enforcement	$10,000.00	$0.00	$10,000.00		**4122-101**	DW-7
Permit Application Review	$55,000.00	$15,074.50	$39,925.50	$4,664.00	**4124-101**	DW-7
Lake Studies/TMDL Reports						
2022 Grant Applications	$40,000.00	$2,005.50	$37,994.50	$350.00	**4661-101**	DW-13
WMP Updates - Including Implementation Plan Updates if needed	$20,000.00	$0.00	$20,000.00		**4661-101**	DW-13
Prioritization of water quality projects from subwatershed feasibility studies	$5,000.00	$216.00	$4,784.00	$156.00	**4661-101**	DW-13
Cost/Benefit Analysis of Treatment Options for Bennett and Wakefield in 2020 Internal Load Analysis	$35,000.00	$570.00	$34,430.00	$570.00	**4661-101**	WL-3, BeL-3
Phalen Chain of Lakes Changes in Water Quality	$2,500.00	$2,070.00	$430.00	$0.00	**4661-101**	DW-2, DW-12
Contingency for Lake Studies	$22,500.00	$0.00	$22,500.00		**4661-101**	
Research Projects						
New Technology Mini Case Studies (average 6 per year)	$12,000.00	$154.00	$11,846.00	$0.00	**4695-101**	DW-12
Kohlman Permeable Weir Test System - Implement Monitoring Plan	$50,000.00	$2,517.00	$47,483.00	$2,391.00	**4695-101**	DW-12
Shallow Lake Aeration Study	$90,000.00	$6,989.50	$83,010.50	$3,917.50	**4695-101**	DW-12
Project Operations						
2021 Tanners Alum Facility Monitoring	$15,000.00	$90.00	$14,910.00	$90.00	**4650-101**	TaL-3
Capital Improvements						
North St. Paul Target	$160,000.00	$156,963.80	$3,036.20	$13.00	**4128-518**	DW-6
Ryan Drive-Keller Parkway Conveyance	$194,000.00	$211,122.06	-$17,122.06	$3,349.14	**4128-520**	DW-9. GC-3
Commercial Sites Retrofit Projects 2022 (Targeted Retrofits)	$45,000.00	$5,381.00	$39,619.00	$0.00	**4128-518**	DW-6
School Sites Retrofit Projects 2022 (Targeted Retrofits)	$45,000.00	$28,531.00	$16,469.00	$14,407.00	**4128-518**	DW-6
Church Sites Retrofit Projects 2022 (Targeted Retrofit)	$45,000.00	$19,190.46	$25,809.54	$10,097.50	**4128-518**	DW-6
Stewardship Grant Program: Gen'l BMP Design Assistance and Review (cases where Dist is approached by landowner, or landowner is not commercial, school, church).	$75,000.00	$6,369.87	$68,630.13	$2,920.50	**4682-529**	DW-6
Kohlman Creek Storage and Detention	$200,000.00	$0.00	$200,000.00		**4128-520**	KC-2
Wetland Restoration	$100,000.00	$0.00	$100,000.00		**4128-529**	DW-8
South Owasso Boulevard East WQ Pond	$150,000.00	$0.00	$150,000.00		**4128-520**	GC-3
West Industrial Park Berm and associated improvements	$150,000.00	$0.00	$150,000.00		**4128-520**	GC-3
South Lake Judy Filtration- Regional BMP	$160,000.00	$0.00	$160,000.00		**4128-518**	LE-3
CIP Project Repair & Maintenance						
Routine CIP Inspection and Unplanned Maintenance Identification	$125,000.00	$9,666.50	$115,333.50	$5,021.00	**4128-516**	DW-5
Beltline 5-year Inspection	$70,000.00	$44,783.82	$25,216.18	$14,442.00	**4128-516**	BELT-2
District Inspection Standardization	$34,200.00	$18,386.50	$15,813.50	$2,851.00	**4128-516**	DW-5
2021 CIP Maintenance and Repairs	$150,000.00	$133,265.46	$16,734.54	$0.00	**4128-516**	DW-5
2022 CIP Maintenance and Repairs	$150,000.00	$84,108.58	$65,891.42	$10,645.00	**4128-516**	DW-5
2023 CIP Maintenance and Repairs (planning, bidding, and project setup)	$40,000.00	$0.00	$40,000.00		**4128-516**	DW-5
				$112,635.64		

Barr declares under the penalties of Law that this Account,
Claim, or Demand is just and that no part has been paid.

Bradley J. Lindaman, Vice President

Galowitz Olson, PLLC
10390 39th Street North
Lake Elmo, Minnesota 55042
Office: (651) 777-6960
Fax: (651) 777-8937

Ramsey-Washington Metro Watershed District
C/O Tina Carstens
2665 Noel Drive
Little Canada MN 55117

March 23, 2022
File No: 9M

	Balance
General Account	$1,933.60

Permit Application Coversheet

Date April 06, 2022

Project Name SPRWS Soil Staging Site Project Number 22-08

Applicant Name Isaac Afwerke, St. Paul Regional Water Services

Type of Development Grading

Property Description

This project is located east of Pigs Eye Lake Road, northwest of Pigs Eye Lake in the City of St. Paul. The applicant is proposing to regrade the site for a future soil staging area. Work will also include installation of a chain link fence and lighting as well as final stabilization. The total site area is 5.6 acres. The project does not include any impervious area, so Rule C for stormwater management does not apply. The site is located within the 100-year floodplain of the river, and there will be no net fill nor loss of floodplain storage. A wetland was delineated on the northern tip of the site, however it was designated as incidental by the City of St. Paul, the Wetland Conservation Act (WCA) LGU for this area.

Watershed District Policies or Standards Involved:

- ☐ *Wetlands*
- ☑ *Erosion and Sediment Control*
- ☐ *Stormwater Management*
- ☑ *Floodplain*

Water Quantity Considerations

There are no water quantity considerations.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

There are no long term water quality considerations.

Staff Recommendation

Staff recommends approval of this permit with the special provision.

Attachments:

- ☑ Project Location Map
- ☑ Project Grading Plan

#22-08 SPRWS Soil Staging Site

Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

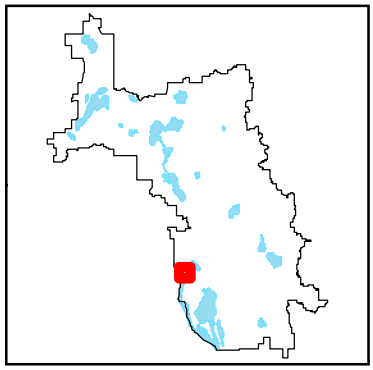
- WMU
- Flow Arrows
- Major Flow Arrows
- Subwatersheds
- Creeks
- Permits
- Ramsey Co Parcels

Highlighted Areas Represent Active Permit

0 300 600
Feet

0 0.05 0.1
Miles

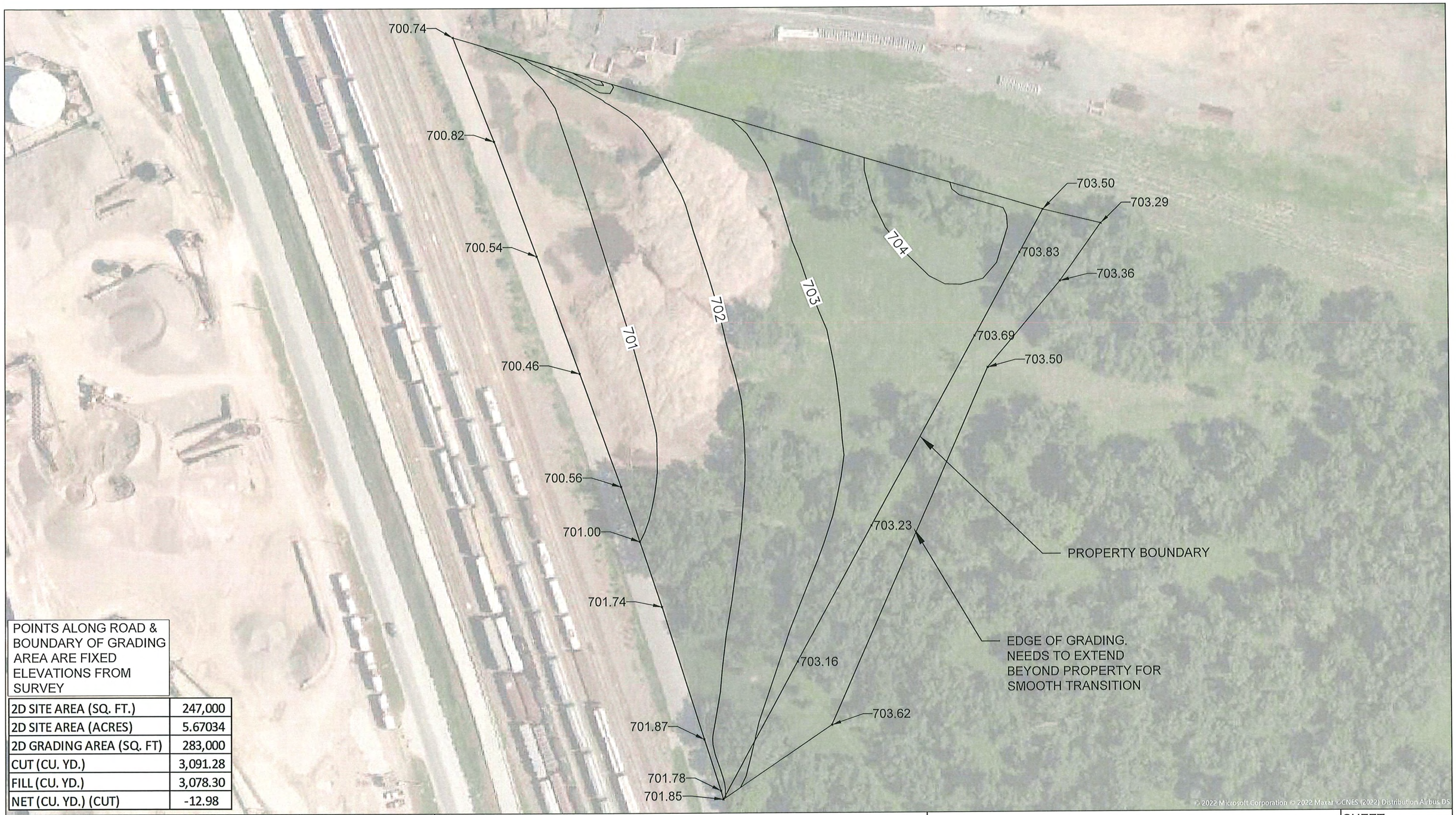
N



22-08

Special Provisions

1. The applicant shall submit contractor contact information for the person(s) responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).



POINTS ALONG ROAD & BOUNDARY OF GRADING AREA ARE FIXED ELEVATIONS FROM SURVEY

2D SITE AREA (SQ. FT.)	247,000
2D SITE AREA (ACRES)	5.67034
2D GRADING AREA (SQ. FT)	283,000
CUT (CU. YD.)	3,091.28
FILL (CU. YD.)	3,078.30
NET (CU. YD.) (CUT)	-12.98

SAINT PAUL REGIONAL WATER SERVICES

ENGINEERING DIVISION
1900 RICE STREET NORTH
SAINT PAUL, MN 55113

0 100

SCALE: 1" = 100'

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

SIGNATURE: Tim Bagstad

PRINTED NAME: Tim Bagstad

DATE: 03/07/2022 REG. NO: 44575

REVISIONS:

PROJ. NO. N-7343
DATE: 03/07/2022
DESIGNED: Issac Afwerke
REG. EIT: 16079-T
DRAFTED: AMB

PROPOSED GRADING

PIGS EYE LAKE ROAD SOIL STAGING
2022

SHEET: 4 OF 11

Permit Application Coversheet

Date April 06, 2022

Project Name Xcel Energy Lexington to County Road C Project Number 22-09

Applicant Name Brian Black, Xcel Energy

Type of Development Utility Maintenance

Property Description

This project is located on sections of County Road B and Hamline Avenue in the City of Roseville, from Lexington Avenue to County Road C. The applicant is proposing to replace 1.5 miles of gas pipe. The old pipe will be retired in-place, and new piping will be installed using open trench, horizontal directional drilling, and jack and bore techniques. The total disturbance area is 0.94 acre. Rule C for stormwater management does not apply, and there will be no new impervious area as a result of this project. A smaller portion of the project area is located within Rice Creek Watershed District (RCWD) and may require a separate permit.

Watershed District Policies or Standards Involved:

- ☐ *Wetlands*
- ☑ *Erosion and Sediment Control*
- ☐ *Stormwater Management*
- ☐ *Floodplain*

Water Quantity Considerations

There are no water quantity considerations.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

There are no long term water quality considerations.

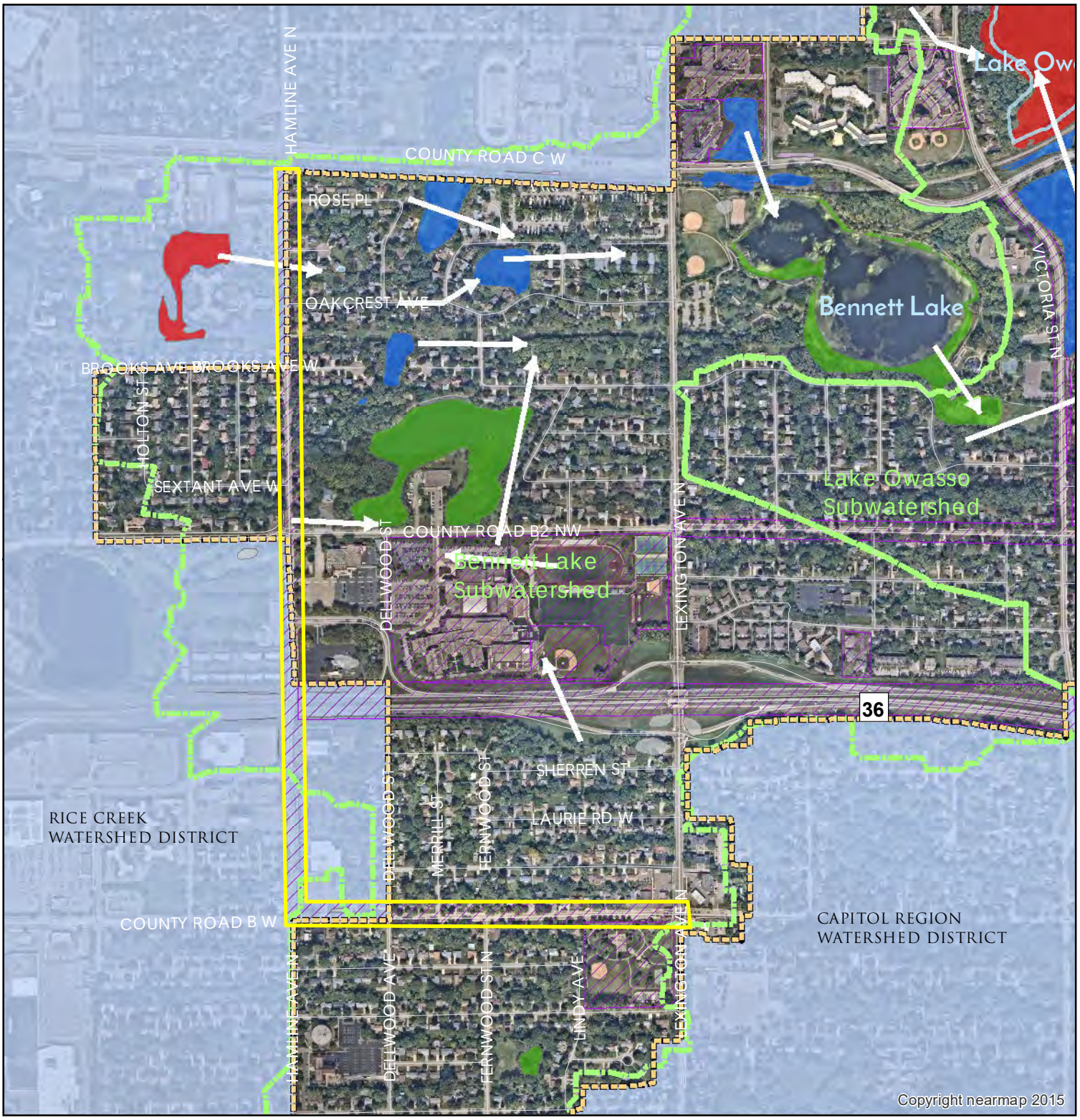
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ Project Location Map
- ☐ Project Grading Plan

#22-09 Xcel Energy Lexington to County Rd C



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

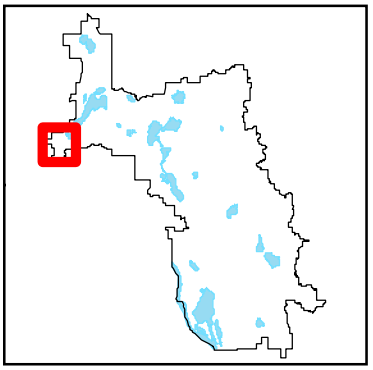
- WMU
- Flow Arrows
- Major Flow Arrows
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 750 1,500
Feet

0 0.125 0.25
Miles

N



22-09

Special Provisions

1. The applicant shall add notes to the plans:
   A. Notify Nicole Soderholm, Ramsey-Washington Metro Watershed District, at 651-792-7976 prior to beginning any construction activity for an initial erosion control inspection.
   B. The specified erosion and sediment control practices are the minimum. Additional practices may be required during the course of construction.

2. The applicant shall include the erosion control plan in the signed plans set.

3. The applicant shall submit the final, signed plans set.

4. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

Permit Application Coversheet

Date April 06, 2022

Project Name Reuter Walton Apartments Project Number 22-10

Applicant Name Kris Ikeler, Reuter Walton Development

Type of Development Residential

Property Description

This project is located on Twin Lake Boulevard, south of West Vadnais Lake in the City of Little Canada. The applicant is proposing to construct a multi-family apartment building with associated parking, landscaping, and stormwater improvements. The total site area is 2.14 acres. An underground infiltration system is proposed to meet stormwater treatment requirements. Pretreatment will be included in the form of isolator rows within the chamber system. A portion of the site is located within the 100-year floodplain, and no fill is proposed in order to maintain flood storage on the landscape.

Watershed District Policies or Standards Involved:

- ☐ *Wetlands*
- ☑ *Erosion and Sediment Control*
- ☑ *Stormwater Management*
- ☑ *Floodplain*

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ Project Location Map
- ☑ Project Grading Plan

#22-10 Reuter Walton Apartments

Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

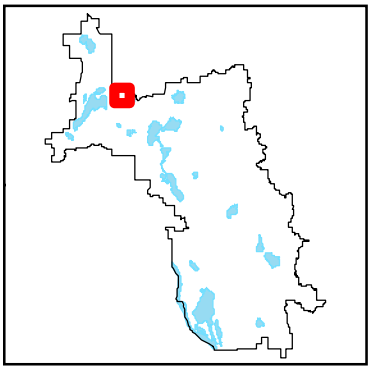
- WMU
- Flow Arrows
- Major Flow Arrows
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 250 500
Feet

0 0.05 0.1
Miles

N



22-10

Special Provisions

1. The applicant shall submit the final, signed plans set.

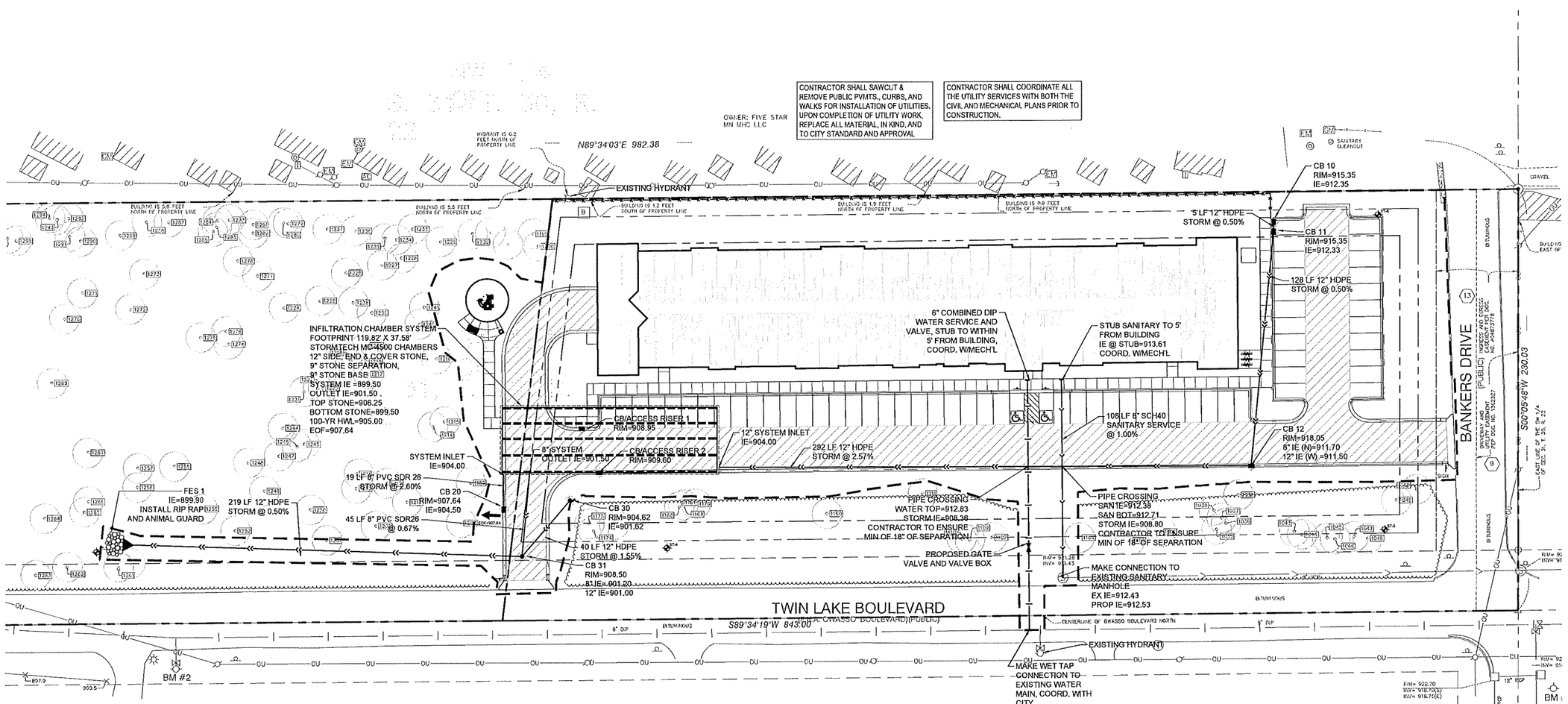
2. The applicant shall submit an executed stormwater maintenance agreement for the proposed stormwater facilities.

3. The applicant shall submit a draft, site-specific BMP Operations & Maintenance Plan.

4. The applicant shall submit the final geotechnical report.

5. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

6. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit coverage for the project.



GENERAL UTILITY NOTES:

1. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTACT "GOPHER STATE ONE CALL" (651-454-0002 OR 800-252-1166) FOR UTILITY LOCATIONS, 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY UTILITIES THAT ARE DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.
2. SEE SITE PLAN FOR HORIZONTAL DIMENSIONS AND LAYOUT.
3. CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND TOPOGRAPHIC FEATURES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF DISCREPANCIES OR VARIATIONS FROM THE PLANS.
4. UTILITY INSTALLATION SHALL CONFORM TO THE CURRENT EDITION OF "STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE LINE INSTALLATION" AND "SANITARY SEWER AND STORM SEWER INSTALLATION" AS PREPARED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM), AND SHALL CONFORM WITH THE REQUIREMENTS OF THE CITY AND THE PROJECT SPECIFICATIONS.
5. CASTINGS SHALL BE SALVAGED FROM STRUCTURE REMOVALS AND RE-USED OR PLACED AT THE DIRECTION OF THE OWNER.
6. ALL WATER PIPE SHALL BE CLASS 52 DUCTILE IRON PIPE (DIP) AWWA C151, ASME B16.4, AWWA C110, AWWA C153 UNLESS OTHERWISE NOTED.
7. ALL SANITARY SEWER SHALL BE SDR 26 POLYVINYL CHLORIDE (PVC) ASTM D3034 & F679, OR SCH 40 ASTM D1785, 2665, ASTM F794, 1866) UNLESS OTHERWISE NOTED.
8. ALL STORM SEWER PIPE SHALL BE HDPE ASTM F714 & F2306 WITH ASTM D3212 SPEC FITTINGS UNLESS OTHERWISE NOTED.
9. PIPE LENGTHS SHOWN ARE FROM CENTER TO CENTER OF STRUCTURE OR TO END OF FLARED END SECTION.
10. UTILITIES ON THE PLAN ARE SHOWN TO WITHIN 5' OF THE BUILDING FOOTPRINT. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR THE FINAL CONNECTION TO BUILDING LINES. COORDINATE WITH ARCHITECTURAL AND MECHANICAL PLANS.
11. CATCH BASINS AND MANHOLES IN PAVEO AREAS SHALL BE SUMPED 0.04 FEET. ALL CATCH BASINS IN GUTTERS SHALL BE SUMPED 0.15 FEET PER DETAILS. RIM ELEVATIONS SHOWN ON THIS PLAN DO NOT REFLECT SUMPED ELEVATIONS.
12. ALL FIRE HYDRANTS SHALL BE LOCATED 5 FEET BEHIND BACK OF CURB UNLESS OTHERWISE NOTED.
13. HYDRANT TYPE, VALVE, AND CONNECTION SHALL BE IN ACCORDANCE WITH CITY REQUIREMENTS. HYDRANT EXTENSIONS ARE INCIDENTAL.
14. A MINIMUM OF 8 FEET OF COVER IS REQUIRED OVER ALL WATERMAIN, UNLESS OTHERWISE NOTED. EXTRA DEPTH MAY BE REQUIRED TO MAINTAIN A MINIMUM OF 18" VERTICAL SEPARATION TO SANITARY OR STORM SEWER LINES. EXTRA DEPTH WATERMAIN IS INCIDENTAL.
15. A MINIMUM OF 18 INCHES OF VERTICAL SEPARATION AND 10 FEET OF HORIZONTAL SEPARATION IS REQUIRED FOR ALL UTILITIES, UNLESS OTHERWISE NOTED.
16. ALL CONNECTIONS TO EXISTING UTILITIES SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND COORDINATED WITH THE CITY PRIOR TO CONSTRUCTION.
17. CONNECTIONS TO EXISTING STRUCTURES SHALL BE CORE-DRILLED.
18. COORDINATE LOCATIONS AND SIZES OF SERVICE CONNECTIONS WITH THE MECHANICAL DRAWINGS.
19. COORDINATE INSTALLATION AND SCHEDULING OF THE INSTALLATION OF UTILITIES WITH ADJACENT CONTRACTORS AND CITY STAFF.
20. ALL STREET REPAIRS AND PATCHING SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY. ALL PAVEMENT CONNECTIONS SHALL BE SAWCUT. ALL TRAFFIC CONTROLS SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE ESTABLISHED PER THE REQUIREMENTS OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CITY. THIS SHALL INCLUDE BUT NOT BE LIMITED TO SIGNAGE, BARRICADES, FLASHERS, AND FLAGGERS AS NEEDED. ALL PUBLIC STREETS SHALL BE OPEN TO TRAFFIC AT ALL TIMES. NO ROAD CLOSURES SHALL BE PERMITTED WITHOUT APPROVAL BY THE CITY.
21. ALL STRUCTURES, PUBLIC AND PRIVATE, SHALL BE ADJUSTED TO PROPOSED GRADES WHERE REQUIRED. THE REQUIREMENTS OF ALL OWNERS MUST BE COMPLIED WITH. STRUCTURES BEING RESET TO PAVED AREAS MUST MEET OWNERS REQUIREMENTS FOR TRAFFIC LOADING.
22. CONTRACTOR SHALL COORDINATE ALL WORK WITH PRIVATE UTILITY COMPANIES.
23. CONTRACTOR SHALL COORDINATE CONNECTION OF IRRIGATION SERVICE TO UTILITIES. COORDINATE THE INSTALLATION OF IRRIGATION SLEEVES NECESSARY AS TO NOT IMPACT INSTALLATION OF UTILITIES.
24. CONTRACTOR SHALL MAINTAIN AS-BUILT PLANS THROUGHOUT CONSTRUCTION AND SUBMIT THESE PLANS TO ENGINEER UPON COMPLETION OF WORK.
25. ALL JOINTS AND CONNECTIONS IN STORM SEWER SYSTEM SHALL BE GASTIGHT OR WATERTIGHT. APPROVED RESILIENT RUBBER JOINTS MUST BE USED TO MAKE WATERTIGHT CONNECTIONS TO MANHOLES, CATCHBASINS, OR OTHER STRUCTURES.
26. ALL PORTIONS OF THE STORM SEWER SYSTEM LOCATED WITHIN 10 FEET OF THE BUILDING OR WATER SERVICE LINE MUST BE TESTED IN ACCORDANCE WITH MN RULES, CHAPTER 4714, SECTION 1109.0.
27. FOR ALL SITES LOCATED IN CLAY SOIL AREAS, DRAIN TILE MUST BE INSTALLED AT ALL LOW POINT CATCH BASINS 25' IN EACH DIRECTION. SEE PLAN AND DETAIL. INSTALL LOW POINT DRAIN TILE PER PLANS AND GEOTECHNICAL REPORT RECOMMENDATIONS AND REQUIREMENTS.

WATERSHED DISTRICT STORMWATER BMP NOTES:

1. STORMWATER SYSTEMS (INCLUDING INFILTRATION BASIN 1) WILL NEED TO REMAIN OFFLINE AND PROTECTED FROM CONSTRUCTION ACTIVITY AND CLOGGING BY SEDIMENT UNTIL ALL CONTRIBUTING AREAS ARE PERMANENTLY RESTORED.
2. NOTIFY NICOLE SODERHOLM, RAMSEY-WASHINGTON METRO WATERSHED DISTRICT, AT 651-792-7976 AT LEAST 48 HOURS PRIOR TO THE CONSTRUCTION OF ANY VOLUME REDUCTION BMPS (INCLUDING INFILTRATION BASIN 1).

CITY OF LITTLE CANADA UTILITY NOTES:

1. RESERVED FOR CITY SPECIFIC UTILITY NOTES.

UTILITY LEGEND:

- CATCH BASIN
- MANHOLE
- GATE VALVE AND VALVE BOX
- PROPOSED FIRE HYDRANT
- WATER MAIN
- SANITARY SEWER
- STORM SEWER
- FES AND RIP RAP

Know what's **below.** **Call** before you dig.

N

1" = 30'-0"
15'-0" 0 30'-0"

CivilSite GROUP
Civil Engineering • Surveying • Landscape Architecture
5000 Glenwood Avenue
Golden Valley, MN 55422
civilsitegroup.com 612-615-0060

PRELIMINARY: NOT FOR CONSTRUCTION

PROJECT

RW LITTLE CANADA
TWIN LAKE BLVD
LITTLE CANADA, MN 55117

REUTER WALTON DEVELOPMENT
1710 W LAKE STREET #100 MINNEAPOLIS, MN 55408

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.

Matthew R. Pavek
DATE 03/10/22 LICENSE NO. 44263

ISSUE/SUBMITTAL SUMMARY

DATE	DESCRIPTION
03/10/22	WATERSHED SUBMITTAL
03/24/22	WATERSHED RESUBMITTAL

DRAWN BY: KW REVIEWED BY: MP
PROJECT NUMBER: 22023

REVISION SUMMARY

DATE	DESCRIPTION

UTILITY PLAN

C4.0

Permit Application Coversheet

Date April 06, 2022

Project Name St. Paul Wheelock Parkway Improvements Project Number 22-11

Applicant Name Cheng Xiong, City of St. Paul

Type of Development Linear

Property Description

This project is located on Wheelock Parkway between Edgerton Street and Arcade Street in the City of St. Paul. The applicant is proposing to reconstruct the existing roadway and add a new bike trail in the boulevard. The total site area is 5.2 acres. An underground infiltration system is proposed to meet stormwater treatment requirements, citing the linear cost cap which has been exceeded for the project. Pretreatment will include hooded, sumped catch basin inlets.

Watershed District Policies or Standards Involved:

- ☐ *Wetlands*
- ☑ *Erosion and Sediment Control*
- ☑ *Stormwater Management*
- ☐ *Floodplain*

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

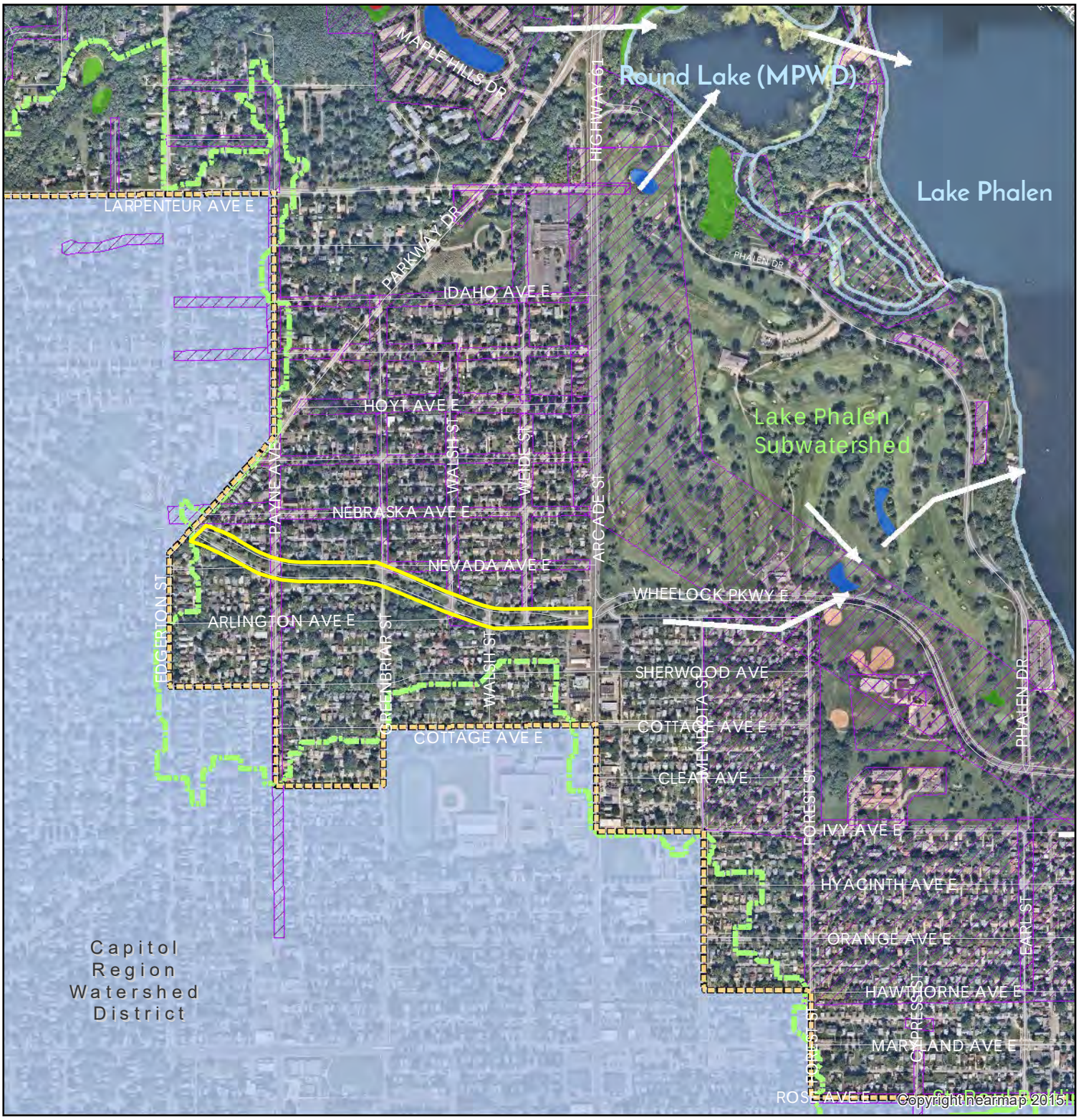
Staff Recommendation

Staff recommends approval of this permit with the special provisions.

Attachments:

- ☑ Project Location Map
- ☑ Project Grading Plan

#22-11 St. Paul Wheelock Parkway Improvements



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

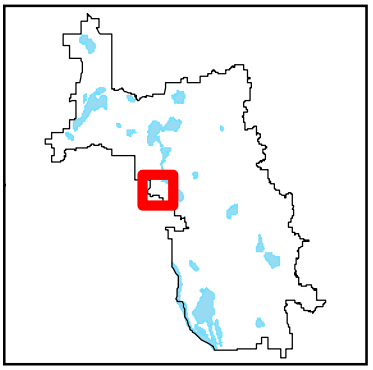
- WMU
- Flow Arrows
- Major Flow Arrows
- Subwatersheds
- Creeks
- Permits

Highlighted Areas Represent Active Permit

0 500 1,000
Feet

0 0.125 0.25
Miles

N



22-11

Special Provisions

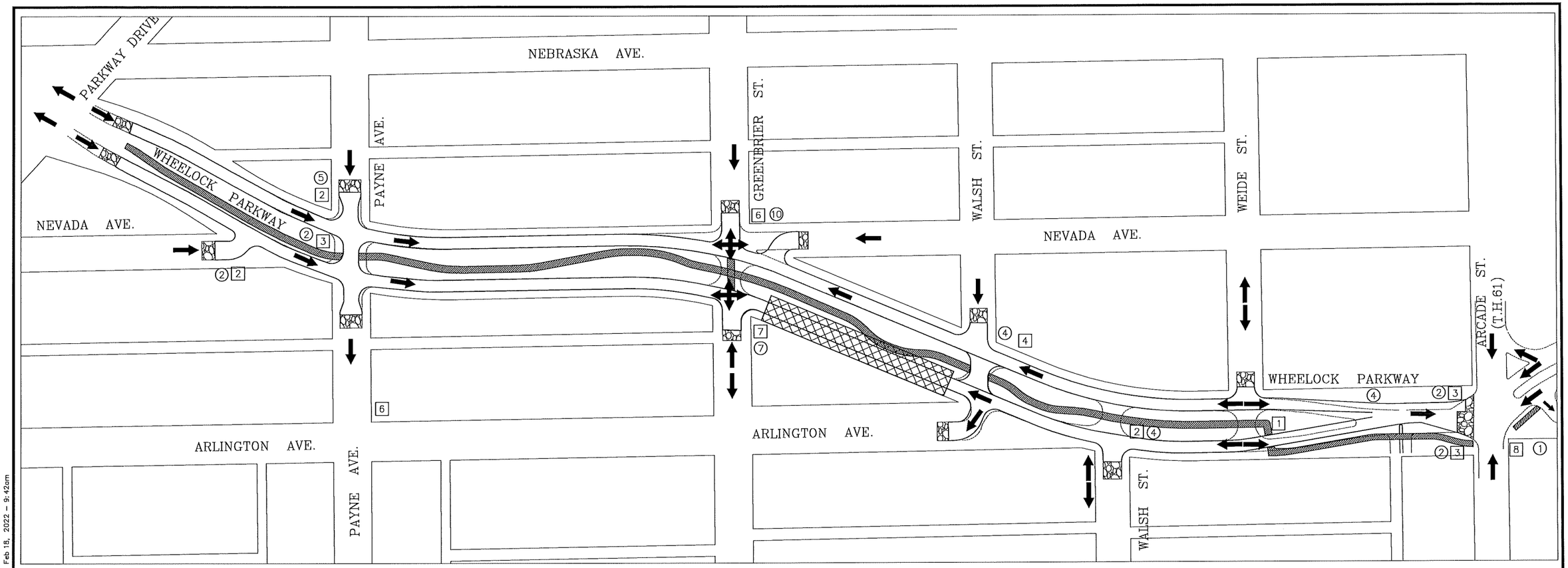
1. The applicant shall revise the erosion control plan to specify perimeter control where needed on down-gradient curblines.

2. The applicant shall provide construction details for the erosion and sediment control practices specified.

3. The applicant shall submit the final, signed plans set.

4. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

5. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit coverage for the project.



LEGEND:

NORTH

- DIRECTION OF FLOW
- (#) INTERIM SEDIMENT CONTROL AND STORM DRAIN INLET PROTECTION FOR NEW CATCH BASINS SEE DETAIL (NO. INDICATES CB'S REQUIRING CONTROL)
- [#] EXISTING CATCH BASINS OR SIDE INLETS REQUIRING STORM DRAIN INLET PROTECTION SEE DETAIL (NO. INDICATES CB'S REQUIRING CONTROL.)
- LOCATION OF INFILTRATION TRENCH
- CONSTRUCTION EXITS PER MN DOT 2573.3

NOTES:

1. CONTRACTOR SHALL PLACE SEDIMENT CONTROL LOGS AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR SHALL NOTIFY NICOLE SODERHOLM, RAMSEY–WASHINGTON METRO WATERSHED DISTRICT, AT 651–792–7976 PRIOR TO BEGINNING ANY AND ALL CONSTRUCTION ACTIVITY FOR AN INITIAL SWPPP INSPECTION.
3. ALL PAVED SURFACES WITHIN AND ADJACENT TO THE PROJECT AREA SHALL BE SWEPT FREE OF SEDIMENT WITHIN 24 HOURS OF DISCOVERY.
4. SEE SPECIFICATIONS FOR STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
5. SPECIFIED EROSION/SEDIMENT CONTROL PRACTICES ARE THE MINIMUM. ADDITIONAL PRACTICES MAY BE REQUIRED DURING THE COURSE OF CONSTRUCTION.
6. SEDIMENT CONTROL SHALL CONFORM TO CITY OF ST PAUL STANDARD PLATE NO. 2400A, 2401 AND OR 2402
7. CONTRACTOR SHALL PROVIDE CONSTRUCTION EXITS AT ALL EXITS FROM ACTIVE CONSTRUCTION. SEE MnDOT STANDARD SPECIFICATIONS 2020 2573.3

EROSION AND SEDIMENT CONTROL PLAN

DESIGNED	CEE	I HEREBY CERTIFY THAT THIS PLAN 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	PREPARED BY STREET ENGINEERING DIVISION FOR THE CITY OF ST. PAUL, DEPARTMENT OF PUBLIC WORKS
DRAWN	CEE	Signature: _____ Date: X/XX/XX	WHEELOCK PARKWAY PHASE 5
APPROVED	CME	CHRISTOPHER M. ENGELMANN Lic. No. 43350	

PROJECT: 22–P–1470	STATE AID PROJECT NUMBER: N.A.		
DRAWER: 12	CAD NAME: PROJECTS/CURRENT/WHEELOCK PHASE 5 P–1470/DWG		
DWG. NO. 1636	DATE: 2/16/2022	SHEET NO. 6 OF 27 SHEETS	

\\Teal\cad\streets\projects\current\Wheelock Phase 5 P-1470\DWG\06-Erosion & Sediment Control Plan.dwg Feb 16, 2022 – 9:42am

Stewardship Grant Application Summary

Project Name: Lakewood Hills **Application Number** 22-09 CS

Board Meeting Date: 4/6/2022

Applicant Name: Connie Taillon

Residential ☐ **Commercial/Government** ☑

Project Overview:

Lakewood Hills is a park owned by the City of White Bear Lake. In 2021, the applicant completed a parking lot mill and overlay project at the park. As part of the project, but above any permit requirements, the City of White Bear lake installed a curb cut and inlet structure in preparation for a rain garden to be installed late summer of 2022. The applicant is requesting grant funding to cover the cost of the rain garden installation and native plantings.

This project is in a priority area and is eligible for 100% coverage up to $100,000.

BMP type(s):

Rain Garden(1)

Grant Request:

$27,000.00

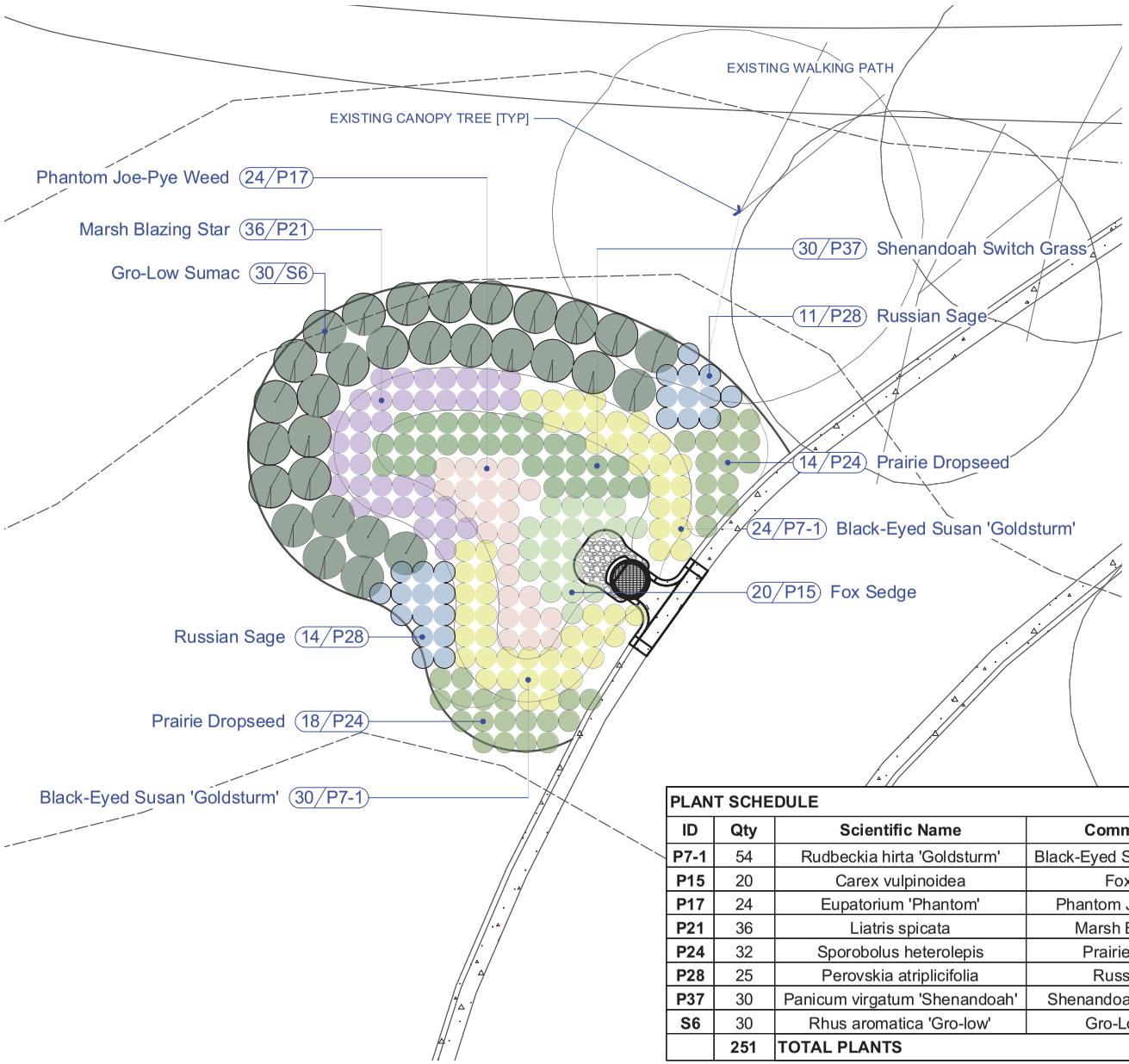
Recommendation:

Staff recommends approval of this application.

Subwatershed:

Willow Creek

Location Maps:



PLANT SCHEDULE

ID	Qty	Scientific Name	Common Name	Size	Spacing (ft)
P7-1	54	Rudbeckia hirta 'Goldsturm'	Black-Eyed Susan 'Goldsturm'	#1 Cont.	2
P15	20	Carex vulpinoidea	Fox Sedge	#1 Cont.	2
P17	24	Eupatorium 'Phantom'	Phantom Joe-Pye Weed	#1 Cont.	2
P21	36	Liatris spicata	Marsh Blazing Star	#1 Cont.	2
P24	32	Sporobolus heterolepis	Prairie Dropseed	#1 Cont.	2
P28	25	Perovskia atriplicifolia	Russian Sage	#1 Cont.	2
P37	30	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	#1 Cont.	2
S6	30	Rhus aromatica 'Gro-low'	Gro-Low Sumac	#2 Cont.	4
	251	TOTAL PLANTS			

RAMSEY COUNTY

RAMSEY COUNTY SWCD
1425 PAUL KIRKWOLD DR
ARDEN HILLS, MN 55112
651-266-7274
www.ramseycounty.us

PROJECT: LAKEWOOD HILLS PARK
LOCATION:
2110 ORCHARD LANE
WHITE BEAR LAKE, MN 55110
WATERSHED DISTRICT:

DESIGNER: BTO
DATE: 11/15/2021
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY: MPS
TAA:

NOTES:
-CALL GOPHER ONE TO MARK UTILITIES BEFORE DIGGING
-SEE PLANT SCHEDULE FOR SPACING [PLANT LOCATION MAY VARY]
-PLANT SUBSTITUTIONS MUST BE APPROVED BY SWCD STAFF
-ORIGINAL SHEET SIZE: 11"x17"

SCALE: 1"=10'-0"

PLANTING PLAN

N

L300

****

Permit Program

****

Permit Application Coversheet

Date April 06, 2022

Project Name Victoria Shores Project Number 22-12

Applicant Name Dwayne Sikich, Builders Lot Group

Type of Development Residential

Property Description

This project is located on both sides of Victoria Street at Orchard Lane West in the City of Roseville. The applicant is proposing to construct 9 single-family homes with associated driveways, sidewalk, and stormwater facilities. The total site area is 2.6 acres.

The City of Roseville ordered a discretionary Environmental Assessment Worksheet (EAW) for the project. The EAW was completed in September 2021 and released for public comment in October 2021. The District provided written comments on the EAW in November 2021 addressing the watershed's rules and authority with respect to wetlands, stormwater management, floodplain, and erosion and sediment control. The EAW was approved by the Roseville City Council in December 2021 without requiring further environmental review. A final plat for the site was approved 5-0 by the city in March 2022 with no public comment. The plat includes an HOA-managed outlot that incorporates the wetland, lakeshore, and stormwater treatment areas. See enclosed survey.

To meet stormwater treatment requirements, an underground filtration system and above-ground filtration basin are proposed with sediment capture upstream of the facilities. Filtration is being proposed due to poor soils. No net fill is proposed in the 100-year floodplain of Lake Owasso in order to maintain flood storage on the landscape.

A 'Manage A' wetland fringe on the lakeshore was delineated onsite, and the boundary was approved in May 2021 (#21-03 WCA). A no-loss decision was also approved in April 2021 (#21-04 WCA) for future dock placement as the Wetland Conservation Act (WCA) does not consider such activity a regulated impact to wetlands. The HOA will be responsible for ensuring any future boardwalk and/or dock design and placement meets the Minnesota Department of Natural Resources (DNR) requirements. The delineated wetland requires a 75' average (37.5' minimum) no-disturb buffer. The applicant was able to meet those requirements in the final condition, but a variance request (Rule E) for temporary disturbance in the minimum buffer is being requested in order to install stormwater outlet pipes from the filtration Best Management Practices (BMP).

In addition to the standard stormwater maintenance agreement, a wetland buffer agreement will be required by the city and watershed district in order to regulate allowable activities in the buffer and to aid in enforcement/restoration if this agreement is breached by future landowners. The agreement specifies that access may be granted through the buffer to the lakeshore with a maximum 6' wide vegetated path. No pavement, structures, turf grass, non-native ornamental vegetation, or other landscaping materials shall be placed in the buffer. Wetland buffer monument signage shall be placed by the developer marking the boundary of the buffer on each lot such that landowners will be aware of the area regulated by the conditions of this agreement.

Watershed District Policies or Standards Involved:

- ☑ *Wetlands*
- ☑ *Erosion and Sediment Control*
- ☑ *Stormwater Management*
- ☑ *Floodplain*

Water Quantity Considerations

The proposed stormwater management plan is sufficient to handle the runoff from the site.

Water Quality Considerations

Short Term

The proposed erosion and sediment control plan is sufficient to protect downstream water resources during construction.

Long Term

The proposed stormwater management plan is sufficient to protect the long term quality of downstream water resources.

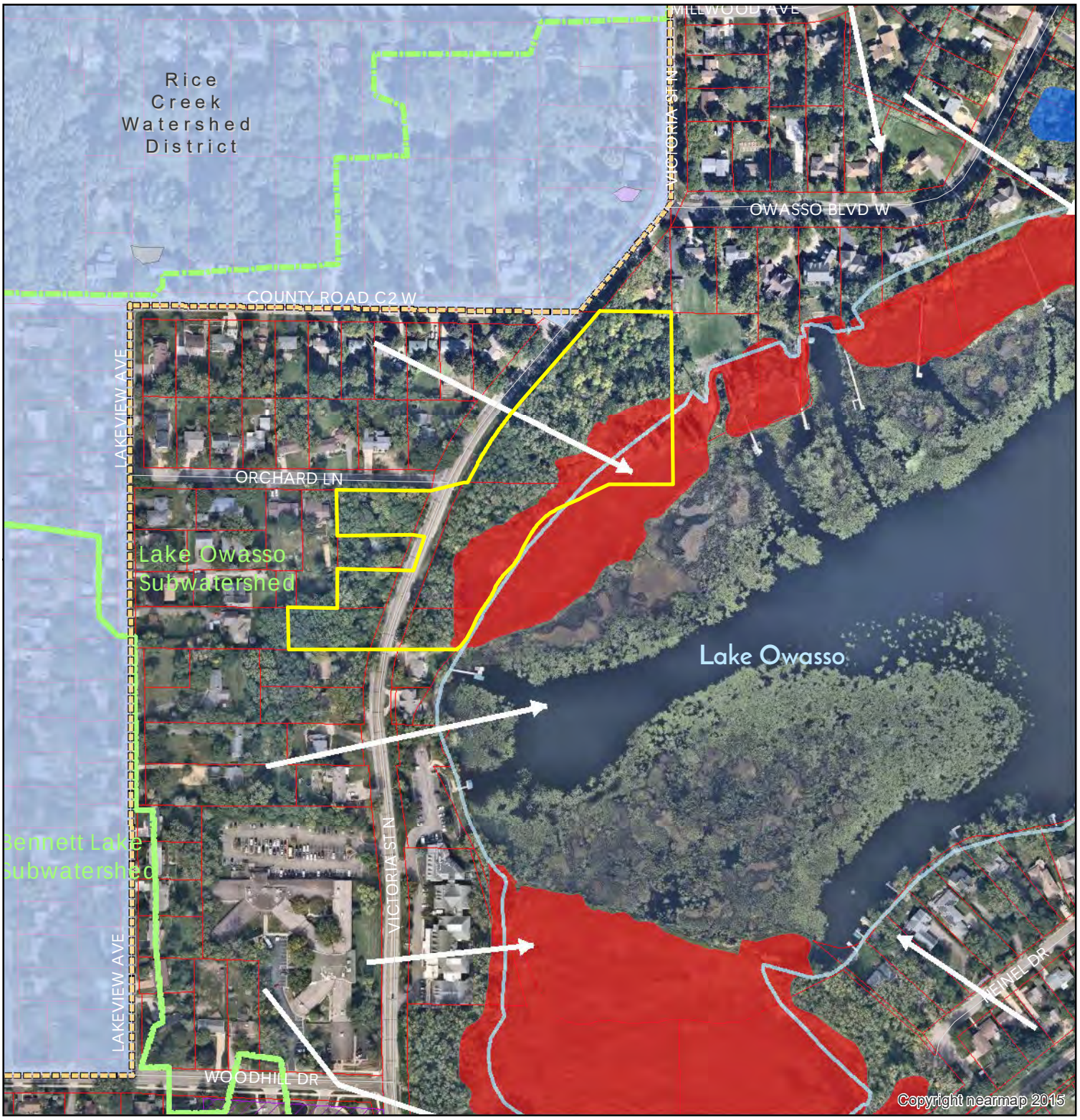
Staff Recommendation

Staff recommends approval of this permit with the special provisions and variance request (Rule E).

Attachments:

- ☑ Project Location Map
- ☑ Project Grading Plan

#22-12 Victoria Shores



Note: Shaded area is outside RWMWD

Wetlands
- Manage A
- Manage B
- Manage C
- Lake
- Sediment Pond
- Not Assessed

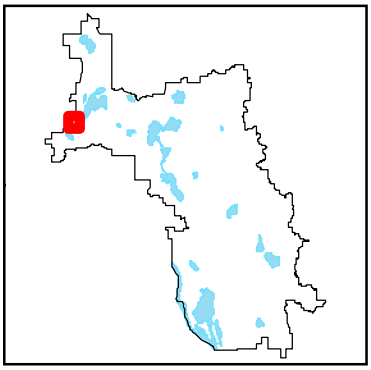
- WMU
- Flow Arrows
- Major Flow Arrows
- Subwatersheds
- Creeks
- Permits
- Ramsey Co Parcels

Highlighted Areas Represent Active Permit

0 250 500
Feet

0 0.05 0.1
Miles

N



22-12

Special Provisions

1. The applicant shall submit the final, executed joint wetland buffer agreement with the City of Roseville.

2. The applicant shall submit the final, executed joint stormwater maintenance agreement with the City of Roseville.

3. The applicant shall submit the joint, site-specific BMP Operations & Maintenance Plan with the City of Roseville.

4. The applicant shall submit contact information for the trained erosion control coordinator responsible for implementing the Stormwater Pollution Prevention Plan (SWPPP).

5. The applicant shall submit a copy of the approved Minnesota Pollution Control Agency's NPDES Construction Permit coverage for the project.

6. The applicant shall submit a signage detail for the proposed wetland buffer monuments.

7. The applicant shall submit the final, signed plans set.

FILTRATION BASIN CONSTRUCTION NOTES

1. BIOFILTRATION BASIN CONSTRUCTION REQUIREMENTS:
(INCLUDES ALL DEVICES USING FILTRATION THROUGH A SOIL MEDIUM TO CAPTURE STORM WATER RUNOFF BUT ARE NOT LIMITED TO: BIOFILTRATION BASINS, BIOFILTRATION TRENCHES, BIOFILTRATION BASINS, RAINWATER GARDENS, SAND FILTERS, ORGANIC FILTERS, BIORETENTION AREAS, ENHANCED SWALES, DRY STORAGE PONDS WITH UNDERDRAIN DISCHARGE, AND NATURAL DEPRESSIONS (IF USED TO PROVIDE STORMWATER TREATMENT OF NEW IMPERIOUS SURFACE))

1.a. PERMITTEES MUST NOT EXCAVATE BIOFILTRATION SYSTEMS TO FINAL GRADE, OR WITHIN THREE (3) FEET OF FINAL GRADE, UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN CONSTRUCTED AND FULLY STABILIZED UNLESS THEY PROVIDE RIGOROUS EROSION PREVENTION AND SEDIMENT CONTROLS (E.G., DIVERSION BERMS) TO KEEP SEDIMENT AND RUNOFF COMPLETELY AWAY FROM THE BIOFILTRATION AREA. WHEN EXCAVATING AN BIOFILTRATION SYSTEM TO WITHIN THREE (3) FEET OF FINAL GRADE, PERMITTEES MUST STAKE OFF AND MARK THE AREA SO HEAVY CONSTRUCTION VEHICLES OR EQUIPMENT DO NOT COMPACT THE SOIL IN THE BIOFILTRATION AREA. ONCE STREET AND UTILITY CONSTRUCTION CEASES AND "FINAL STABILIZATION" (AS DEFINED ACCORDING TO SECTION 8 OF THE SWPPP NARRATIVE) OF CONTRIBUTING DRAINAGE AREA HAS BEEN COMPLETED, AND ONLY AFTER THE OWNER'S ENGINEER AUTHORIZES CONTRACTOR TO PROCEED, BIOFILTRATION BASIN SHALL BE EXCAVATED TO FINISHED GRADE.

1.b. HEAVY EQUIPMENT SHALL NOT TRAVEL WITHIN THE BIOFILTRATION BASIN AREA. EXCAVATION WITHIN THE BIOFILTRATION BASIN SHALL BE PERFORMED BY USE OF A BACKHOE BUCKET WITH TEETH. CONTRACTOR SHALL DISC OR TILL THE SOILS IF REQUIRED BY THE SOILS ENGINEER.

1.c. BIOFILTRATION BASIN SHALL BE PROTECTED BY SILT FENCE DURING ALL CONSTRUCTION ACTIVITIES. ALL DEPOSITED SEDIMENT DURING CONSTRUCTION ACTIVITY SHALL BE PROPERLY DISPOSED OF DOWNSTREAM OF BIOFILTRATION BASIN, IF POSSIBLE.

1.d. ALL FLARED END SECTION INLETS AND CATCH BASIN MANHOLE INLETS SHALL HAVE INLET EROSION CONTROL PROTECTION IN PLACE UNTIL FINAL STABILIZATION BASIN HAS OCCURRED.

1.e. ABOVE THE BIOFILTRATION BASIN OUTLET ELEVATION, INCLUDING THE BERM AND DISTURBED AREAS, A MINIMUM OF 4" DEPTH OF TOPSOIL MATERIAL SHALL BE PLACED TO THE FINISHED GRADE ELEVATION. TOPSOIL SHALL MEET (MN/DOT) SPECIFICATION. THE AREA SHALL BE SEEDED WITH MN STATE SEED MIXTURE 25-131 (LOW MAINTENANCE TURF) APPLIED AT A RATE OF 220 LBS/ACRE, OR MN STATE SEED MIXTURE 35-241 (MESIC PRAIRIE GENERAL) APPLIED AT A RATE OF 36.5 LBS/ACRE. SOD MEETING (MN/DOT) SPECIFICATION 3878.2-B CAN BE SUBSTITUTED FOR SEED.

SEED APPLICATION PROCEDURE:
MIXTURE APPLICATION PROCEDURES SHALL FOLLOW (MN/DOT) SPECIFICATION 2575.3. SEED SHALL BE SECURED BY USE OF (MN/DOT) SPECIFICATION 3885 CATEGORY 1 EROSION BLANKET.

ABSENT A SOIL TEST, FERTILIZER MEETING ANALYSIS 22-5-10 (NPK) 80% W.I.N. SHALL BE APPLIED AT A RATE OF 350 LBS/ACRE FOR SEED MIXTURE 25-131, OR FERTILIZER WITH AN ANALYSIS OF 18-1-8 (NPK) (FOR LOAMS, CLAY LOAM SOIL), OR 17-10-7 (NPK) (FOR SANDS WITH LESS THAN 30% ORGANIC AND CLAY MATTER) NATURAL BASE SHALL BE APPLIED AT A RATE OF 150 LBS/ACRE FOR SEED MIXTURE 35-241.

1.f. BELOW THE BIOFILTRATION BASIN OUTLET, INCLUDING BASIN FLOOR, PLACE PLANTING MEDIUM SOIL BASED ON - SITE SOIL CONDITIONS, AND ALSO BASED ON LANDSCAPE ARCHITECT, WATERSHED, AND/OR CITY RECOMMENDATIONS (SEE DETAIL ON PLAN). DISTURBED AREAS TO BE SEEDED WITH MN STATE SEED MIXTURE 33-261 (STORMWATER SOUTH AND WEST) APPLIED AT A RATE OF 35 LBS/ACRE. DRAINTILE INSTALLATION (IF REQUIRED) SHALL BE INSTALLED CONCURRENTLY WITH FLOOR CONSTRUCTION.

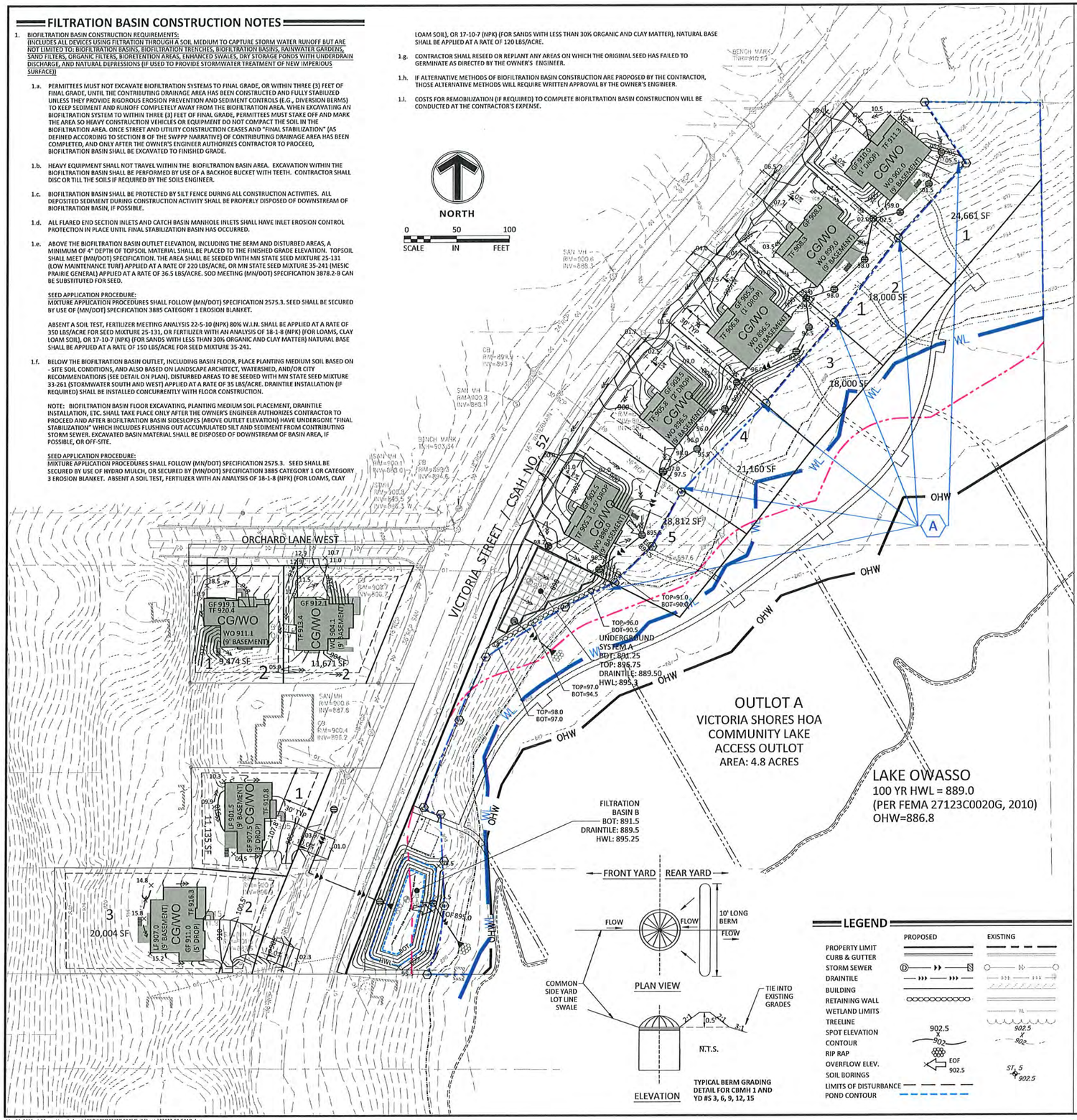
NOTE: BIOFILTRATION BASIN FLOOR EXCAVATING, PLANTING MEDIUM SOIL PLACEMENT, DRAINTILE INSTALLATION, ETC. SHALL TAKE PLACE ONLY AFTER THE OWNER'S ENGINEER AUTHORIZES CONTRACTOR TO PROCEED AND AFTER BIOFILTRATION BASIN SIDESLOPES (ABOVE OUTLET ELEVATION) HAVE UNDERGONE "FINAL STABILIZATION" WHICH INCLUDES FLUSHING OUT ACCUMULATED SILT AND SEDIMENT FROM CONTRIBUTING STORM SEWER. EXCAVATED BASIN MATERIAL SHALL BE DISPOSED OF DOWNSTREAM OF BASIN AREA, IF POSSIBLE, OR OFF-SITE.

SEED APPLICATION PROCEDURE:
MIXTURE APPLICATION PROCEDURES SHALL FOLLOW (MN/DOT) SPECIFICATION 2575.3. SEED SHALL BE SECURED BY USE OF HYDRO MULCH, OR SECURED BY (MN/DOT) SPECIFICATION 3885 CATEGORY 1 OR CATEGORY 3 EROSION BLANKET. ABSENT A SOIL TEST, FERTILIZER WITH AN ANALYSIS OF 18-1-8 (NPK) (FOR LOAMS, CLAY LOAM SOIL), OR 17-10-7 (NPK) (FOR SANDS WITH LESS THAN 30% ORGANIC AND CLAY MATTER), NATURAL BASE SHALL BE APPLIED AT A RATE OF 120 LBS/ACRE.

1.g. CONTRACTOR SHALL RESEED OR REPLANT ANY AREAS ON WHICH THE ORIGINAL SEED HAS FAILED TO GERMINATE AS DIRECTED BY THE OWNER'S ENGINEER.

1.h. IF ALTERNATIVE METHODS OF BIOFILTRATION BASIN CONSTRUCTION ARE PROPOSED BY THE CONTRACTOR, THOSE ALTERNATIVE METHODS WILL REQUIRE WRITTEN APPROVAL BY THE OWNER'S ENGINEER.

1.i. COSTS FOR REMOBILIZATION (IF REQUIRED) TO COMPLETE BIOFILTRATION BASIN CONSTRUCTION WILL BE CONDUCTED AT THE CONTRACTOR'S EXPENSE.



LEGEND

	PROPOSED	EXISTING
PROPERTY LIMIT		
CURB & GUTTER		
STORM SEWER		
DRAINTILE		
BUILDING		
RETAINING WALL		
WETLAND LIMITS		
TREELINE		
SPOT ELEVATION	902.5	902.5
CONTOUR	902	902
RIP RAP		
OVERFLOW ELEV.	EOF 902.5	
SOIL BORINGS		ST. 5 902.5
LIMITS OF DISTURBANCE		
POND CONTOUR		

GRADING NOTES

1. PROPOSED CONTOURS ARE TO FINISHED SURFACE ELEVATION. SPOT ELEVATIONS ALONG PROPOSED CURB DENOTE GUTTER GRADE.
2. CONTRACTOR SHALL REVIEW PAVEMENT GRADIENT AND CONSTRUCT "GUTTER OUT" WHERE WATER DRAINS AWAY FROM CURB. ALL OTHER AREAS SHALL BE CONSTRUCTED AS "GUTTER IN" CURB.
3. ALL GRADIENT ON SIDEWALKS ALONG THE ADA ROUTE SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20), EXCEPT AT CURB RAMPS (1:12), AND A MAXIMUM CROSS SLOPE OF 2.00% (1:50). MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE SHALL BE IN 2.00% (1:50). CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT. COORDINATE ALL WORK WITH PAVING CONTRACTOR.
4. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
5. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
6. CONTRACTOR SHALL COMPLETE THE SITE GRADING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER'S SOILS ENGINEER. ALL SOIL TESTING SHALL BE COMPLETED BY THE OWNER'S SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOIL TESTS AND INSPECTIONS WITH THE SOILS ENGINEER.

   A GEOTECHNICAL ENGINEERING SOILS REPORT HAS BEEN COMPLETED BY:

   COMPANY: HAUGO GEOTECHNICAL SERVICES
   ADDRESS: 2825 CEDAR AVENUE SOUTH MINNEAPOLIS, MN 55407
   PHONE: 612-979-3542
   DATED: MARCH 12, 2021

   CONTRACTOR SHALL OBTAIN A COPY OF THE SOILS REPORT.
7. CONTRACTOR SHALL COMPLETE DEWATERING AS REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION.
8. PRIOR TO PLACEMENT OF THE AGGREGATE BASE, A TEST ROLL SHALL BE PERFORMED ON THE STREET AND PARKING AREA SUBGRADE. CONTRACTOR SHALL PROVIDE A LOADED TANDEM AXLE TRUCK WITH A GROSS WEIGHT OF 25 TONS. THE TEST ROLLING SHALL BE AT THE DIRECTION OF THE SOILS ENGINEER AND SHALL BE COMPLETED IN AREAS AS DIRECTED BY THE SOILS ENGINEER. CORRECTION OF THE SUBGRADE SOILS SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOILS ENGINEER.
9. REPLACE ALL SUBGRADE SOIL DISTURBED DURING THE CONSTRUCTION THAT HAVE BECOME UNSUITABLE AND WILL NOT PASS A TEST ROLL. REMOVE UNSUITABLE SOIL FROM THE SITE AND IMPORT SUITABLE SOIL AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.
11. EXISTING TREES AND OTHER NATURAL VEGETATION WITHIN THE PROJECT AND/OR ADJACENT TO THE PROJECT ARE OF PRIME CONCERN TO THE CONTRACTOR'S OPERATIONS AND SHALL BE A RESTRICTED AREA. CONTRACTOR SHALL PROTECT TREES TO REMAIN AT ALL TIMES. EQUIPMENT SHALL NOT NEEDLESSLY BE OPERATED UNDER NEARBY TREES AND EXTREME CAUTION SHALL BE EXERCISED WHEN WORKING ADJACENT TO TREES. SHOULD ANY PORTION OF THE TREE BRANCHES REQUIRE REMOVAL TO PERMIT OPERATION OF THE CONTRACTOR'S EQUIPMENT, CONTRACTOR SHALL OBTAIN THE SERVICES OF A PROFESSIONAL TREE TRIMMING SERVICE TO TRIM THE TREES PRIOR TO THE BEGINNING OF OPERATION. SHOULD CONTRACTOR'S OPERATIONS RESULT IN THE BREAKING OF ANY LIMBS, THE BROKEN LIMBS SHOULD BE REMOVED IMMEDIATELY AND CUTS SHALL BE PROPERLY PROTECTED TO MINIMIZE ANY LASTING DAMAGE TO THE TREE. NO TREES SHALL BE REMOVED WITHOUT AUTHORIZATION BY THE ENGINEER. COSTS FOR TRIMMING SERVICES SHALL BE CONSIDERED INCIDENTAL TO THE GRADING CONSTRUCTION AND NO SPECIAL PAYMENT WILL BE MADE.
12. EXCAVATE TOPSOIL FROM AREAS TO BE FURTHER EXCAVATED OR REGRADED AND STOCKPILE IN AREAS DESIGNATED ON THE SITE. CONTRACTOR SHALL SALVAGE ENOUGH TOPSOIL FOR RESPREADING ON THE SITE AS SPECIFIED. EXCESS TOPSOIL SHALL BE PLACED IN EMBANKMENT AREAS, OUTSIDE OF BUILDING PADS, ROADWAYS AND PARKING AREAS. CONTRACTOR SHALL SUBCUT CUT AREAS, WHERE TURF IS TO BE ESTABLISHED, TO A DEPTH OF 6 INCHES. RESPREAD TOPSOIL IN AREAS WHERE TURF IS TO BE ESTABLISHED TO A MINIMUM DEPTH OF 6 INCHES.
13. TRENCH BORROW CONSTRUCTION: IF ALLOWED BY THE OWNER, CONTRACTOR SHALL COMPLETE "TRENCH BORROW" EXCAVATION IN AREAS DIRECTED BY THE ENGINEER IN ORDER TO OBTAIN STRUCTURAL MATERIAL. TREES SHALL NOT BE REMOVED OR DAMAGED AS A RESULT OF THE EXCAVATION, UNLESS APPROVED BY THE ENGINEER. THE EXCAVATION SHALL COMMENCE A MINIMUM OF 10 FEET FROM THE LIMIT OF THE BUILDING PAD. THE EXCAVATION FROM THIS LIMIT SHALL EXTEND AT A MINIMUM SLOPE OF 1 FOOT HORIZONTAL TO 1 FOOT VERTICAL (1:1) DOWNWARD AND OUTWARD FROM THE FINISHED SURFACE GRADE ELEVATION. THE TRENCH BORROW EXCAVATION SHALL BE BACKFILLED TO THE PROPOSED FINISHED GRADE ELEVATION, AND SHALL BE COMPACTED IN ACCORDANCE WITH REQUIREMENTS OF THE QUALITY COMPACTION METHOD AS OUTLINED IN MN/DOT SPECIFICATION 2105.3F2. SNOW FENCE SHALL BE FURNISHED AND PLACED ALONG THE PERIMETER OF THE TRENCH BORROW AREA WHERE THE SLOPES EXCEED 2 FOOT HORIZONTAL TO 1 FOOT VERTICAL (2:1).
14. FINISHED GRADING SHALL BE COMPLETED, CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISHED GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS, TRAFFIC AND EROSION. REPAIR ALL AREAS THAT HAVE BECOME RUTTED, ERODED OR HAS SETTLED BELOW THE CORRECT GRADE. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITION OR TO THE REQUIREMENTS OF THE NEW WORK.
15. TOLERANCES
    15.A. THE RESIDENTIAL BUILDING SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.30 FOOT ABOVE, OR 0.30 FOOT BELOW, THE PRESCRIBED ELEVATION AT ANY POINT WHERE MEASUREMENT IS MADE.
    15.B. THE STREET OR PARKING AREA SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.05 FOOT ABOVE, OR 0.10 FOOT BELOW, THE PRESCRIBED ELEVATION OF ANY POINT WHERE MEASUREMENT IS MADE.
    15.C. AREAS WHICH ARE TO RECEIVE TOPSOIL SHALL BE GRADED TO WITHIN 0.30 FOOT ABOVE OR BELOW THE REQUIRED ELEVATION, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
    15.D. TOPSOIL SHALL BE GRADED TO PLUS OR MINUS 1/2 INCH OF THE SPECIFIED THICKNESS.
16. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS OR SHORTAGE OF SOIL MATERIAL EXISTS, CONTRACTOR SHALL TRANSPORT ALL EXCESS SOIL MATERIAL OFF THE SITE TO AN AREA SELECTED BY THE CONTRACTOR, OR IMPORT SUITABLE MATERIAL TO THE SITE.
17. CONTRACTOR SHALL DETERMINE THE LOCATION OF ANY HAUL ROADS THAT MAY BE REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION AND SHALL INDICATE HAUL ROADS ON EROSION AND SEDIMENT CONTROL "SITE MAP". CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITY OF EACH ROADWAY. CONTRACTOR SHALL POST WHATEVER SECURITY, AND COMPLY WITH ALL CONDITIONS WHICH ARE REQUIRED BY EACH GOVERNING AUTHORITY OF EACH ROADWAY.
18. FILL PLACED WITHIN THE BUILDING PAD AREAS SHALL BE IN CONFORMANCE WITH HUD/FHA PROCEDURES AND DATA SHEET 79G.
19. NO WHEELED MACHINES SHALL BE USED TO EXCAVATE BASINS AND/OR DURING THE BACKFILLING.
20. NO TRAFFIC ALLOWED OVER BASINS DURING ANY PHASE OF THE PROJECT.
21. BASINS SHALL BE PROTECTED FROM ALL EXPOSED SOIL DURING ALL CONSTRUCTION ACTIVITIES.
22. BASINS SHALL BE RIPPED WITH A TOOTHED BUCKET TO REMOVE SOIL INTERFACE, PRIOR TO INSTALLING BACKFILL MATERIAL.
23. BASINS SHALL NOT BE OPEN TO ACCEPT WATER UNTIL THE SITE IS STABILIZED.
24. NOTIFY CITY OF ROSEVILLE ENGINEERING DEPARTMENT AT 651-792-7004, AT LEAST 24 HOURS PRIOR TO THE CONSTRUCTION OF STORMWATER BMPs.
25. NO CONSTRUCTION ACTIVITY OR DISTURBANCE IS ALLOWED WITHIN THE WETLAND BUFFER.
26. SOIL BORINGS 7-10 WILL NEED ADDITIONAL CORRECTION, THE HOME BUILDER WILL BE MAKING THESE CORRECTIONS.
27. FINAL HOME CONSTRUCTION LOT GRADING SHALL ADHERE TO MINNESOTA RESIDENTIAL CODE: R401.3 DRAINAGE:

    SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER APPROVED POINT OF COLLECTION THAT DOES NOT CREATE A HAZARD. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES (152 MM) WITHIN THE FIRST 10 FEET (3048 MM).

    EXCEPTION: WHERE LOT LINES, WALLS, SLOPES OR OTHER PHYSICAL BARRIERS PROHIBIT 6 INCHES (152 MM) OF FALL WITHIN 10 FEET (3048 MM), DRAINS OR SWALES SHALL BE CONSTRUCTED TO ENSURE DRAINAGE AWAY FROM THE STRUCTURE. IMPERVIOUS SURFACES WITHIN 10 FEET (3048 MM) OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING.

    AN ADDITIONAL COURSE OF BLOCK MAY NEED TO BE ADDED TO THE FOUNDATION OR THE GRADING PLAN MANY NEED TO BE ADJUSTED ACCORDINGLY TO MEET THIS CODE REQUIREMENT.

KEY NOTES

A. INSTALL WETLAND BUFFER SIGN

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone
763.476.8532 facsimile
Engineering | Surveying | Planning | Environmental

Client
Builders LOT GROUP

Project
VICTORIA SHORES

Location
ROSEVILLE, MN

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.

PRELIMINARY

Eric T. Lieberg
Registration No. 50475 Date: 02/05/2021

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

Summary

Designed: CJS Drawn: CJS
Approved: ETL Book / Page:
Phase: FINAL Initial Issue: 02/05/2021

Revision History

No.	Date	By	Submittal / Revision
	02/05/21		CITY SUBMITTAL
	03/18/21		CITY RESUBMITTAL
	03/26/21		WATERSHED RESUBMITTAL
	04/26/21		WATERSHED RESUBMITTAL
	05/14/21		WATERSHED RESUBMITTAL
	10/05/21		WATERSHED RESUBMITTAL
	01/05/22		CITY RESUBMITTAL
	01/25/22		CITY RESUBMITTAL
	03/04/22		WATERSHED RESUBMITTAL

Sheet Title
GRADING PLAN

Sheet No. Revision
C4.01

Project No. 22422

VICTORIA SHORES

KNOW ALL PERSONS BY THESE PRESENTS: That Builders Lot Group, LLC, a Minnesota limited liability company, owner of the following described property situated in the City of Roseville, County of Ramsey, State of Minnesota:

Lot One (1), Block Two (2), Richard's Park, according to the recorded plat thereof, and situate in Ramsey County, Minnesota;

and

That part of Government Lot 3, Section 2, Township 29, Range 23, lying west of the North-South Quarter line described as follows: The North 306.1 feet of the South 886.1 feet of Government Lot 3, except the West 500 feet thereof and except that part of the North 80 feet of the South 755 feet thereof lying Westerly of Victoria Street, and situated in Ramsey County, Minnesota;

and

That part of the following parcel which lies East of the West 370 feet thereof: Beginning at a point on the West line of Lot 3, Section 2, Township 29, Range 23, 480 feet North of the Southwest corner of said Government Lot 3, thence East parallel to the South line of said Government Lot 3, 666 feet, more or less, to the shore of Lake Owasso, thence Northeasterly along the shore line of said Lake Owasso to a point 580 feet North of the South line of said Government Lot 3, measured at right angles to said South line of said Government Lot 3; thence West parallel to the South line of said Government Lot 3, 830 feet, more or less, to a point on the West line of said Government Lot 3, 580 feet North of the Southwest corner of said Government Lot 3, thence South 100 feet to the point of beginning, and situate in Ramsey County, Minnesota.

Has caused the same to be surveyed and platted as VICTORIA SHORES and does hereby dedicate to the public for public use forever the public ways and the easements for drainage and utility purposes only as shown on this plat.

In witness whereof said Builders Lot Group, LLC, a Minnesota limited liability company, has caused these presents to be signed by its proper officer this _____ day of _____ , 20_____.

SIGNED: BUILDERS LOT GROUP, LLC

By _____ , chief manager.
Melvin Moore

STATE OF _____
COUNTY OF _____
This instrument was acknowledged before me this _____ day of _____ , 20_____ , by Melvin Moore, chief manager of Builders Lot Group, LLC, a Minnesota limited liability company, on behalf of the company.

_____ _____
(signature) (printed name)

Notary Public_____County, _____
My Commission Expires_____

I, Daniel L. Thurmes, do hereby certify that I have surveyed or directly supervised the survey of the property described on this plat; prepared this plat or directly supervised the preparation of this plat; that this plat is a correct representation of the boundary survey; that all mathematical data and labels are correctly designated on this plat; that all monuments depicted on this plat have been correctly set; that all monuments indicated on this plat will be correctly set within one year; that all water boundaries and wet lands, as defined in Minnesota Statutes, Section 505.01, Subd. 3, as of the date of this surveyor's certification are shown and labeled on this plat; and all public ways are shown and labeled on this plat.

Dated this _____ day of _____, 20___

_____
Daniel L. Thurmes, Land Surveyor
Minnesota License No. 25718

STATE OF MINNESOTA
COUNTY OF _____
The foregoing instrument was acknowledged before me this_____day of_____, 20___, by Daniel L. Thurmes, Licensed Land Surveyor.

_____ _____
(signature) (printed name)

Notary Public,_____County, Minnesota
My Commission Expires_____

CITY OF ROSEVILLE
We do hereby certify that on the _____ day of _____, 20___, the City Council of the City of ROSEVILLE, Minnesota, approved this plat. Also, the conditions of Minnesota Statutes, Section 505.03, Subd. 2, have been fulfilled

_____ _____, Mayor _____, Clerk

PROPERTY TAX, RECORDS, AND ELECTION SERVICES DEPARTMENT
Pursuant to Minnesota Statutes, Section 505.021, Subd. 9, taxes payable in the year 20___ on the land hereinbefore described have been paid. Also, pursuant to Minnesota Statutes, Section 272.12, there are no delinquent taxes and transfer entered this _____ day of _____, 20__.

Heather L. Bestler, Ramsey County Auditor/Treasurer

By_____, Deputy

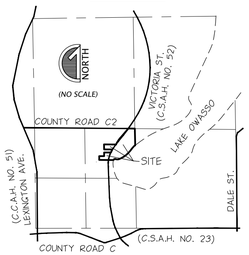
COUNTY SURVEYOR
Pursuant to Minnesota Statutes, Section 383A.42, this plat is approved this_____ day of _____, 20__.

_____
Daniel D. Baar
Ramsey County Surveyor

COUNTY RECORDER, County of Ramsey, State of Minnesota
I hereby certify that this plat of VICTORIA SHORES was filed in the office of the County Recorder for public record on this _____ day of _____, 20_____, at _____ o'clock ____.M. and was duly filed in Book _____ of Plats, Page _____, as Document Number _____.

_____ _____,
Deputy County Recorder

VICINITY MAP



SECTION 2, T29N, R23W,
CITY OF ROSEVILLE
RAMSEY COUNTY, MINNESOTA

LEGEND

- o Denotes ½ inch x 14 inch iron pipe marked with Minnesota License No. 25718 to be set within one year after recording of this plat.
- ● Denotes ½ inch iron pipe found.
- SET o Denotes ½ inch x 14 inch iron pipe set and marked with Minnesota License No. 25718
- —— WL —— Wet lands delineated and located by JD Donath of Sambatek on October 27, 2020. Report #22422.

  Bench mark - top nut hydrant northwest quadrant of Victoria Street and Orchard Lane. Elevation = 903.34 FEET (NAVD 88)
- (L=239.05 PLAT) Denotes distance as shown on the plat of RICHARD'S PARK

DRAINAGE AND UTILITY EASEMENTS ARE SHOWN AS THUS:

BEING 10 FEET IN WIDTH AND ADJOINING PUBLIC WAYS AND REAR LOT LINES AND BEING 5.00 FEET IN WIDTH AND ADJOINING LOT LINES UNLESS OTHERWISE SHOWN ON THIS PLAT.

NORTH

FOR THE PURPOSES OF THIS SURVEY THE NORTH-SOUTH QUARTER LINE OF SECTION 2, T29N, R23W ALSO THE EAST LINE OF LOT 1, BLOCK 2, RICHARD'S PARK IS ASSUMED TO BEAR S00°52'38"E .

50 100

1 INCH = 50 FEET
SCALE IN FEET

CORNERSTONE
LAND SURVEYING, INC.

Memorandum

DATE: Friday, March 25, 2022
Re: Victoria Shores – Rele E Variance Request
TO: Nicole Soderholm, Permit Coordinator
Ramsey-Washington Metro Watershed District
FROM: Eric Luth, PE

This memo summarizes the Victoria Shores project's requested variance from the Ramsey-Washington Metro Watershed District (RWMWD) Rules – Rule E Wetland Management.

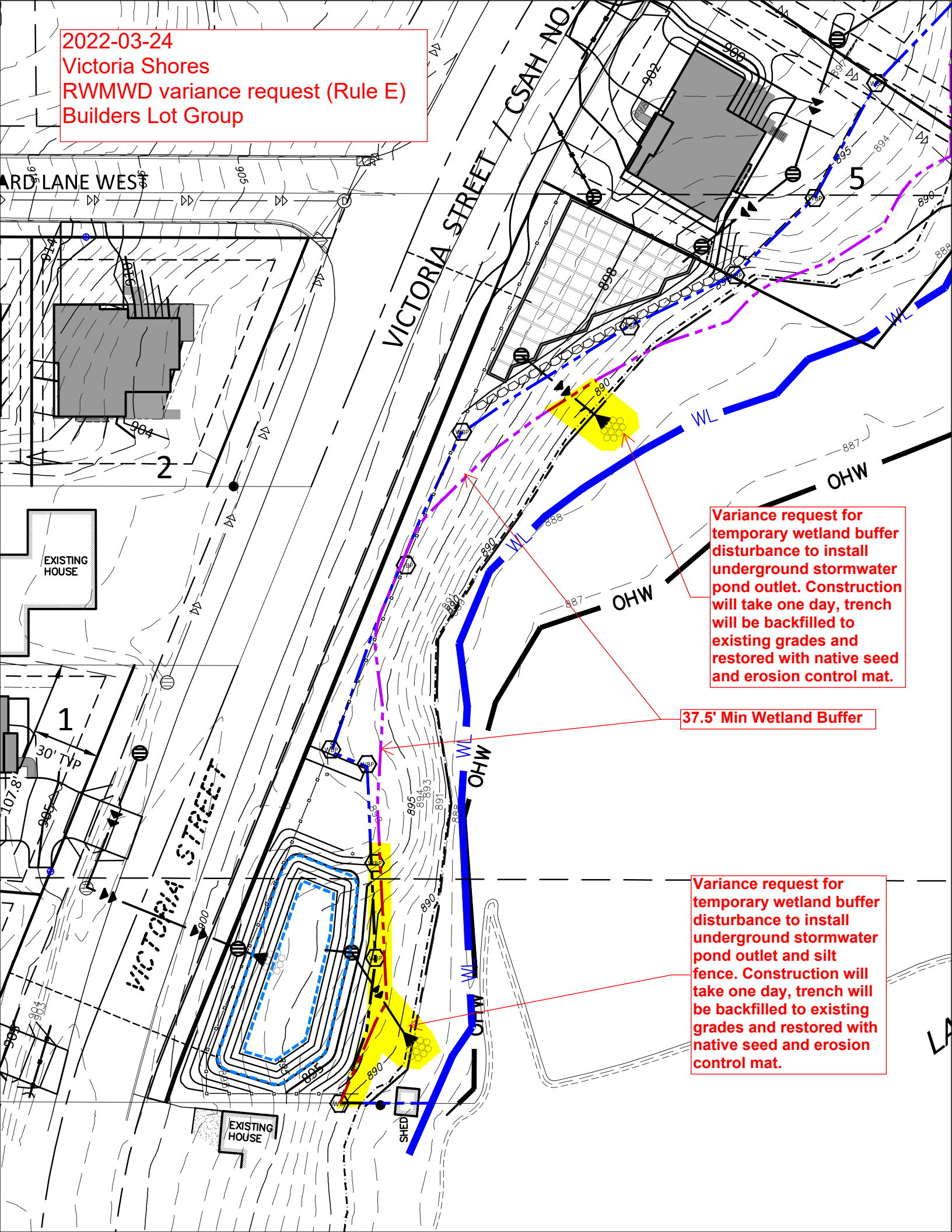
RWMWD Rule E.3(d) outlines the no-disturb wetland buffers required by the watershed. RWMWD Rule E.3(d)(4) allows for the temporary disturbance of wetland buffer for wetland replacement through mitigation.

It is requested that a variance be allowed to this rule for temporary disturbance in the 37.5' minimum buffer of the Lake Owasso wetland. Please refer to attached map the delineated wetland. The variance will allow the construction of two stormwater outlet pipes from the proposed stormwater treatment facilities to Lake Owasso. The stormwater facilities have been designed and located per RWMWD rules to treat stormwater run off from the proposed Victoria Shores Development.

North Disturbance:
Variance request for temporary wetland buffer disturbance to install underground stormwater pond outlet. Construction will take one day, trench will be backfilled to existing grades and restored with native seed and erosion control mat.

South Disturbance:
Variance request for temporary wetland buffer disturbance to install underground stormwater pond outlet and silt fence. Construction will take one day, trench will be backfilled to existing grades and restored with native seed and erosion control mat.

As the proposed construction meets the stated goals of the district and the spirit of Rule E.3(d)(4), we request a variance to RWMWD Rule E.3(d).


2022-03-24
Victoria Shores
RWMWD variance request (Rule E)
Builders Lot Group
VICTORIA STREET / CSAH NO.
ARD LANE WEST
EXISTING HOUSE
EXISTING HOUSE
SHED
VICTORIA STREET
30' TYP
107.8'
WL
OHW
Variance request for temporary wetland buffer disturbance to install underground stormwater pond outlet. Construction will take one day, trench will be backfilled to existing grades and restored with native seed and erosion control mat.
37.5' Min Wetland Buffer
Variance request for temporary wetland buffer disturbance to install underground stormwater pond outlet and silt fence. Construction will take one day, trench will be backfilled to existing grades and restored with native seed and erosion control mat.

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

MEMORANDUM

Date: April 6, 2022

To: Board of Managers and Staff

From: Nicole Soderholm, Permit Coordinator
Mary Fitzgerald, District Inspector

Subject: March Enforcement Action Report

During March 2022:

Number of Violations:	**4**
Install/Maintain Inlet Protection	2
Install/Maintain Construction Entrance	1
Contain/Dispose of Liquid and Solid Waste	1

Activities and Coordination Meetings:

Permitting assistance to private developers and public entities, miscellaneous resident inquiries, ongoing ESC inspections/reporting, WCA administration, new permit review with Barr Engineering, SWPPP and wetland restoration enforcement, underground BMP discussion with City of Woodbury, water resource coordination meeting with City of St. Paul, Victoria Shores agreements discussion with City of Roseville, initial SWPPP meeting with contractor, Metro Gold Line/MnDOT coordination meetings, Minnesota Pollution Control Agency MS4 Q&A session, rules discussion with Capitol Region Watershed District, introductory meeting with communications intern Jazmine, Wetland A trails feasibility meeting with Ramsey County Parks, MS4 Roundtable planning meeting with VLAWMO and Rice Creek Watershed District, buckthorn removal with NR

Project Updates:

#21-33 Owasso Warehouse (Little Canada)

The new warehouse project near Owasso Boulevard East and Spruce Street began in March. When complete, the project will include a new warehouse, building addition, site improvements, and an iron-enhanced filtration basin. Staff met onsite with the general contractor on March 15th for an initial erosion control walk-through. Staff conduct these walk-

throughs prior to soil disturbance at all project sites to verify necessary erosion and sediment control BMPs are installed and functional. It also provides an opportunity for staff to discuss RWMWD inspection processes and expectations.

Staff walked the site and found biolog perimeter control and rock anti-tracking entrances installed, but inlet protection was missing. The site verified that this would be installed promptly. Staff and the general contractor also discussed the potential for needing to dewater during drilling operations. Staff clarified requirements and requested to be notified if dewatering is needed.

#22-03 Gervais Woods 2nd Addition (Little Canada)

Gervais Wood's 2nd addition is underway with a temporary erosion control permit. When complete, the site will have 15 single family homes with associated driveways, cul-de-sac, and utilities. Stormwater will be treated with the installation of a filtration basin and wet pond. Staff visited the site on March 1st after receiving notification that the site had begun to clear trees. Staff discovered that soil disturbance work had begun in addition to tree grubbing without proper erosion and sediment control items installed. Staff communicated to contractors onsite that work must cease immediately until all necessary erosion and sediment control items were installed per plan. Extensive communication continued through the day, and staff revisited the site the following day to verify that redundant perimeter control had been installed adjacent to the wetland. Staff revisited the site on March 16th and found all necessary items to be installed and functional. Staff will continue to inspect the site on a biweekly basis through project completion.

#21-27 Level Up Academy Addition (White Bear Lake)

Staff conducted an initial erosion control walk-through at Level Up Academy on February 23rd with the general contractor. The site was completely snow-covered due to a recent large snow event, so most erosion and sediment control items were unable to be inspected. Staff revisited the site on March 15th during snowmelt conditions and found the site to be compliant, but some maintenance work was needed –including: maintaining rock entrances, removing sediment from curblines, adding additional protections next to construction entrances to capture runoff, and installing additional inlet protection at catch basins downstream. The earthwork contractor onsite walked the site with staff and agreed to complete all necessary items promptly. Staff will continue to inspect the site biweekly through project completion unless additional visits are warranted via complaints received or inspection non-compliance.

Single Lot Residential Permits Approved by Staff:

None

Permits Closed:

13-16 Havencrest (Maplewood)
15-27 MnDOT Highway 36 Hamline to Victoria (Roseville)
15-33 Cub Foods of Oakdale (Oakdale)
19-49 RWMWD 2020 CIP (Multiple cities)
20-18 Twin Lake Outlet Project (Little Canada)
21-01 RWMWD 2021 CIP (Multiple cities)
22-05 Amira Senior Apartments (Woodbury) WITHDRAWN

****

Stewardship Grant Program

****

Stewardship Grant Program Budget Status Update

April 6, 2022

Homeowner	Coverage	Number of Projects: 3	Funds Allocated
Habitat Restoration and rain garden w/o hard surface drainage	50% Cost Share $15,000 Max	2	$4,300
Rain garden w/hard surface drainage, pervious pavement, green roof	75% Cost Share $15,000 Max	1	$8,000*
Master Water Steward Project	100% Cost Share $15,000 Max	0	$0
Shoreland Restoration	100% Cost Share $15,000 Max	0	$0

Commercial, School, Government, Church, Associations, etc.	Coverage	Number of Projects: 6	Funds Allocated
Habitat Restoration	50% Cost Share $15,000 Max	1	$7,500
Shoreland Restoration (below 100-year flood elevation w/actively eroding banks)	100% Cost Share $100,000 Max	0	$0
Priority Area Projects	100% Cost Share $100,000 Max	4	$328,540*
Non-Priority Area Projects	75% Cost Share $50,000 Max	1	$50,000
Public Art	50% Cost Share $15,000 Max	0	$0
Aquatic Veg Harvest/LVMP Development	50% Cost Share $15,000 Max	0	$0

Maintenance	50% Cost Share $5,000 Max for 5 Years	62	$46,025
Consultant Fees			$9,000
Total Allocated			**$453,365**

2022 Stewardship Grant Program Budget	
Budget	$1,000,000
Total Funds Allocated	$453,365
Total Available Funds	**$546,635**

**Includes project pending approval at the April 6, 2022 board meeting.*

****

Action Items

****

Request for Board Action

Board Meeting Date: April 6, 2022 **Agenda Item No: 7A**

Preparer: Tina Carstens, Administrator
Paige Ahlborg, Watershed Project Manager

Item Description: Lake Owasso Shoreline Restoration Project Authorization to Finalize Design and Prepare the Bidding Documents and Advertise for Bids.

Background:
This project involves the shoreline buffer restoration of 10 residential properties that have been damaged by prolonged high water levels. Combined, the total restoration area is approximately 0.39 acres, with individual sites ranging from 855 square feet to 3,270 square feet, with an average project size of 1,681 square feet.

The project scope includes site-wide management for invasive and non-desirable species, bank and shoreline stabilization, and revegetation using a combination of native seed and plant plugs. The purpose of completing this work is to establish a diverse, natural shoreline buffer, as well as provide wildlife and pollinator habitat, runoff interception and filtration, competition for invasive species, and landscape aesthetics. Individual site design and revegetation components were developed for this project based on needs for shoreline use by landowners; in addition to, important site circumstances such as elevation, remnant plant communities, and anticipated soil and hydrologic conditions.

Site preparation for the project will begin as soon as conditions allow in spring 2022. Stabilization of upland soils and vegetation will shortly follow, allowing the contractor to closely monitor water level elevations for timing and favorable conditions to install plants. The overall project is expected to be substantially completed by fall of 2022. Long-term monitoring and maintenance for all individual project sites will continue beyond the completion date, for the 2023 and 2024 growing seasons. Cost estimate for the proposed project is $169,112.

Final plans and specs are set to go out for public bid on April 11. Bids will be due on April 26. Staff will bring a contractor recommendation to the board of managers at the May 4 meeting.

Applicable District Goal and Action Item:

Goal: Achieve healthy ecosystems- the District will manage water and related natural resources to create and preserve healthy ecosystems.

Action Items: EC3- Lead ecological restoration projects to improve water resources and associated upland habitat.

Staff Recommendation:
Staff recommends the Board approve the preliminary design, estimated costs, and proposed project schedule, and direct staff to finalize the design and bidding documents and advertise the project for bid.

Financial Implications:
The Lake Owasso Shoreline Restoration Project budget is included in the 2022 Stewardship Grant Program budget.

Board Action Requested:
Approve the preliminary design, estimated costs, and proposed project schedule, and direct staff to finalize the design and bidding documents and advertise the project for bid.

LAKE OWASSO SHORELINE RESTORATION PROJECT

SHOREVIEW, MN

INVITATION FOR BID

The Ramsey-Washington Metro Watershed District invites you to submit a bid for the LAKE OWASSO SHORELINE RESTORATION PROJECT in Shoreview. This letter is intended to provide you with background information about the project, the anticipated scope of work, and deliverables.

Bids for the LAKE OWASSO SHORELINE RESTORATION PROJECT in Shoreview, Minnesota will be **received via email** at paige.ahlborg@rwmwd.org until **1:00 pm, CDT, Tuesday, April 26, 2022**, and then opened privately. Evaluation of bids will be a qualitative review conducted by Ramsey-Washington Metro Watershed District and Ramsey County with emphasis on price, qualifications, and completeness.

The Work consists of furnishing all labor, materials, equipment, skills, and performing all operations required to construct the Work. The Work includes, but is not limited to, mobilization and demobilization; construction survey and project layout; furnishing, installing, maintaining, and removing erosion control facilities; woody and herbaceous vegetation, and invasive species removal; tree clearing and removal; disposal, preparing soil, transporting and installing of all seeds, live plants and other materials required for: (1) shoreline grading and soil stabilization practices including rip rap & Bio D-Block installation, (2) seeding and planting of native plant species, (3) the establishment and protection of seeded areas and live plants, (4) site-wide management for all invasive and non-desirable species for two growing seasons post-contract period; all as provided for in the Bidding Documents.

Instruction to Bidders Brief: A complete submittal shall include at a minimum, the following documents, and/or items:

1. Statement of Qualifications (SOQ) per Section A – A-8 General Conditions and Requirements of the Specifications and Provisions Document
2. Completed Copy of the Bid Form (See Exhibit C)
3. Completed Copy of the 'Responsible Contractor and Certification of Compliance' Form (See Attachment A)

There will be no pre-bid meeting for this project. Please contact us by phone at (651) 792-7964 and (651) 266-7280 if you have any questions. Questions will be accepted until **1:00pm, CDT, April 25, 2021**. Partial sets of documents will not be issued.

Contact Information

Ramsey-Washington Metro Watershed District
Paige Ahlborg
Watershed Project Manager
(651) 792-7964
paige.ahlborg@rwmwd.org

Ramsey County Soil & Water Conservation Division
Brian Olsen
Owner Representative
(651) 266-7280
brian.olsen@ramseycounty.us

ATTACHED: Packaged Bidding Documents for the LAKE OWASSO SHORELINE RESTORATION project

Bid Package
for
LAKE OWASSO SHORELINE RESTORATION PROJECT
(SHOREVIEW, MN 55126)

April 6, 2022

Prepared By:

RAMSEY COUNTY

Bid Package Content Index:

Exhibit A: Project Specifications and Provisions
Exhibit B: Construction Plan Set
Exhibit C: Bid Form
Attachment A: 'Responsible Contractor and Certification of Compliance' Form
Attachment B: Construction Contract (Draft Example)

Exhibit A: Project Specifications and Provisions

RAMSEY COUNTY
Parks & Recreation

SPECIFICATIONS AND PROJECT PROVISIONS

Lake Owasso Shoreline Restoration Project

March 29, 2022

SPECIFICATIONS AND PROJECT PROVISIONS

SECTION A - GENERAL REQUIREMENTS

A-1 SCOPE OF WORK

The work to be performed under the provision of these contract documents shall include the furnishing of all materials, labor, tools, and equipment necessary to successfully and safely complete the restoration as described in the Plans and Specifications herein. Items required to perform work but may not be listed in the specifications remain the responsibility of the Contractor. Minor appurtenances not specifically listed as proposal items, but which are necessary to complete the project, as shown in the Plans and Specifications, in a satisfactory manner, shall be considered incidental items and no direct compensation will be made therefore. The Owner is not responsible for safety on this project.

A-2 LOCATION

The project consists of **10** residential sites, surrounding the extent of Lake Owasso (ID 62005600) – located West of the I-694 and I-35E corridor merge, within the City of Shoreview. As shown on Construction Drawings.

RESIDENTIAL SITE(S) The residential sites are individually owned and located immediately surrounding Lake Owasso. Sites are separated along West Horseshoe Drive on the north side and Woodbridge Street & East Owasso Lane on the east side of the lake. As shown on Construction Drawings.

A-3 OWNER AND OWNER REPRESENTATIVE

The Owner of the Project is Ramsey-Washington Metro Watershed District (RWMWD), 2665 Noel Drive, Little Canada, MN 55117. The Owner Representative for the project unless otherwise noted, is the Ramsey County Parks & Recreation Department; Soil & Water Conservation Division staff. The Owner Representative will provide oversight and inspection for the Lake Owasso Shoreline Restoration Project site(s).

A-4 SPECIFICATIONS, WHICH APPLY

Except as modified herein, the following shall apply and where applicable, hereby adopted by reference:

(1) Minnesota Department of Transportation Standard Specifications for Construction; 2018 edition, Division II and Division III.
(2) Minnesota Seed Law and Rules; August 1, 2015 edition.

A-5 PAYMENT

Payment must be coordinated with Ramsey-Washington Metro Watershed District.

A-6 PROJECT WAGES

This is **NOT** a prevailing wage project.

A-7 STARTING AND COMPLETION DATES

Construction and installation work authorized under this contract for the Lake Owasso Shoreline Restoration Project, shall be completed by **June 15th, 2023**. Maintenance of these sites may continue beyond this date. **Work can begin after execution date of contract between the Owner and the Contractor.**

Anticipated Project Timeline (*subject to change):*

(1) Quotation packages due: April 26, 2022
(2) Contractor selection: May 4, 2022
(3) Notice to Proceed: May 5, 2022
(4) Substantial Completion: October 31, 2022
(5) Full Completion: June 15, 2023

A-8 QUALIFICATIONS AND CERTIFICATIONS OF CONTRACTOR

To demonstrate qualifications to perform the Work, **the Bidder shall submit to the Owner a Statement of Qualifications (SOQ)**, which demonstrates the Contractor's ability to complete the Work as specified. This documentation shall include at a minimum the following, and such other information the Owner believes necessary:

(1) Description of the project overview and the Contractor's approach to completing the work, written in a way that demonstrates the Contractor's understanding of what is required; estimated work start date; procedures and an anticipated time of completion for each type of work listed in plan; methods and locations for material staging sites and all major points of access necessary.

(2) Description of the Contractor's equipment, key personnel and resources which demonstrate the Contractor's ability to successfully complete the Work including: size and makeup [i.e. supervisors, crew leaders, operators, laborers, etc.] of crew anticipated, and Labor rate sheets. It is required that all onsite staff proposed to supervise or lead in completion of the services must have a bachelor's degree in Natural Resources – or approved equal; experience constructing shoreline restoration projects and establishing native landscapes within the state or upper Midwest; qualifications to accurately and quickly identify trees and vegetation native to the State of Minnesota, and the invasive species targeted for eradication.

All herbicide applicators on-site must be individually licensed for application in the State of Minnesota. Copies of current herbicide applicator licenses must be submitted. Applicators applying herbicide under someone else's license is explicitly forbidden.

(3) Description of the Contractor's project experience including: nature of project, owner's name and contact information, dollar value and name of bonding company.

Contractors must have performed similar shoreline restoration, native landscape installation work at a minimum of five (5) projects within the past five (5) years, to the extent possible for projects of equal size.

Contractors must have performed similar vegetation management work at a minimum of five (5) projects within the past five (5) years, not including projects that were primarily installation work. Provide five (5) references of vegetative management work within the past five (5) years. Include only projects that were primarily vegetation management/maintenance.

(4) Description of present commitments during the 2022-2024 growing seasons.

A-9 LISTING OF SUBCONTRACTORS

The Contractor shall provide the Owner with a listing of subcontractors, contact information who will perform the major items of work on this project and their qualifications **within three calendar days following the Owner's request.** If while completing the project, additional Sub-Contractors are required, the general Contractor shall notify the Owner in writing of the Contractors name, contact information, and Work to be performed prior to the start of the work to be completed.

A-10 WORKING HOURS

Work shall not commence before 7:00 a.m. nor extend beyond sundown Monday through Friday. No work is to be done on Saturday or Sunday without prior Owner, County and City approval.

A-11 DRUG AND ALCOHOL FREE WORKPLACE

The Contractor hereby certifies, under penalty of perjury, under the laws of the State of Minnesota that under the contract he will comply with the requirements of the Drug-Free Workplace Act of 1988 (Government Code Section 8350 et. Seq.). Therefore, the work stie shall be kept drug and alcohol free at all times.

A-12 CONTRACTOR ACCESS TO SITE

The project site(s) will be accessible from surrounding roads. It is the contractor's responsibility to coordinate with the individual residential landowners and The Owner to locate the best access points to the shoreline projects. Contractor to use the least amount of different access points as reasonable to complete the scope of work and minimize damage to properties for access points. Private property, of residential landowners participating in the restoration project have consented to reasonable and appropriate access to sites respectively. It is the contractor's responsibility to obtain permission through contact, coordination, and notification with individual residential landowners for abrupt or intrusive access, usage of sites for staging of materials, access with equipment, and the temporary relocation of existing above ground and below ground structures.

A-13 BRAND NAME

If items called for by these documents have been identified herein by a "brand name or equal" description, such identification is intended to be descriptive but not restrictive and is to indicate the quality and characteristics of products that will be satisfactory.

A-14 MEASUREMENT VERIFICATION

The Contractor shall verify all measurements and grades, which relate to his/her work at the site and shall, before commencing work, report any variations or discrepancies to the Owner Representative for adjustment.

A-15 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

The Contractor is expected to carefully examine the site prior to submitting a bid and prior to any contract for restoration work begins. Contractor specifically acknowledges and declares that the Contract Documents are sufficient to have enabled it to determine the Guaranteed Maximum Price, and that the Drawings and Specifications are sufficient to enable Contractor to properly complete the Work to fulfill all its obligations under the Contract Documents. Contractor shall carefully study and compare all existing conditions, Drawings, Specifications, and other Contract Documents; shall verify all figures on the Drawings before laying out the Work; shall take field measurements and verify field conditions; shall carefully compare such field measurements and conditions and other information known to Contractor with the Contract Documents before commencing activities; and shall give prompt notice to the Owner Representative in writing, of all errors, inconsistencies, or omissions, which it may discover and obtain specific instructions in writing with respect thereto before proceeding with the Work.

The Contractor is reminded that the responsibility for determining all surface and sub-surface conditions is placed solely on the Bidder. This shall be construed to include the location of all underground facilities and utilities, the soil type, the depth of water table, and all other factors having an influence on the work.

A-16 WARRANTY AND GAURANTEES

The Contractor shall provide a warranty and guarantee on all material, products and work performed by the Contractor and subcontractor for the restoration project for a period of not less than one year, as specified below, or as agreed between Owner and Contractor prior to beginning of restoration work. Specific products used in the restoration of the project may include warranties specific to them and of longer term than 1 year. Provide written verification from the manufacture of the product stating what the warranty covers and the timeframe in which the warranty expires.

SEEDED AREAS

Contractor shall guarantee seeded areas through the specified maintenance period, and until final acceptance. Success is defined as minimum 80% cover of acceptable species as determined by Owner Representative and minimum of 50% of seeded species. Areas unsuccessful because native plants have not become successfully established at any time during the maintenance period shall have weed species and problem areas removed prior to seed dispersal and be re-seeded at the original density.

A-17 UNIT PRICES

Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead

and profit. **For Measurement and Payment, refer to Bid Form.** Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this worked measured, at Owner's expense, by an independent surveyor acceptable to Contractor. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price.

A-18 MATERIALS FURNISHED BY CONTRACTOR

All materials used in the Work shall be new unless otherwise provided for in the Contract Documents, shall meet the requirements of the specification, be in conformance with samples provided, and shall not be incorporated into the work until reviewed by the Owner Representative. Unless otherwise specifically indicated in the Contract Documents, all materials necessary for the proper execution of the Work shall be furnished and paid for by the Contractor, whether temporary or not and whether incorporated into the work or not. Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditions as specified by the manufacturer. Materials supplied or equipment to be incorporated into the work shall not be purchased by the Contractor or the subcontractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

A-19 PRODUCT SUBSTITUTIONS

Each Contractor, by signing and submitting a response form, represents that their response is based upon the materials and equipment described or designated in the Contract Documents and that, if Awarded the Contract, will furnish or use only materials and equipment so described or designated. No substitution will be considered unless written request has been submitted to the Owner for approval at least four (4) calendar days prior to the date and hour set for receipt of response. Each request shall include a complete description of the proposed substitution and any other data or information necessary for a complete evaluation by the Owner. If the Owner approves any proposed substitution, such approval will be set forth in an addendum. The general requirements for substitutions will be equal to or better than the initially specified materials.

A-20 STORAGE OF MATERIALS

Materials shall be so stored by the Contractor as to insure the preservation of their quality and fitness for the work. Stored materials shall be located so as to facilitate prompt inspection. Private property shall not be used for storage purposes without written permission of the owner respectively or lessee thereof, or otherwise noted by the project Owner.

A-21 SUBMITTALS PROCEDURES

The Contractor shall provide submittals for project products, services, equipment in accordance with the following instructions:

(1) Action Submittals: Written and graphic information that requires Owner Representative responsive action.
(2) Informational Submittals: Written information that does not require Owner Representative responsive action. Submittals may be rejected for not complying with requirements.

Coordinate preparation and processing of submittals with performance of restoration activities. Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner Representatives receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals. Allow 10 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner Representative will advise Contractor when a submittal being processed must be delayed for coordination. Resubmittal Review: Allow 10 days for review of each resubmittal. Make resubmittals in same form and number of copies as initial submittal. Place a permanent label or title block on each submittal for identification. Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.

A-22 PROGRESS AND COMPLETION

The Contractor understands and agrees that time is of the essence for completion of this Contract. The Contractor, by submitting a bid and entering into a contract with the Owner, agrees that Substantial Completion, as certified by the Owner of the Lake Owasso Shoreline Restoration Project, **shall be substantially completed by October 31st, 2022;** after written Notice to Proceed. The date of Substantial Completion shall be adjusted accordingly if the OWNER does not issue the Notice to Proceed on or before the aforementioned dates. Refer to General Contract/Agreement Terms and Conditions.

A-23 SITE PROTECTION

The Contractor shall protect that which is to remain and shall conduct all installation operations in a manner that will not damage or jeopardize the surrounding plant life or existing structures designated to remain. The Contractor is responsible for all utility locates and shall coordinate with the appropriate utility provider for any modification for all major and small utilities. Any damage to utilities, trees or other existing-to-remain items shall be repaired at the Contractor's expense.

A-24 EXCAVATED MATERIALS

Excavated materials must be removed from site, deposited, or stored in an upland area, in a manner where the materials will not be redeposited into the water body by reasonably expected high water or runoff. Departure from any previously approved spoil disposal plans may be allowed only through approval by Owner Representative.

Excavated material shall not be permanently placed within community designated floodplain areas or shoreland areas unless all necessary local permits and approvals have been obtained.

A-25 INVASIVE SPECIES – EQUIPMENT DECONTAMINATION

All equipment intended for use at the project site must be free of prohibited invasive species and aquatic plants prior to being transported into the project site; and from one site to the next within the overall scope of the project, for the duration of the Installation and Maintenance Contract periods.

A-26 SITE CLEANLINESS AND CLEAN-UP

The Contractor shall be responsible for keeping the restoration site clean, neat, and orderly during the actual restoration project and free of trash. Material shall be stored in areas approved by Owner Representative. Dirt and debris shall be removed from paved surfaces in and immediately around the restoration limits. For final acceptance, the site shall be thoroughly cleaned. This shall include but not be limited to, remove all materials, trash and sweeping streets or pavement used during work. On weekends all materials or equipment on-site shall be neatly stored and safely out of the way of vehicle or pedestrian traffic.

Contractor shall protect landscape work and materials from damage due to landscape operations, operations by other trades and trespassers. Contractor shall maintain protection during installation and maintenance periods, and shall treat, repair or replace damaged landscape work as directed by Owner's Representative.

A-27 PLANS DURING RESTORATION

The Contractor is expected to carefully examine the site prior to submitting a Bid and prior to any restoration work. Prior to commencing with the restoration project, the Contractor shall have the restoration plan, Addenda, permits, and all supplemental instructions on site. These documents shall be made available to all Subcontractors, Owner, and agency inspectors. Permits shall be displayed for easy review by agency staff. The project restoration plan and specifications shall be kept with staff on site during work on the project.

SECTION B – MATERIALS

B-1 SUBMITTALS LIST

Contractor shall provide the Owner and Owner Representative the following submittals within 30 days notice to proceed on contracted work, or as otherwise specified, per the Owner Representative's request.

(1) Weed Spraying and Vegetation Removal Schedule
   1. Dates of mobilization to the site, initial crew size, and equipment being used.
   2. Herbicides(s) product name and rate of application.

(2) Temporary Erosion Control, Grading, Rip Rap & Bio D-Block Installation, Seed Bed Preparation and Rolled Erosion Blanket Installation Schedule
   1. Dates of mobilization to the site, initial crew size, and equipment being used.

(3) Planting Schedule
   1. Prior to the time of any seeding and/or planting Contractor shall supply the Owner's Representative with the proposed planting schedule for each operation.

(4) Seeding and Planting Supplies
   1. Prior to the time of any seeding and/or planting the Contractor shall supply the Owner's Representative with the names and addresses of all seed and live plant suppliers showing quantities related to supplier for all seeds and live plants. Plant species, including scientific names, seed blends, percentages, weights, and ratios shall be submitted and guaranteed in writing.

B-2 HERBICIDE

All herbicides to be used must be pre-approved by Owner Representative before being brought on site for use. Contractor shall submit any alternative equal herbicide requests to Owner Representative before use. Herbicide shall be delivered to the site in the closed fully labeled manufacturer's container.

All herbicide used in or around saturated or wet areas such as wetlands, seeps, shrub swamps, open water, shorelines, etc. should be marketed for safe use around aquatic habitat.

The primary herbicides for herbaceous vegetation used shall be a broad-spectrum non-selective post-emergent systemic formulation such as "Rodeo" (Glyphosate) manufactured by Monsanto company or an approved equal suitable for application by appropriate sprayer. Any other herbicide will be a broadleaf selective, which will be chosen to fit the specific weeds found during the restoration phase, for example "Milestone" (aminopyralid) manufactured be DOW or an approved equal suitable for application by appropriate sprayer. Contractor shall submit any alternative equal herbicide requests to Owner Representative before use.

The primary herbicides for woody stump treatment shall be "Garlon 3A" (triclopyr) manufactured by DOW or an approved equal suitable for application by appropriate sprayer. Any other herbicide will be an invasive woody selective, which will be chosen to fit the specific species found during the restoration phase, for example "Transline" (clopyralid) manufactured by DOW or an approved equal suitable for application by appropriate sprayer.

B-3 SEED MIXTURES

All seed mixtures are shown on the Construction Drawings; and outlined as such in the following: Seeds shall be blended by the vendor and the mixture and ratio shall be guaranteed in writing to be as specified by percentage or weight in the Seed and Plant Lists.

TURF SEED

The seed mixture and rate of application to be used in the restoration of disturbed areas, and for all areas identified on drawings, will be standard Minnesota State Seed Mix 25-131; Low-Grow Non-Native Fine Fescue Seed Mix; at 220 pounds per acre; or approved equal. See Construction Drawings for all project seed mixtures.

NATIVE SEED

Permanent Native Seed – Wet-Transitional Mix (Custom):

The *Wet-Transitional Mix*; or approved equal, shall be planted for all corresponding areas identified on Construction Drawings. Additional areas to be reviewed onsite by Contractor and Owner Representative as necessary due to water-level fluctuations, prior to seeding activities are as follows: areas one-foot higher than water elevation down to six-inches lower than water elevation, along the edge of standing water, areas of wet or pro-longed saturated soils and areas that may periodically be saturated.

COVER CROP

All cover crop shall be mixed and sown accordingly, and specified rates of application, to be used will be the standard Minnesota State Seed Mix 21-111 (Oats Cover Crop), OR, the standard

Minnesota State Seed Mix 21-112 (Winter Wheat Cover Crop); see MNDOT Table 3876-1. For all Permanent Native Seed Mixes, oats and winter wheat shall be selected based on the time of year that the Permanent Native Seed Mix is being used; Contractor shall specify cover crop in species submission to the Owner Representative for approval.

B-4 SEED REQUIREMENTS

All seed shall be true to their name as specified. All seed shall originate from parent plants as close to the site as possible, located within the St. Paul Baldwin Plains and Moraines or Anoka Sand Plain Ecoregions or within 200 miles of project location. The origin of seed is required to be listed on the seed tag for all species in a mix. Plant origins beyond a 200-mile radius shall be approved in writing by the Owner Representative.

Species and quantities to be planted shall be those specified. Seed mixtures and any substitutions or changes shall be submitted in writing to the Owner Representative for approval.

All seed that is supplied for projects must be labeled according to the requirements of the Minnesota Seed Law, section 21.82. All seed should be of the highest quality pure live seed and germination rate.

All seed shall be stored in such a manner to insure adequate protection against damage by heat, moisture and/or high humidity to maintain dormancy, rodents or other such causes. Seed which has become wet, moldy, or otherwise damaged in transit, storage or during planting operations will not be acceptable.

All legumes shall be inoculated with the proper rhizobia and at the appropriate time prior to planting.

B-5 EROSION AND SEDIMENT CONTROL

In all cases, methods that have been determined to be the most effective and practical means of preventing or reducing sediment from leaving the worksite shall be installed according to the Plans and Specifications; or as directed by the Owner Representative; and in areas that slope to the water and on worksite areas that have the potential for direct discharge to the water body. These methods such as mulches, erosion control blankets, temporary coverings, silt fence, silt curtains, bio-rolls, barriers, dead-turfgrass preservation, as specified in the Plans and Specifications, or as required during the process of construction; shall be installed or implemented concurrently with construction and planting operations, or within 24 hours after the start of the project per site.

Sediment Control Logs/Bio-Rolls are preferred and may be used in lieu of silt fence where trenching is not acceptable (i.e. within the drip-line of existing trees, etc.). Bio-Rolls shall conform to MNDOT 3897 Specification.

Any work below the water level shall be encircled by a flotation sediment curtain to prevent sediment from being transported beyond the construction site. Rolled erosion control prevention shall be installed according to the plans and specifications. (See Section B-6).

The Contractor is responsible for stabilizing all areas until after final acceptance. The Contractor shall provide written request for stabilization acceptance. Contractor to remove temporary erosion control measures upon notification by Owner Representative.

B-6 ROLLED EROSION CONTROL PREVENTION

Rolled erosion control prevention shall conform to the requirements of MNDOT 3885, category erosion control blanket shall be made of all natural, biodegradable materials such as jute or coconut fiber, or straw. Thread shall be cotton or similar all-natural material. **PHOTO BIODEGRADBLE MATERIAL WILL NOT BE ACCEPTED; METAL STAPLES WILL NOT BE ACCEPTED.**

Contractor shall use erosion control blanket as indicated in Construction Drawings. Install rolled blanket per manufacturer specifications.

Basis of Specification Standards shall be used for the following:

(1) Specified for Use Within Revegetation Unit-2:
Specified Per Plan As: Category 25
American Excelsior Company (AEC); Curlex II FibreNet
Roll Size – 4.0ft x 101.25ft (45 SY) or 8.0ft x 101.25ft (90 SY)
Weight – 32.9lb. or 65.7lb
Fiber Count – 7,000 per yd^2
Fiber Length (80% min.) – 6.0 in.
Mass per Unit Area (+/-10%) – 0.73lb./ yd^2
Net Openings – 0.5 in. x 1.0 in.
Thread – Biodegradable natural jute fiber

(2) Specified for Use Within Revegetation Unit-4
Specified Per Plan As: Category 30
North American Green (NAG); BioNet SC150BN
Roll Size – 6.67ft x 108ft (80 SY) or 8.0ft x 112ft (100 SY)
Top Net – Leno woven, 100% biodegradable jute; 9.35lb./1,000 ft^2 (4.53 kg/100 m^2) approx. wt.
Bottom Net – 100% biodegradable jute; 7.70lb./1,000 ft^2 (3.76 kg/100 m^2) approx. wt.
Matrix – 70% Straw Fiber 0.35lb./ yd^2 (0.19 kg/100 m^2); 30% Coconut Fiber 0.15lb./ yd^2 (0.15 kg/100 m^2)
Thread – Biodegradable woven natural fiber

(3) North American Green (NAG); Eco-Stake 6-inch and 12-inch
Leg Length – 5.00-inch
Leg Thickness – 0.40-inch
Head Width – 1.25-inch
Total Length – 6.00-inch
Head Thickness – 0.40-inch
Leg Width (tapered to point) – 0.60-inch

The Contractor shall submit other equal erosion control blanket samples with manufacturer information for consideration by Owner Representative as approved equal.

B-7 LIVE PLANTS

Basis of Specification Standards shall be used for the following:
1. NATIVE PERENNIAL 4" CONTAINERIZED

2. NATIVE PERENNIAL 2" PLUG
    a. Cell Size: 2 1/8 in. x 2 3/8 in. x 2 1/4 in. deep; or approved equal

Plants shall be true to their name as specified. Any substitution or change shall be approved in writing by the Owner Representative. Their origin shall be known to be local within a 200-mile radius of the project location. Plant origin beyond a 200-mile radius shall be submitted in writing to the Owner Representative for approval.

All live plants and seed, including bare roots, live stakes, and all container grown plants including shrubs and trees, shall be produced in nurseries that do not use neonicotinoids in the storing or production of the plants or the storing or production of the seed producing plants. Plants stored on site shall be given proper horticultural care until installation. Plants shall be free from insects, diseases and weeds; and must show appearances of normal health and vigor.

All plant material, including collected stock, shall comply with the State and Federal laws with respect to inspection for plant diseases and insect and weed infestations. The plants shall be carefully protected to ensure that the plants are delivered in a good condition.

All plants shall be free of unacceptable weed species, pests, root or crown rot, mold and debris.

All plants shall have been in current pot a minimum of six (6) weeks. Plants shall be free of Woody circling roots.

B-8 MULCH

Shredded hardwood mulch shall conform to the requirements of MNDOT 3882, Type 6 mulch. Natural color undyed mulch only. Contractor shall install mulch in planting areas not susceptible to flooding, and/or all planting areas not specified for vegetation establishment in combination with seed.

B-9 TEMPORARY EXCLUSION FENCE

Exclusion fencing shall be installed immediately after the start of planting operations and placed according to the Plans and Specifications, or as directed by the Owner Representative. Contractor shall submit written request for approval by Owner Representative for the need of additional fencing material. Steel securing staples shall be used for fence installation only; are temporary; and shall be removed and disposed off-site by contractor during fence removal operations.

Basis of Specification Standards shall be used for the following:

(1) Heavy Duty Fence Posts – 12 Gauge; Color-Green
Size – 6.0ft H **Weight –** 5.50 lb.
(2) Vinyl-Coated Welded Wire Fence; PVC Green
Size – 2" x 4" (maximum opening dimensions) x 14 Gauge-Galvanized Steel Core (maximum gauge); 48" (maximum height)
Weight – 72.00 lb.
(3) Steel Securing Staples; 6-inch
Size – 6.0-inch x 1.0-inch x 6.0-inch

SECTION C – PROJECT EXECUTION

C-1 DESCRIPTION

The Work shall consist of furnishing all labor, tools and equipment required for grading, rip rap installation, Bio D-Block Installation, preparing soil, transporting, and installing of all seeds, live plants and other materials required for:

(1) Shoreline and soil stabilization practices
(2) Seeding and planting of native plant species
(3) The establishment and protection of seeded areas and live plants designated in the plans
(4) Site-wide management for all invasive species for two growing seasons (2023 and 2024)

C-2 PRE-CONSTRUCTION CONFERENCE

Prior to the start of the Work, there will be a pre-construction conference arranged by the Owner and Owner Representative; attended by Owner, Owner Representative, Contractor (including designated project superintendent), and others as appropriate; held to establish a working understanding among the parties as to the Work, to discuss the Project Tasks and Timeline, and set forth a Progress Meeting Schedule (See Section C-3) for which it will be mandatory for Contractor to attend.

At this meeting, the Contractor shall designate a competent project superintendent. The Contractor shall also submit a list of phone numbers for the various subcontractors, foremen and all superintendents, including numbers to use in case of emergency.

At this meeting, the Contractor shall submit in writing to the Owner Representative for approval, a schedule of procedure indicating the order in which the Contractor proposes to perform the various stages of the work. Contractor to also include anticipated start and completion dates.

C-3 PROGRESS MEETINGS

Progress meetings will be held – **Weekly, or as otherwise determined by Owner and Owner Representative** to monitor progress and coordinate activities on the project site. The Contractor and its subcontractors shall attend these meetings, provide any required documentation of progress and anticipated construction scheduling as required by Owner Representative.

C-4 JOB CONDITIONS

The Contractor shall examine and evaluate soils, and water levels, observe conditions under which work is to be performed, and notify the Owner Representative of unsatisfactory conditions. If conditions detrimental to installation or plant growth are encountered, such as prolonged high or low water levels different from expected that may affect revegetation unit success, the Contractor shall notify Owner Representative.

C-5 UTILITY COORDINATION

Contractor shall notify Gopher State One-Call for all utilities locates prior to work initiation.

Private Landowners shall provide private utility locates at the request of the Contractor. The Contractor is not responsible for private underground facilities and utilities (wires, cables, irrigation, electrical, etc.), but shall be required to coordinate and receive confirmation from

landowners to ensure all private utilities are located or indicated to the fullest extent conceivable prior to the commencement of restoration work.

C-6 CONSTRUCTION SURVEYING

Contractor shall provide construction surveying for the onsite staking of critical construction elevations; elevations shall be staked in the field for positioning review and approval by Owner Representative prior to commencement of work activities; and maintained in place by the Contractor until project completion. Critical construction elevations as specified below should be staked, for a minimum of once per site, or additionally as necessary.

Basis of Specification Standards for Construction Survey Staking shall be used for the following critical elevations:

1. Lake Owasso Ordinary High Water Level (OHWL): 887.10' NAVD88

C-7 PROJECT FIELD LOCATION AND LAYOUT

The Contractor and Owner Representative shall jointly inspect the work area(s) prior to the start of the restoration project to establish or verify the boundaries and/or limits of the work area(s), equipment assignment, material storage areas and access routes.

The Contractor is required to field stake all elements and boundaries to be constructed with the project and review the location with the Owner Representative prior to construction of the element. Project elements and boundaries constructed without Owner Representative approval that are constructed in the wrong location or with the wrong elevation shall be removed at the Contractor's expense and replaced per the requirements of the plan and field conditions. Contractor shall provide Owner Representative with 72-hour notice of each field meeting needed for approval.

The Owner Representative will provide flagging of unique features, trees or ground cover vegetation to remain and/or be relocated prior to construction. The Contractor shall provide Owner Representative with 72-hour notice to when flagging will be required.

C-8 SITE WIDE MANAGEMENT FOR HERBACEOUS WEEDS

The Contractor shall begin management for herbaceous weeds as soon as the growing season begins in 2022. Sites identified for preliminary weed infestation severity have been indicated on the Construction Drawings; to be field verified by Contractor.

The Contractor shall coordinate timing and methods for eradication of all woody and herbaceous weeds throughout the Installation Contract Period of the 2022 growing season and Maintenance Contract Period of the 2023 and 2024 growing seasons. The Contractor shall thoroughly inspect each site – once per month during the growing season (May– October) and perform eradication of all invasive species, including re-sprouts of woody invasives removed previously as well as all herbaceous invasive plants as listed below in weed control plan.

The Contractor shall provide to the Owner Representative a detailed management inspection report, including amount of staff people on site, type and quantity of herbicide used, type of

equipment used if any, and a general description of the work performed, including areas in which invasive plants were controlling and if further action should be taken, for the entirety of the contract period.

C-9 SITE PREPARATION

Before soil preparation and planting activities commence, the Contractor shall control and eliminate all competing vegetation located within the project limits; designated per plan; or as not to remain by Owner Representative, including but not limited by: all native and non-native; annual, biennial or perennial; lawn and turfgrass-type, bed plantings, etc.

Additionally, Contractor to control and eliminate all other plant species listed in part of the Minnesota Noxious Weed Law (Minnesota Statutes 18.75-18.91). **No noxious weed or non-desirable plant species shall be allowed to recolonize and go to seed at any point during the contract period.**

At least 14 days prior to seeding and planting in areas shall be a foliar spray of glyphosate, to be added in areas with large numbers of broadleaf and turfgrass species present. Obtain approval by Owner Representative before planting; Owner Representative will approve seeding and plant installation after site has been herbicided and all turfgrass and weeds are dead.

Timing	Activity
2 weeks before seeding or planting	Herbicide Application 1: Broadcast Spray Herbicide all areas
5-7 days after herbicide application 1	Mow/Cut: Mow/Cut all areas to height 4-6” as necessary.
2 weeks after beginning of site preparation	Begin seeding and planting if no unacceptable species are visible to Owner’s Representative within 14 days of herbicide application and Owner Representative approves seeding and planting; otherwise apply herbicide again as directed until approval from Owner Representative is obtained.

The contractor shall provide adequate surface preparation and soil treatment required to facilitate maximum germination and growth success for plants. Site shall be relatively free of debris before planting. Dead turfgrass shall remain undisturbed for soil stabilization; or as approved by Owner Representative. All soil preparation prior/post planting activities will be conducted on the contour to reduce erosion. In areas of exposed soils, Contractor must allow all soil to effectively settle before planting.

C-10 CLEARING OPERATIONS & VEGETATION REMOVAL

Clearing Operations of existing vegetation shall be according to MNDOT 2101 Specification. Contractor shall cut off, remove and dispose of trees under 4” in diameter, brush, shrubs, intrusive suckering of existing trees, bedding plants, herbaceous perennials, and other plant life within the boundaries of each site as identified on the plans; which is not specifically designated to remain; or as directed by Owner Representative. Contractor shall be responsible for securing a disposal

area offsite and shall comply with all regulations and secure any permits necessary for the proper disposal of the material. The Contractor shall inspect each site identified in the Construction Drawings prior to the bid opening to satisfy the amount of clearing operations required.

Contractor is required to cut woody species flush to the ground, or at a point no greater than 6-inches of the ground. Contractor shall treat fresh cut stumps with herbicide immediately within a 24-hour period and shall use the appropriate herbicide (Section B-2).

The contracted Work may require grubbing of singular Trees as necessary, identified per plan and/or as determined by Owner Representative where located within project layout boundaries. The Contractor shall identify specific trees greater that 4" in diameter that need to be removed to accommodate design and restoration work. Contractor shall notify Owner Representative for approval prior to removal of impacted trees. Contractor shall provide Owner Representative with 72-hour notice of each field meeting needed for approval.

C-11 SEEDING SCHEDULE

At least three weeks prior to beginning work in each area, Contractor shall submit a seeding plan for approval by the Owner Representative. This plan shall include proposed methods of site preparation, seeding, species, quantities, and types of propagules, proposed surface preparation and equipment.

C-12 SEEDING DATES

All seeding dates shall be performed during May 15-June 30 of the 2022 growing season; variance may be granted due to seasonal conditions with approval by Owner Representative.

C-13 SEEDING

Contractor shall notify the Owner Representative 24 hours prior to beginning the seeding operations.

Contractor shall seed all areas using a broadcast method of seeding; or equal. The broadcast method will use broadcast seeding equipped with an agitator that effectively prevents seed from bridging or plugging. Seed shall be broadcast twice over each area to help insure even distribution, with the second broadcast perpendicular to the first route of seeding. The seeded area shall be hand-raked to the extent necessary to cover the majority of the seed with 1/8" to ¼" of soil. 1/8-inch to ¼-inch of soil.

All cover crop shall be mixed and sown accordingly, and specified rates of application, to be used will be the standard Minnesota State Seed Mix 21-111 (Oats Cover Crop), OR, the standard Minnesota State Seed Mix 21-112 (Winter Wheat Cover Crop); see MNDOT Table 3876-1. For all Permanent Native Seed Mixes, oats and winter wheat shall be selected based on the time of year that the Permanent Native Seed Mix is being used; Contractor shall specify cover crop in species submission to the Owner Representative for approval.

Within 12 hours, if conditions permit or as soon thereafter as practical, the Contractor shall cover all seeded areas with specified erosion control blanket. The Contractor shall be fully responsible for implementing and maintaining permanent and temporary erosion control measures within

prescribed planting areas until vegetated cover has been established to the Owner's Representative's satisfaction.

No fertilizer shall be applied to any seeded areas for any reason.

C-14 SITE RESTORATION

Turf establishment shall apply to all disturbed areas not specified for permanent native seed or live plantings, designated per plan and/or otherwise stated; shall be according to MNDOT 2575, except as modified. Turf establishment shall occur within two (2) weeks of completing grading activities and/or soil bed preparation. Contractor shall be responsible for maintaining and watering during installation and for at least 60-day establishment period after acceptance. The volume of water shall be per plant requirements for establishment and normal growth. Contractor shall provide written request for acceptance inspection.

C-15 LIVE PLANTING INSTALLATION

Four (4) Revegetation Units were delineated for this project based on elevation, anticipated soil and hydrologic conditions, special installation and treatment needs associated with each site respectively. The planting locations and layouts shown in the Plan are approximate. The Contractor shall stake the exact locations and layouts of plants for approval by Owner Representative. Contractor shall provide Owner Representative with 72-hour notice of each field meeting needed for approval. To remedy unanticipated localized problems and seasonal conditions that may hinder plant establishment, the Contractor may request approval by Owner Representative to relocate plantings, to make plant substitutions, or to modify soil or drainage characteristics in accordance with what is shown on plan.

Contractor shall layout a minimum of five (4) sites for plant layout review and demonstration of planting for approval by Owner Representative, to insure adequate layout and proper installation techniques are administered. All Supervisors and laborers completing aforementioned activities shall be present onsite. Contractor shall provide Owner Representative with 72-hour notice of each field meeting needed for approval.

All planting dates shall be performed during May 15-October 15 of the 2022 growing season; preference for early-season planting; or as specified; variance may be granted due to seasonal conditions with approval by Owner Representative. Contractor shall time planting of all live plant material with weather conditions (including rainfall and temperatures) and hydrology per site. Live plant installation specified for areas in combination with seeding activities, shall occur after all seeding activities have been completed per site. Contractor shall install plants in conformance with each Revegetation Unit as shown on plans; and as specified in planting details and schedules. Live plants shall be randomly planted within the specified enclosure areas to provide a non-uniform appearance, in large clusters or group counts of like species throughout the site. Immediately after planting operations begin on site, the enclosures must be properly installed and located (See Section C-17). Substantial completion of planting activities for Revegetation Unit-1 and Revegetation Unit-2 estimated to cease by September 1, 2022.

All planting dates for Revegetation Unit-3 shall be performed during May 15-Aug 30 of the 2022 growing season; variance may be granted due to seasonal conditions with approval by Owner

Representative. Contractor shall hand plant the prescribed quantities of aquatic emergent plants within the areas specified on the plans for Revegetation Unit-3 and shall time planting after water levels have stabilized. Substantial completion of planting activities for Revegetation Unit-3 shall be completed by August 30, 2022.

Emergent plants must be planted with their tops out of the water, plant species exceptions include: *Sagittaria latifolia* (Broadleaf Arrowhead). Revegetation Unit-3 specifies emergent plantings in areas per site ranging from areas with saturated soils, staggered along the edge of the water line, and areas of inundation or shallow water. Active water levels during the contract period will dictate the extent waterward at which the aquatic plantings can be established, but shall not be installed beyond a water depth of one (1) foot; or as approved by Owner Representative.

Plant stock shall be installed on the day of delivery to the Project site unless temporary storage methods are employed. Prior to being installed, the roots of all plants shall be kept completely covered with a moisture-holding material (wood chips, straw, sawdust, moss, or soil) that is kept thoroughly and continuously moist and protect from drying winds, direct sunlight, excessive heat, freezing, low humidity, inadequate ventilation, and animal or human harm. Plants with damage, that has occurred or has been discovered during temporary storage, will become unacceptable. Plants shall not remain stored from one planting season to the next.

C-16 MULCH

Contractor shall place mulch material as shown on plans and in standard planting details no later than seven days after plant installation. Placement of mulch that is contaminated with soil or other materials and inconsistent with the requirements of MNDOT 3882 (Mulch Materials) will be considered unacceptable and shall be removed from the Project.

C-17 TEMPORARY EXCLUSION FENCE

Contractor shall install exclusion fencing immediately surrounding the entire perimeter of each restoration area per site once planting operations have begun; extending waterward to encompass aquatic-emergent plantings as necessary. Contractor shall tie all adjacent and neighboring restoration site fencing together; shall coordinate with landowners regarding all dock staging and access sites; or as directed by Owner Representative.

All exclusion fencing shall remain for the duration of contract and maintenance periods; Contractor to remove exclusion fence upon notification by Owner Representative at the termination of the 2024 maintenance season; or as directed by Owner.

C-18 PLANT INSTALLATION PERIOD

At all times, seedings and plantings shall be maintained for the duration of the Plant Installation and Contract period. Maintenance shall include all operations necessary for the vigorous establishment of all seedings and plantings.

Watering of seedings and plantings shall be incidental to the maintenance and establishment operations, except as otherwise stated by Owner, and/or hereby supplemented with the following:

Contractor shall be responsible for watering during installation and for at least 60-day establishment period after acceptance. The volume of water shall be per plant requirements for establishment and normal growth. Contractor shall provide written request for acceptance inspection after 60-day establishment period. Upon which acceptance is awarded, responsibilities for watering all seedings and plantings will be the responsibility of the private landowner.

C-19 INSPECTION AND ACCEPTANCE

The Owner Representative reserves the right to inspect seeds and plant materials, either at place of growth or at site before planting, for compliance with requirements for name, variety, size, quantity, quality and mix proportion.

Upon request, Contractor shall supply written affidavit certifying composition of Contractor supplied seed mixtures and integrity of plant materials with respect to species, variety, source and germination.

Final Acceptance:

(1) Acceptance of Installation: When the seeding or planting is completed, the Owner Representative will, upon request make a final inspection to determine acceptability.
(2) Acceptance of Guaranteed Work: A minimum of one year after the seeding and planting installation is completed, the Owner Representative will, upon request, make a final inspection to determine acceptability.

Performance Standards: Contractor shall be responsible for the satisfactory growth of plants and all areas seeded under the Contract until final acceptance of the work at the end of the contract period.

Areas for Acceptance of Maintenance

(1) Field Confirmation: Acceptance of the work will be determined by onsite review. The Owner's Representative shall conduct a review for each unit per site.
    1. The review shall be conducted during the first full growing season after seeding and/or planting.
    2. The field confirmation will review each unit that was seeded and/or planted per site respectively. If the unit area has minimum 80% of expected and acceptable cover species (See Section C-9) established; the seeding work will receive acceptance of guaranteed work. If at least 95% of the live plantings are healthy as determined by the Owner's Representative, the live plantings will receive acceptance of guaranteed work.

Non-Compliance: Where inspected seeding work does not comply with the requirements, Contractor shall replace rejected work until inspected again by the Owner's Representative and found to be acceptable. Rejected plants and materials shall be removed promptly from the project site. Contractor shall re-sow at half the original seeding rate and replant unhealthy plants in failed areas of live plantings within 2 weeks of Owner's Representative's notification.

C-20 FINAL CLEAN-UP

Upon completion of the work and before preliminary acceptance and final installation payment will be made, the Contractor shall clean and remove from the site of the work surplus and discarded materials, temporary structures, and debris of every kind.

The Contractor shall leave the site of the work in a neat and orderly condition equal or better than that which originally existed.

Surplus materials removed from the site of the work shall be disposed of at locations approved by the Owner's Representative.

SECTION D – FULL-SITE MANAGEMENT AND MAINTENANCE

D-1 DESCRIPTION

The Full-Site Management and Maintenance contract of two calendar years, begins on the date which all planting operations, have been satisfactorily completed and final acceptance of the project is awarded, unless otherwise specified.

The Work more specifically consists of furnishing relevant expertise as well as all labor, materials, equipment, skills, and performing all operations required to complete all requested maintenance work, which includes, but is not limited to, mobilization and demobilization; maintenance of plantings; plant replacement; herbicide furnishment and application; invasive species management and removal; mulch replenishment; furnishing, installing, and maintaining erosion control measures as necessary; acquisition of all necessary permits to perform the Work; regular reporting of completed operations (See Section C-8 and C-9); and complete site restoration of all disturbed areas all as directed by the Owner. All live plant material installed by Contractor shall be warranted for 120 days after installation; replaced at no cost to the Owner.

The Contractor shall thoroughly inspect each site – once per month during the growing season (May – October), to control all competing vegetation sites shall be maintained approximately six (6) times or as determined per site requirements and/or as budgets allow, throughout the growing seasons for 2023 and 2024.

The Contractor shall provide to the Owner a detailed management inspection report, including amount of staff people on site, type and quantity of herbicide used, type of equipment used if any, and a general description of the work performed, including areas in which invasive plants were controlling and if further action should be taken, for the entirety of the contract period.

D-2 MAINTNENACE DUTIES

Each site included in the contract for this project shall be subject to the same maintenance requirements, progress schedule and reporting. Maintenance duties shall include at a minimum but not be limited by the following:

(1) Spring Clean-up and Mow: All planted areas shall have all perennial vegetation from the previous growing season removed to within four (4) inches above the ground, but not less

than four (4) inches. Shrubs shall be pruned to remove dead and dying vegetation. Clear sites of debris and obstructions from over-wintering that may be detrimental to growth success, and reset exclusion fencing; etc.

(2) Weed Control Visits: All weeds and competing species as identified by the Contractor or as directed by the Owner will be monitored and controlled via manual removal, chemical herbicide applications, spot mowing or full-site mowing regiments. Herbicide application shall be performed with extreme care shall be taken to avoid damage to existing plants and seed. Weed control via manual removal shall not occur within the first growing season in any areas planted in combination with seed. Any damaged plants and seed shall be replaced by the Contractor without cost to the Owner. All planting areas shall be completely free of weeds or all weeds shall have been chemically treated after each Control Visit. All applicable State regulations regarding the application of chemical herbicide are to be complied with including but not limited to postings/notices of application and spray records.

(3) Routine Planting Maintenance: During each growing season prior to June 15 of the contract year, the Contractor shall provide a plant replacement list to be approved by Owner, that includes plants matching those that are installed at each site per Revegetation Unit; in size, spacing and species. All plants are to be warranted for 120 days after installation and replaced at no cost to the Owner.

All mulched planting areas shall have a maintained depth of 3 inches of approved twice-shredded hardwood mulch at the end of each growing season of the Contract period. Mulch shall conform to MnDOT 3878.2 Type 6 Mulch.

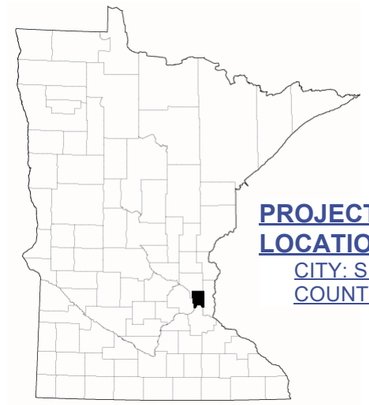
For the low grow fescue and turf establishment areas, management practices will be mowing of the areas one to two times per year and spot treating for broadleaf weed species.

D-3 INSPECTION AND ACCEPTANCE

Upon request the Contractor shall be available for site inspection and review. Any defects in the work shall be corrected per Owner request.

Exhibit B: Construction Plan Set

LAKE OWASSO SHORELINE RESTORATION



PROJECT LOCATION
CITY: SHOREVIEW
COUNTY: RAMSEY

1 VICINITY MAP
NOT TO SCALE

N

INDEX OF SHEETS

THIS PLAN SET CONTAINS 22 SHEETS

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: NA

PROJECT LOCATION

N

G101

INDIVIDUAL PROJECT SITE LOCATIONS

Owasso Shoreline Restoration Properties - 12/3/21

Ramsey-Washington Metro Watershed District

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

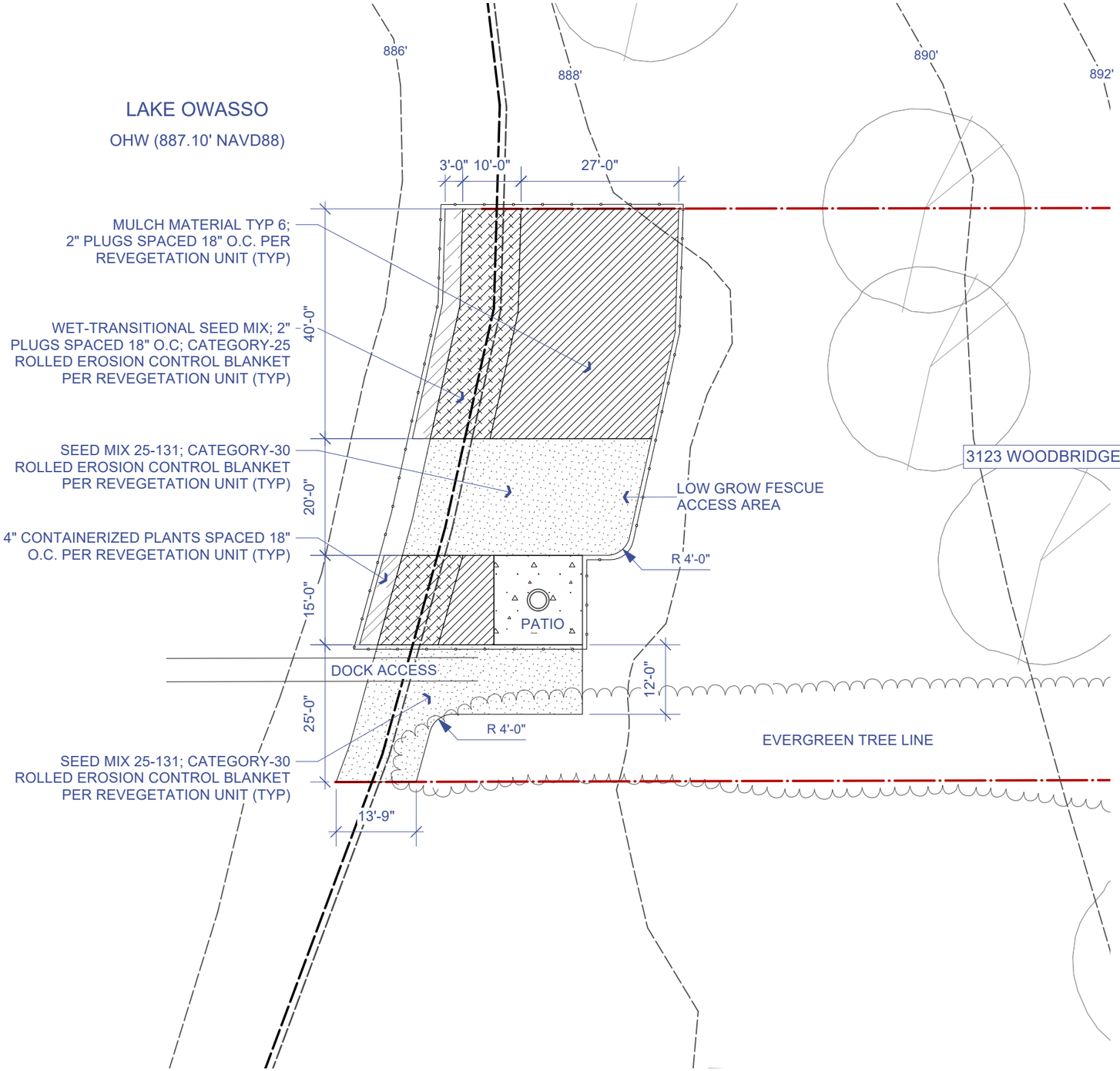
DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: NA

INDIVIDUAL PROJECT SITE LOCATIONS

L201



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	770
2	NATIVE PERENNIAL: 4" POT	EA	75
3	TEMPORARY EXCLUSION FENCE	LF	240
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	11
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	1350
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	1350
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	560
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	560
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	0
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS) [TOTAL]	LF	0
12	TREE REMOVAL & GRUBBING	EA	0

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 TOTAL AREA: +/- 1,190 SF
- REVEGETATION UNIT-2 TOTAL AREA: +/- 560 SF
- REVEGETATION UNIT-3 TOTAL AREA: +/- 170 SF
- REVEGETATION UNIT-4 TOTAL AREA: +/- 1,350 SF
- RIP RAP ROCK (NATURAL STONE) TOTAL LENGTH: +/- 0 LF

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED, AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. BIO D-BLOCK SOILS LIFTS TO SLOP & STABILIZE SHORELINE. (16-400 BIO D-BLOCK TO BE USED (16"x9"x10') OR APPROVED EQUAL) SEE PLAN DETAIL SHEETS FOR MORE INSTALLATION DETAILS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
KELENY RESIDENCE
3123 WOODBRIDGE ST

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

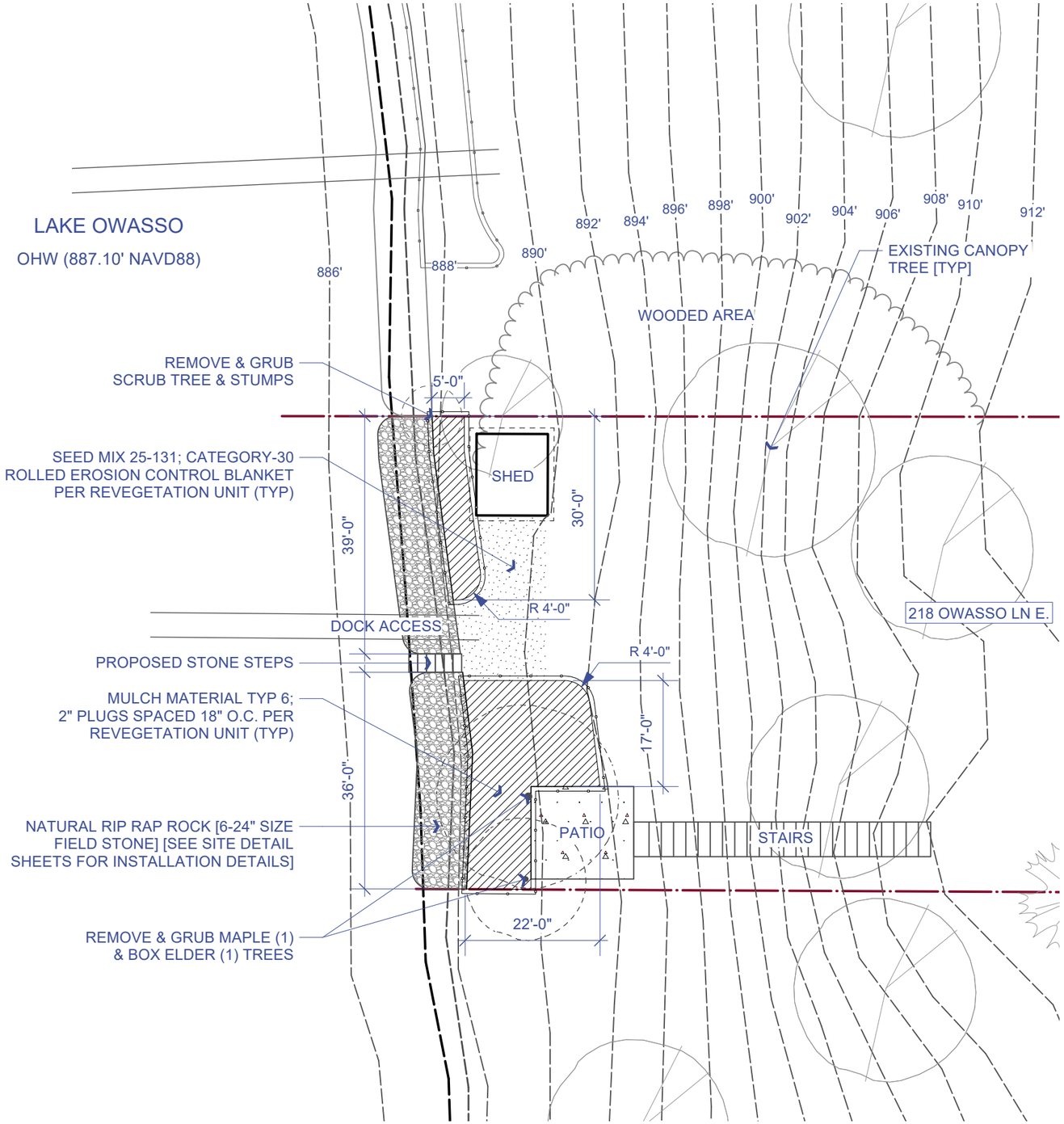
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L101



SITE SPECIFIC MATERIALS SCHEDULE			
ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	293
2	NATIVE PERENNIAL: 4" POT	EA	0
3	TEMPORARY EXCLUSION FENCE	LF	188
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	6
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	350
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	350
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	0
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	0
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	28
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	15
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	2

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 — TOTAL AREA: +/- 665 SF
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 350 SF
- RIP RAP ROCK (NATURAL STONE) — TOTAL LENGTH: +/- 75 LF (~3.5' HEIGHT LAKE BED TO TOP OF BANK)

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
COLIHAN RESIDENCE
218 OWASSO LN E

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

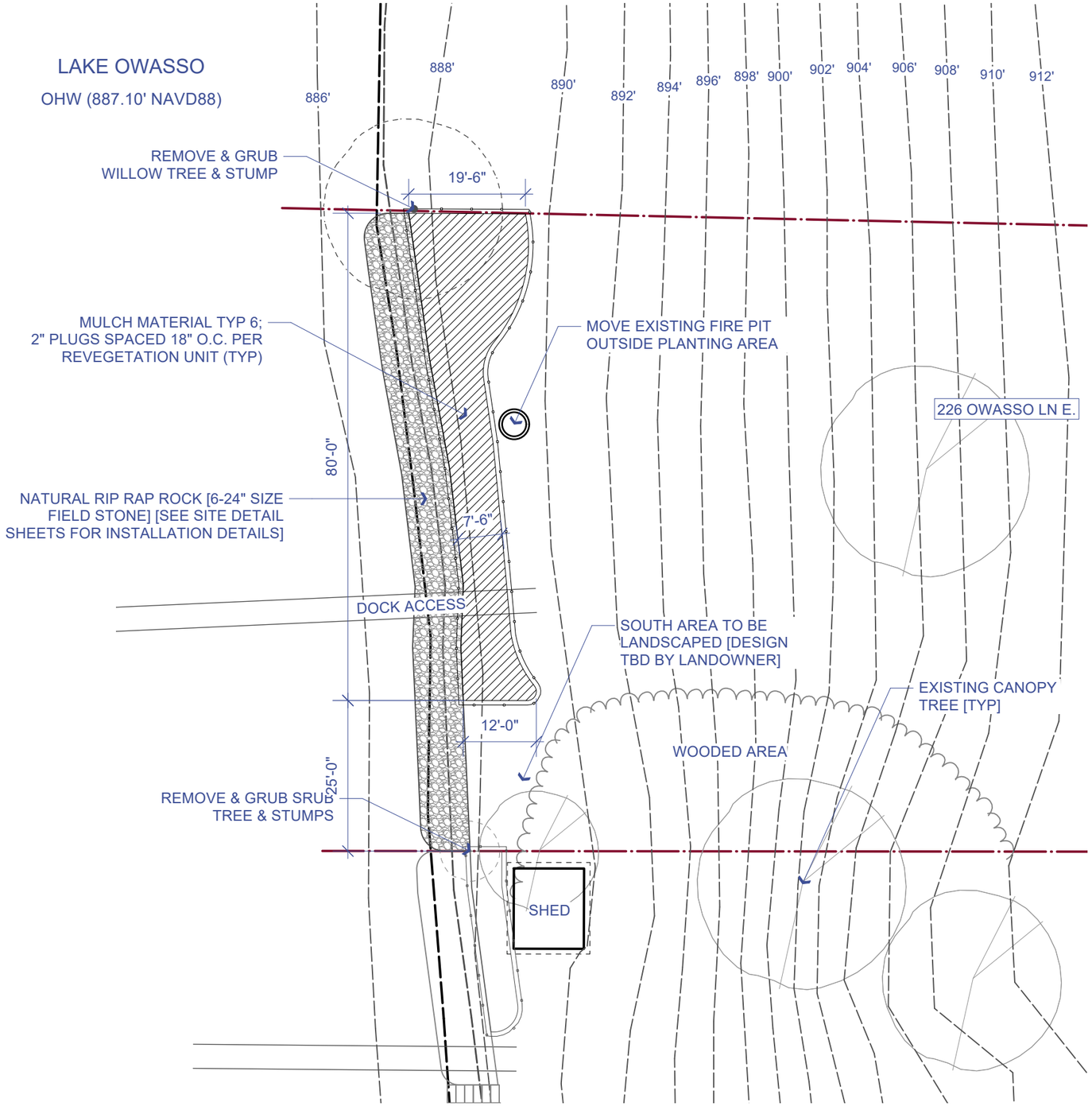
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L102



SITE SPECIFIC MATERIALS SCHEDULE			
ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	376
2	NATIVE PERENNIAL: 4" POT	EA	0
3	TEMPORARY EXCLUSION FENCE	LF	200
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	8
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	0
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	0
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	0
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	0
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	40
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	25
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	1

LEGEND

- 887.10' ELEVATION
  (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION
  (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1
  TOTAL AREA: +/- 855 SF
- REVEGETATION UNIT-2
  TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-3
  TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-4
  TOTAL AREA: +/- 0 SF
- RIP RAP ROCK (NATURAL STONE)
  TOTAL LENGTH: +/- 106 LF (~3.0' HEIGHT LAKE BED TO TOP OF BANK)

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
STOSS RESIDENCE
226 OWASSO LN E

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

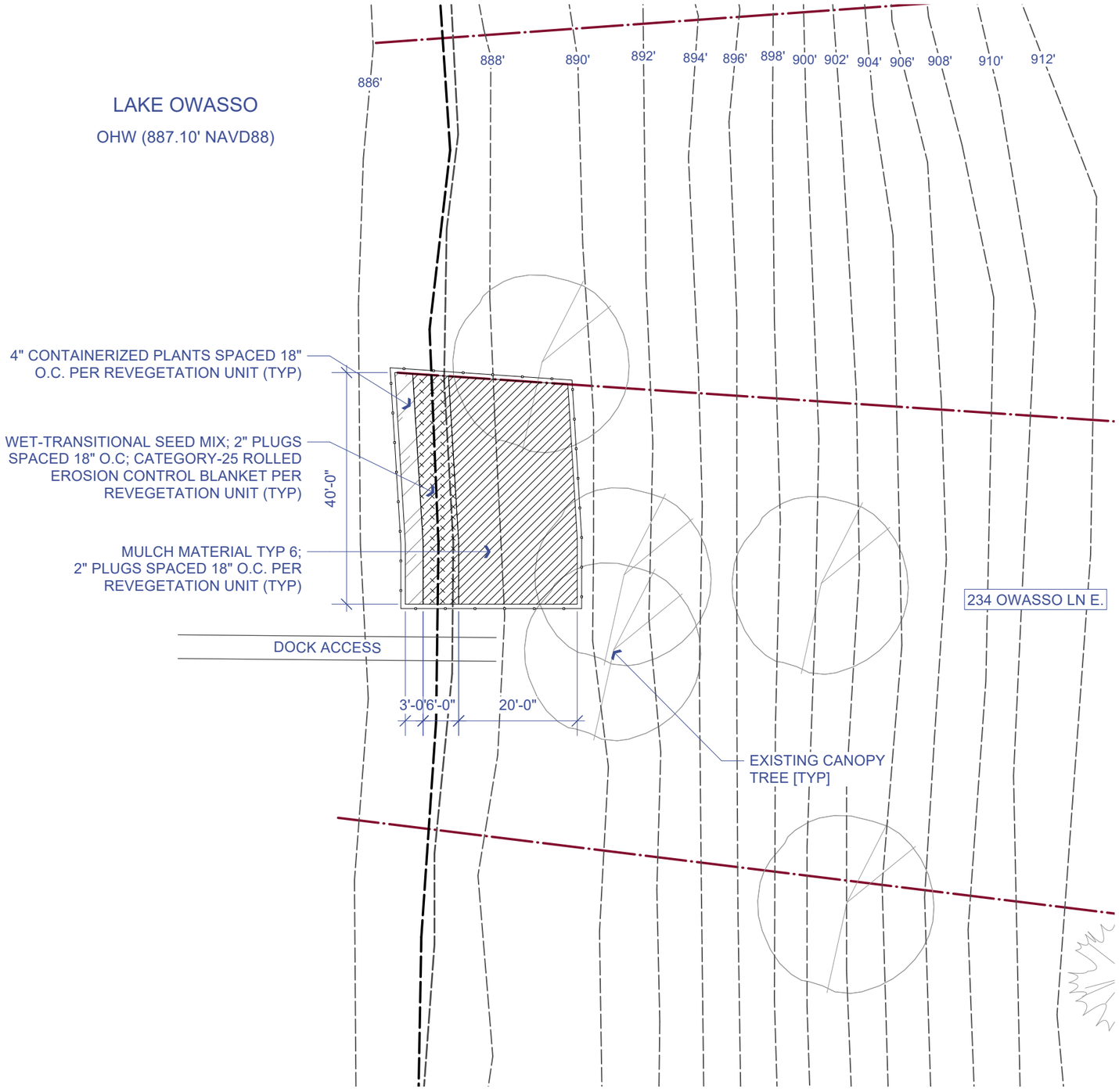
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L103



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	433
2	NATIVE PERENNIAL: 4" POT	EA	51
3	TEMPORARY EXCLUSION FENCE	LF	140
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	7
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	0
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	0
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	230
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	230
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	0
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	0

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION

- REVEGETATION UNIT-1 — TOTAL AREA: +/- 755 SF
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 230 SF
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 115 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 0 SF
- RIP RAP ROCK (NATURAL STONE) — TOTAL LENGTH: +/- 0 LF

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
SILKO RESIDENCE
234 OWASSO LN E

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

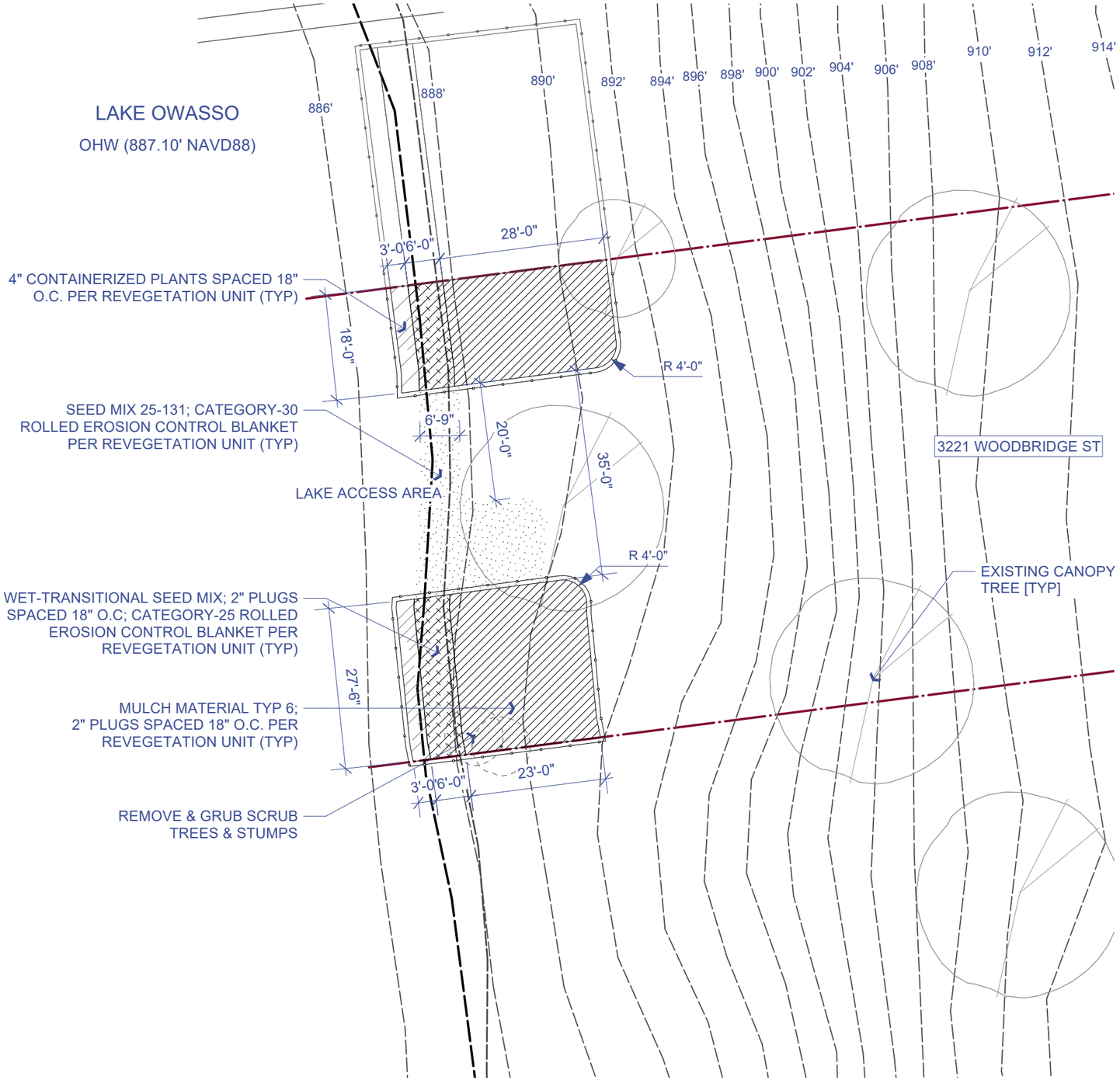
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L104



SITE SPECIFIC MATERIALS SCHEDULE			
ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	616
2	NATIVE PERENNIAL: 4" POT	EA	59
3	TEMPORARY EXCLUSION FENCE	LF	200
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	10.5
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	465
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	465
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	270
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	270
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	0
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	0

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 — TOTAL AREA: +/- 1,130 SF
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 270 SF
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 135 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 465 SF
- RIP RAP ROCK (NATURAL STONE) — TOTAL LENGTH: +/- 0 LF

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
SMITH RESIDENCE
3221 WOODBRIDGE ST

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

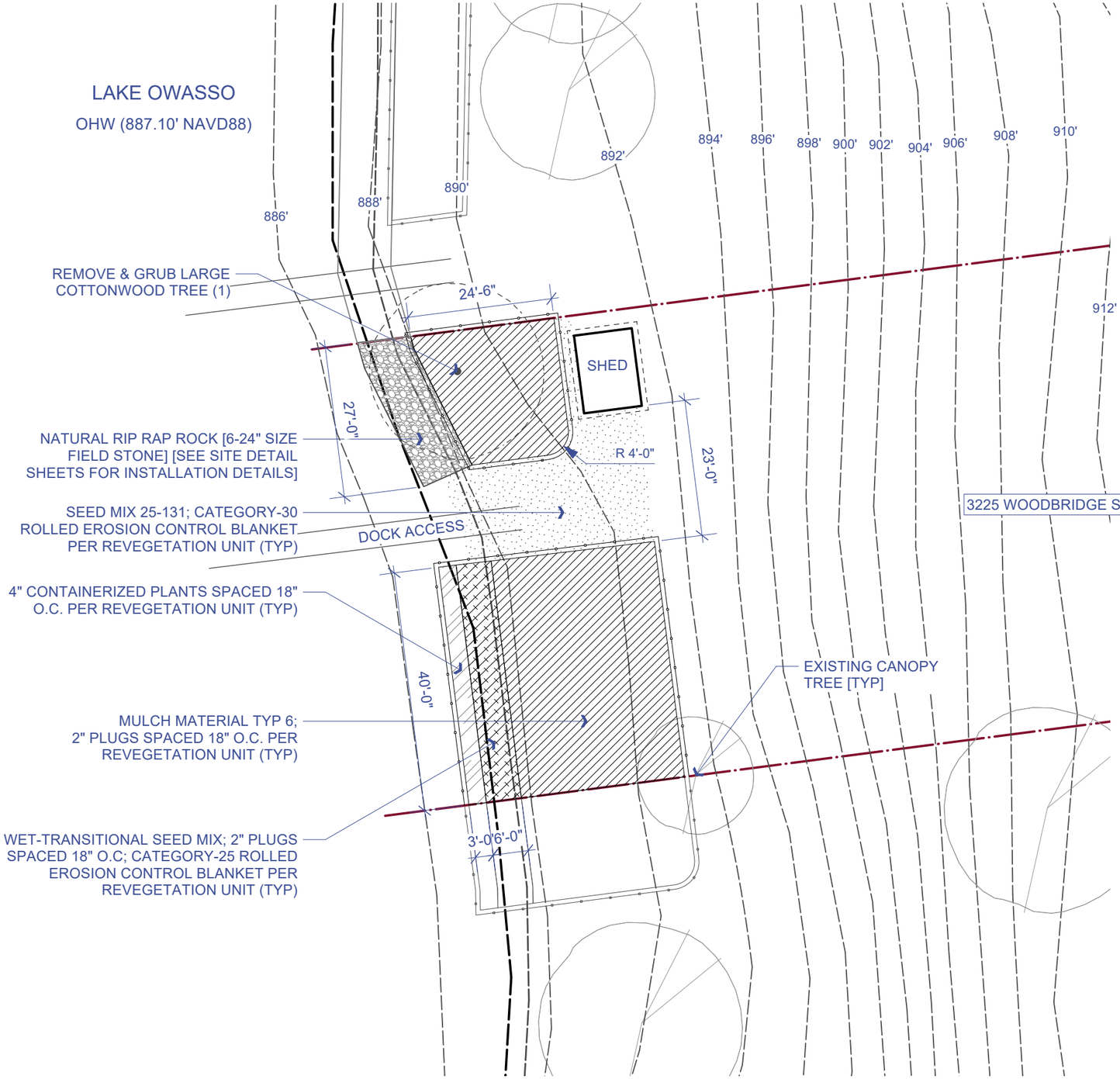
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L105



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	607
2	NATIVE PERENNIAL: 4" POT	EA	55
3	TEMPORARY EXCLUSION FENCE	LF	215
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	10.5
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	685
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	685
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	245
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	245
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	10
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	5.5
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	1

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 TOTAL AREA: +/- 1,135 SF
- REVEGETATION UNIT-2 TOTAL AREA: +/- 245 SF
- REVEGETATION UNIT-3 TOTAL AREA: +/- 125 SF
- REVEGETATION UNIT-4 TOTAL AREA: +/- 685 SF
- RIP RAP ROCK (NATURAL STONE) TOTAL LENGTH: +/- 27 LF (~3.0' HEIGHT LAKE BED TO TOP OF BANK)

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY
RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
GROVE RESIDENCE
3225 WOODBRIDGE ST

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

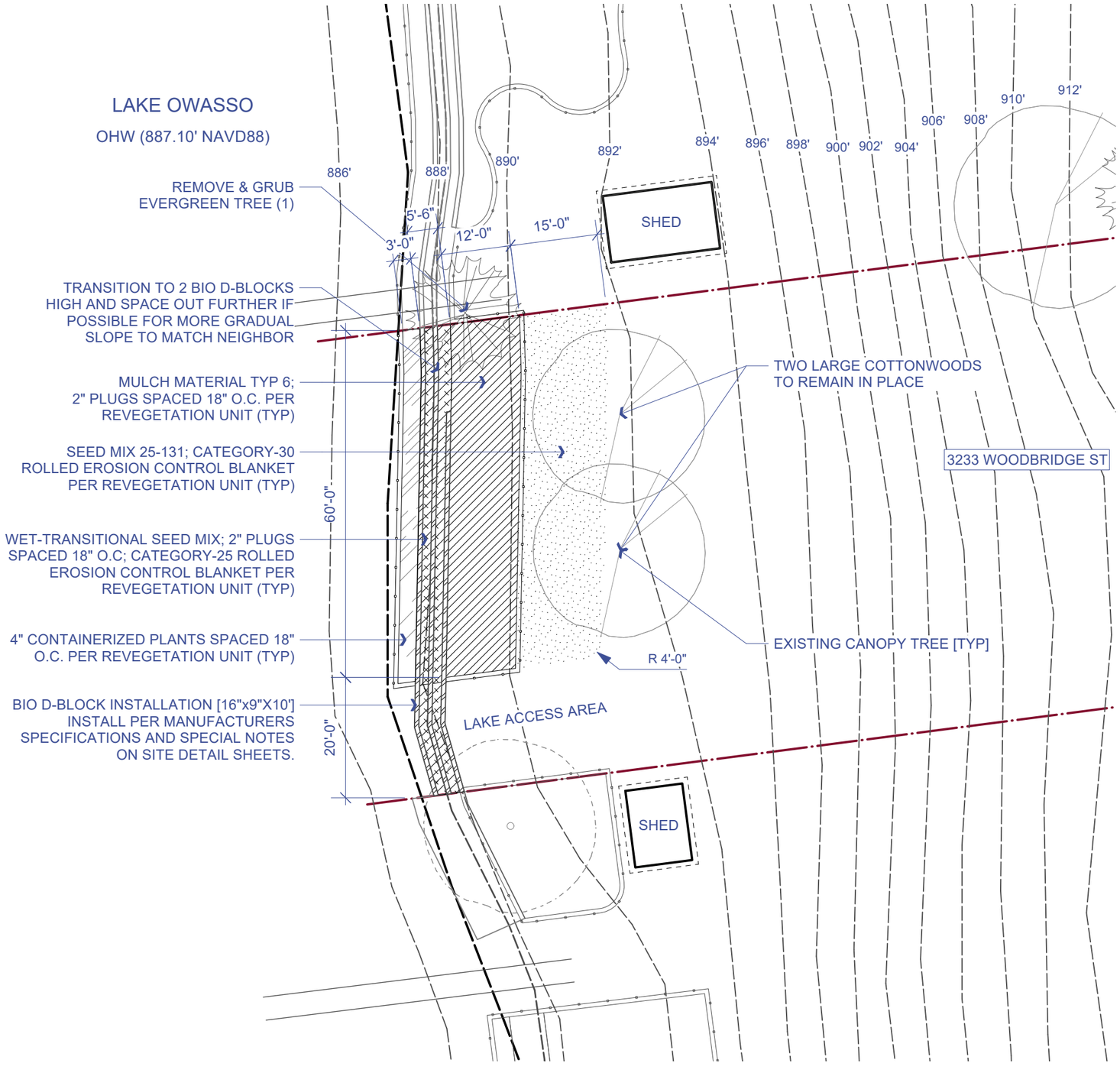
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L106



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	508
2	NATIVE PERENNIAL: 4" POT	EA	81
3	TEMPORARY EXCLUSION FENCE	LF	158
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	6.75
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	910
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	910
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	425
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	425
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	5.5
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	225
12	TREE REMOVAL & GRUBBING	EA	1

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 — TOTAL AREA: +/- 730 SF
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 425 SF (OVER BIO D-BLOCK AREA)
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 185 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 910 SF
- BIO D-BLOCK SOIL LIFTS — LENGTH: +/- 80 LF (3 LIFTS HIGH - TOTAL LENGTH OF BLOCK: 240 LF)
- RIP RAP ROCK (NATURAL STONE) — TOTAL LENGTH: +/- 0 LF

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. BIO D-BLOCK SOILS LIFTS TO SLOP & STABILIZE SHORELINE. (16-400 BIO D-BLOCK TO BE USED (16"x9"x10') OR APPROVED EQUAL) SEE PLAN DETAIL SHEETS FOR MORE INSTALLATION DETAILS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
SUNEEL RESIDENCE
3233 WOODBRIDGE ST
WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/23/2022
PAST REVISION: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

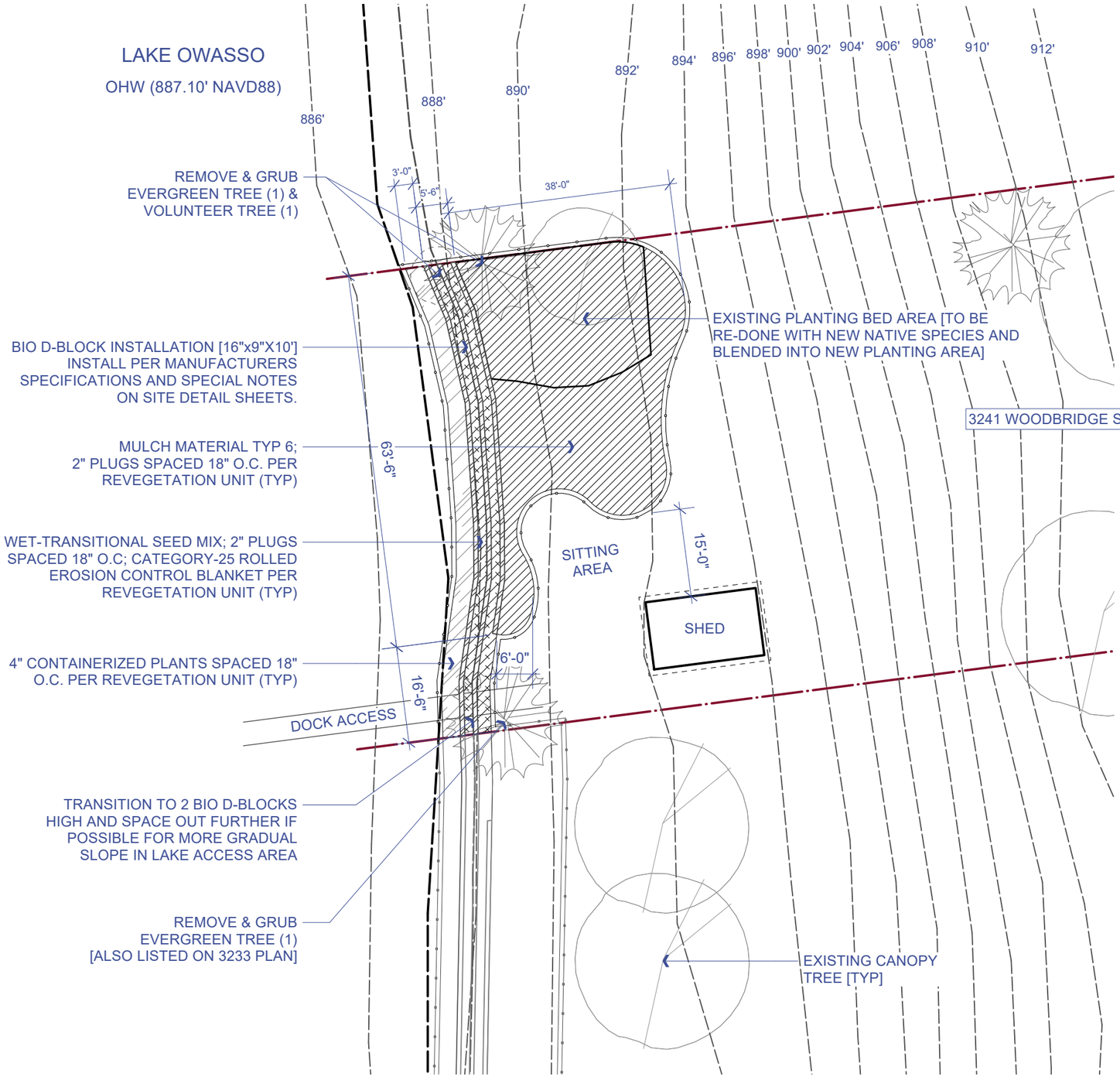
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L107



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	818
2	NATIVE PERENNIAL: 4" POT	EA	108
3	TEMPORARY EXCLUSION FENCE	LF	240
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	13.25
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	0
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	0
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	245
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	245
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	5.5
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS) [TOTAL]	LF	225
12	TREE REMOVAL & GRUBBING	EA	2

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 — TOTAL AREA: +/- 1,430 SF (650 RE-DO EXISTING PLANT BED)
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 430 SF (OVER BIO D-BLOCK AREA)
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 245 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 0 SF
- BIO D-BLOCK SOIL LIFTS — LENGTH: +/- 80 LF (3 LIFTS HIGH - TOTAL LENGTH OF BLOCK: 225 LF)
- RIP RAP ROCK (NATURAL STONE) — TOTAL LENGTH: +/- 0 LF

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. BIO D-BLOCK SOILS LIFTS TO SLOP & STABILIZE SHORELINE. (16-400 BIO D-BLOCK TO BE USED (16"x9"x10') OR APPROVED EQUAL) SEE PLAN DETAIL SHEETS FOR MORE INSTALLATION DETAILS.

RAMSEY COUNTY
RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
LINCK RESIDENCE
3241 WOODBRIDGE ST
WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/23/2022
PAST REVISION: 3/15/2022
PAST REVISION: 2/15/2022
PAST REVISION:
PAST REVISION:
PAST REVISION:
CHECKED BY:
TAA:

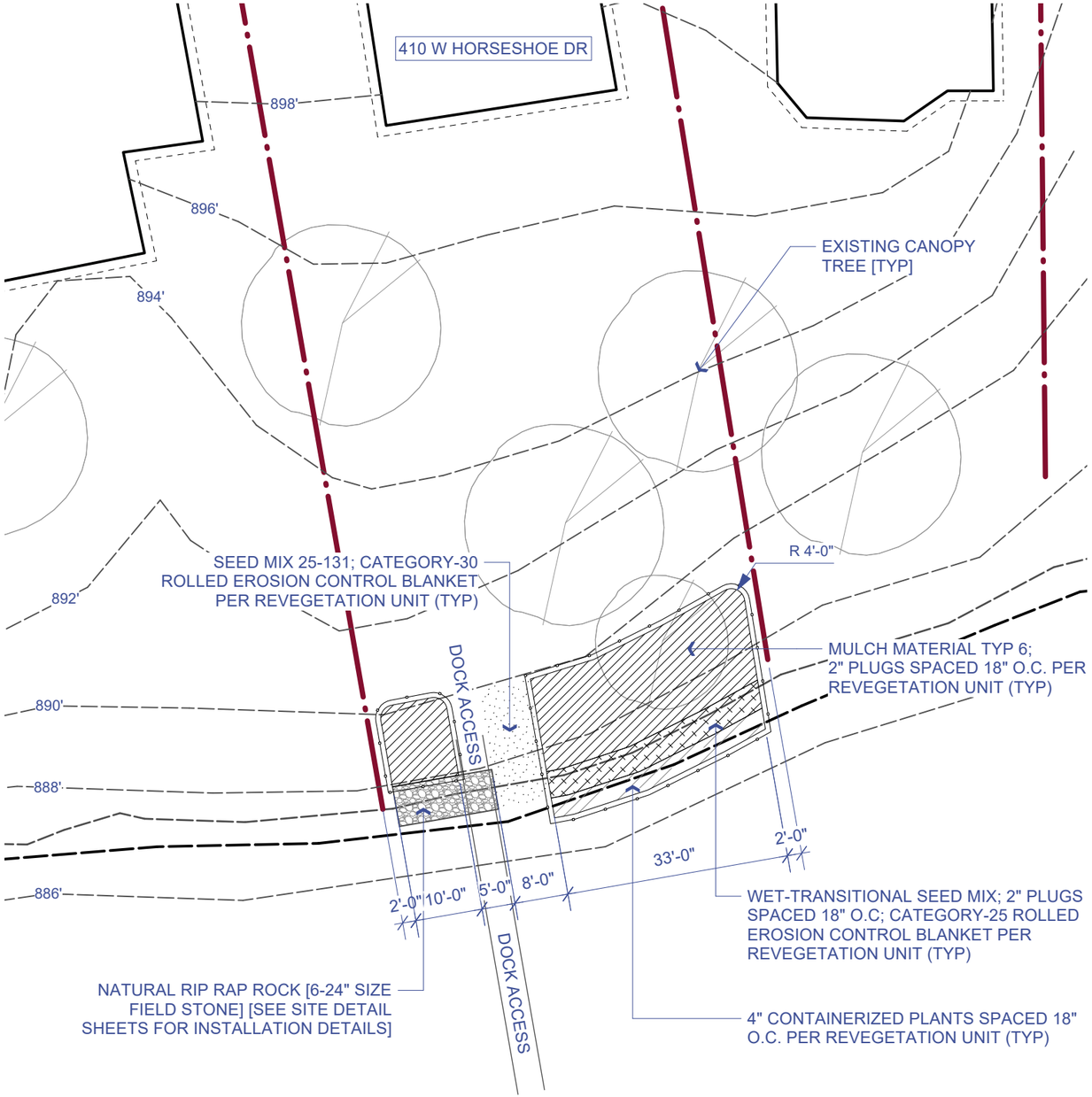
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L108



LAKE OWASSO

OHW (887.10' NAVD88)

SITE SPECIFIC MATERIALS SCHEDULE			
ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	326
2	NATIVE PERENNIAL: 4" POT	EA	44
3	TEMPORARY EXCLUSION FENCE	LF	160
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	5.5
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	145
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	145
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	100
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	100
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	5
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	2.75
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	0

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 TOTAL AREA: +/- 600 SF
- REVEGETATION UNIT-2 TOTAL AREA: +/- 140 SF
- REVEGETATION UNIT-3 TOTAL AREA: +/- 100 SF
- REVEGETATION UNIT-4 TOTAL AREA: +/- 145 SF
- RIP RAP ROCK (NATURAL STONE) TOTAL LENGTH: +/- 15 LF (~2.0' HEIGHT LAKE BED TO TOP OF BANK) [MAINTAIN CURRENT ELEVATION OF DOCK CONNECTION AREA]

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
TATEOSIAN RESIDENCE
410 W HORSESHOE DR

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
REVISION: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

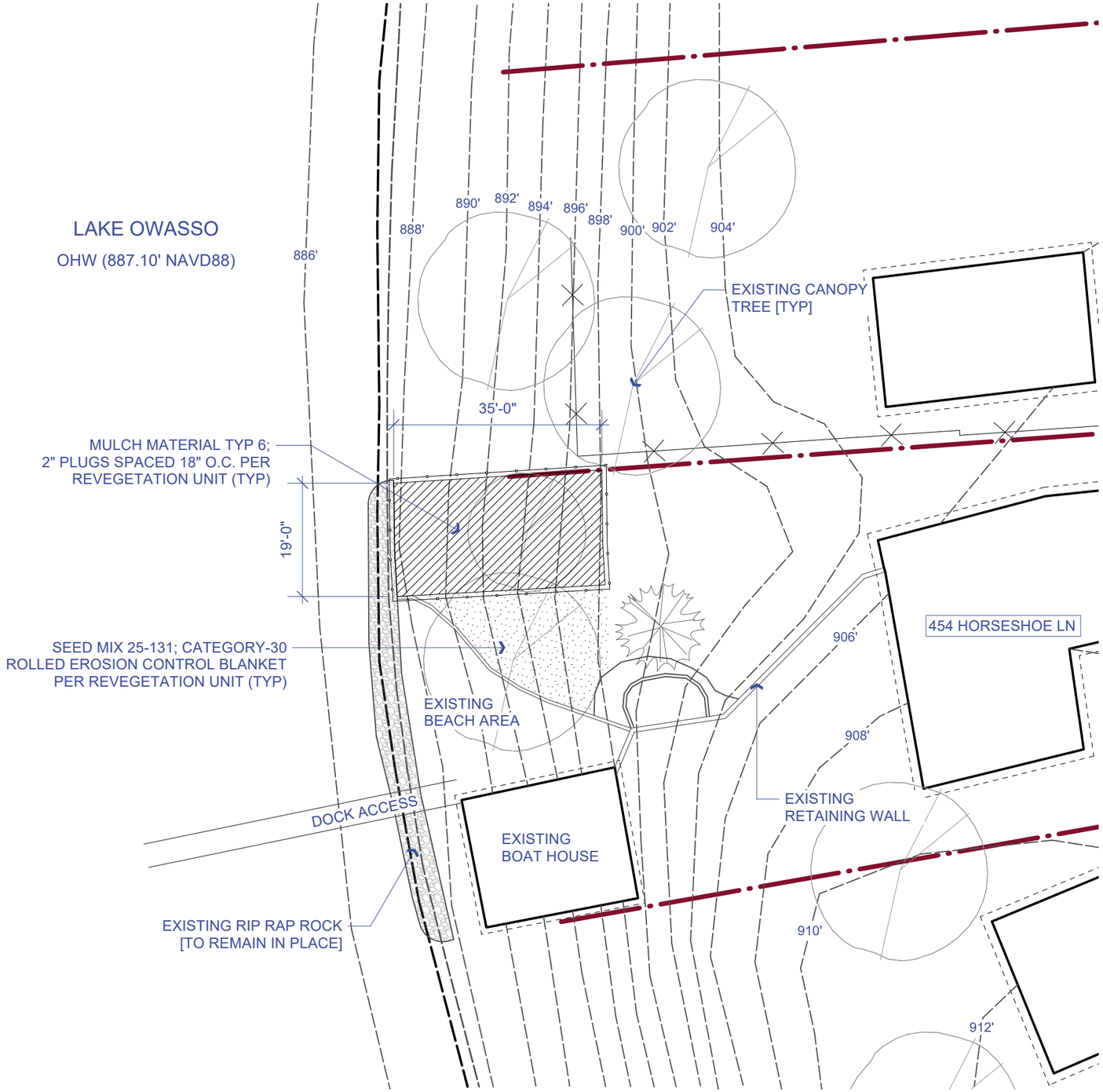
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L109



SITE SPECIFIC MATERIALS SCHEDULE

ITEM NO.	DESCRIPTION	UNIT	QTY
1	NATIVE PERENNIAL: 2" PLUG	EA	297
2	NATIVE PERENNIAL: 4" POT	EA	0
3	TEMPORARY EXCLUSION FENCE	LF	115
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	6.25
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF)	SF	420
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	420
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	0
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX)	SF	0
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	0
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	0
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	0
12	TREE REMOVAL & GRUBBING	EA	0

LEGEND

- 887.10' ELEVATION (LAKE OWASSO ORDINARY HIGH WATER LEVEL)
- BANK CUT-FACE LOCATION (APPROX DURING SITE VISIT NOV. 2021)
- PARCEL BOUNDARY (APPROX.)
- EXCLUSION FENCE / DISTURBANCE LIMITS
- 2' CONTOUR ELEVATION
- REVEGETATION UNIT-1 — TOTAL AREA: +/- 675 SF
- REVEGETATION UNIT-2 — TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-3 — TOTAL AREA: +/- 0 SF
- REVEGETATION UNIT-4 — TOTAL AREA: +/- 420 SF
- RIP RAP ROCK (NATURAL STONE) — EXISTING RIP RAP ON SITE. TO REMAIN IN PLACE.

NOTES

1. PROJECT LAYOUTS & CRITICAL ELEVATIONS SHALL BE STAKED AND VERIFIED BY OWNER REPRESENTATIVE PRIOR TO START AND SHALL REMAIN STAKED THROUGHOUT PROJECT PERIOD:
   1.1 - O.H.W.L. 887.10'
2. HERBICIDE APPLICATIONS AND SITE PREPARATION SHALL OCCUR PER PROJECT SPECIFICATIONS.
3. DEAD TURF TO REMAIN FOR SOIL STABILIZATION. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL FACILITIES IF REQUIRED; AS APPROVED BY OWNER REPRESENTATIVE.
4. ALL PLANTINGS INSTALLED BELOW WATER LINE, IN SOFT SOILS, OR IN AREAS SUBMERGED DUE TO WATER FLUCTUATIONS SHALL BE BIO-STAKED TO ANCHOR IN PLACE.
5. OWNER REPRESENTATIVE & CONTRACTOR SHALL MARK ANY/ALL UNIQUE ITEMS IN THE FIELD DURING SITE LAYOUT WALKTHROUGH THAT ARE TO REMAIN
6. CONTRACTOR SHALL CONNECT TEMPORARY EXCLUSION FENCE FOR ALL ADJACENT PROJECTS WHERE FEASIBLE
7. REVEGETATION UNIT-4 MATERIALS SHALL NOT BE INSTALLED BELOW B.F.E. 886.50'; OR AS APPROVED BY OWNER REPRESENTATIVE OR NOTED ON PLANS
8. REVEGETATION UNIT-1 MATERIALS SHALL NOT BE INSTALLED BELOW 887.50'; OR AS APPROVED BY OWNER RESPRESENTATIVE
9. RIP RAP ROCK TO BE A NATURAL FIELD STONE MIX WITH AVERAGE DIAMETER 6-24" TO MEET DNR SPECIFICATIONS. INSTALL AT 3H:1V: SLOPE MAX. SEE SITE DETAIL SHEETS FOR MORE SPECIFICATIONS.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:
STIGLICH RESIDENCE
454 W HORSESHOE DR

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/15/2022
REVISION: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: 1"=20'-0"

SITE LAYOUT

N

L110

1 REVEGETATION UNIT-1 MASTER LIST

REVEGETATION UNIT-1: UPLAND PLANT SPECIES LIST

Soil Moisture: Wet-Mesic / Mesic / Dry-Mesic / Dry

Common Name	Scientific Name	Size	Remarks
			Contractor to select species from list for the appropriate site conditions; field verification and approval by Owner Representative required. Install perennials 18" on center (specified per plan) in random groups (12-36 count per group); 6-12 species per site
Grasses		2" Plug	
Side Oats Grama	Bouteloua curtipendula		
Blue Grama	Bouteloua gracilis		
Bottlebrush Grass	Elymus hystrix		
June Grass	Koeleria cristata		
Little Bluestem	Schizachyrium scoparium		
Indiangrass	Sorghastrum nutans		
Prairie Dropseed	Sporobolus heterolepis		
Sedges & Rushes			
Bicknell's Sedge	Carex bicknelli		
Plains Oval Sedge	Carex Brevior		
Field Oval Sedge	Carex Molesta		
Spreading Oval Sedge	Carex normalis		
Long-beaked Sedge	Carex sprengelii		
Path Rush	Juncus tenuis		
Forbs & Ferns			
Butterfly Milkweed	Asclepias tuberosa		
Whorled Milkweed	Asclepias verticillata		
Anise Hyssop	Agastache foeniculum		
Prairie Onion	Allium stellatum		
Wild Columbine	Aquilegia canadensis		
Butterfly Milkweed	Asclepias tuberosa		
Panicled Aster	Aster lanceolatus		
Big Leaf Aster	Aster macrophyllus		
Lady Fern	Athyrium filix-femina		
Coreopsis Palmata	Coreopsis palmata		
Tall Coreopsis	Coreopsis tripteris		
White Priairie Clover	Dalea candida		
Purple Prairie Clover	Dalea Purpureum		
Canada Tick Trefoil	Desmodium canadense		
Purple Coneflower	Echinacea purpurea		
Pale Purple Coneflower	Echinacea pallida		
Sweet Joe Pye Weed	Eupatorium purpureum		
Wild Geranium	Geranium maculatum		
Prairie Smoke	Geum triflorum		
Ox-eye Sunflower	Heliopsis helianthoides		
Rough Blazingstar	Liatris aspera		
Meadow Blazingstar	Liatris ligulistylus		
Dense Blazingstar	Liatris spicata		
Ostrich Fern	Matteuccia struthiopteris		
Virginia Bluebells	Mertensia virginiana		
Wild Bergamot	Monarda fistulosa		
Sensitive Fern	Onoclea sensibilis		
Smooth Penstemon	Penstemon digitalis		
Prairie Phlox	Phlox pilosa		
Jacobs Ladder	Polemonium reptans		
Solomon's Seal	Polygonatum canaliculatum		
Mountain Mint	Pycnanthemum virginianum		
Black-eyed Susan	Rudbeckia hirta		
Sweet Black-eyed susan	Rudbeckia subtumentosa		
Zig Zag Goldenrod	Solidago flexicaulis		
Stiff Goldenrod	Solidago rigida		
Showy Goldenrod	Solidago speciosa		
Smooth Blue Aster	Symphyotrichum laevis		
Sky Blue Aster	Symphiotrichum oolentangiensis		
Spiderwort	Tradescantia ohiensis		
Hoary Vervain	Verbena Stricta		
Culver's Root	Veronicastrum virginicum		
Heartleaf Alexanders	Zizia aptera		
Golden Alexanders	Zizia aurea		

2 REVEGETATION UNIT-2 MASTER LIST

REVEGETATION UNIT-2: WET-TRANSITIONAL PLANT SPECIES LIST

Soil Moisture: Wet / Wet-Mesic / Mesic

Common Name	Scientific Name	Size	Remarks
			Contractor to select species from list for the appropriate site conditions; field verification and approval by Owner Representative required. Install perennials 18" on center (specified per plan) in random groups (12-36 count per group); 6-12 species per site
Grasses		2" Plug	
Canada Blue Joint	Calamagrostis canadensis		
Sedges & Rushes			
Bebb's Sedge	Carex bebbii		
Bottlebrush Sedge	Carex comosa		
Caterpillar Sedge	Carex crinita		
Porcupine Sedge	Carex hystricina		
Lake Sedge	Carex lacustris		
Common Hop Sedge	Carex lupulina		
Pointed-Broom Sedge	Carex scoparia		
Awl Fruit Sedge	Carex stipata		
Tussock Sedge	Carex stricta		
Fox Sedge	Carex vulpinoidea		
Creeping Spikerush	Eleocharis palustris		
Soft Rush	Juncus effusus		
Green Bulrush	Scirpus atrovirens		
Forbs & Ferns			
Sweet Flag	Acorus americanus		
Water Plantain	Alisma subcordatum		
Canada Anemone	Anemone canadensis		
Swamp Milkweed	Asclepias incarnata		
Nodding Bur Marigold	Bidens cernua		
Turtlehead	Chelone glabra		
Showy Tick Trefoil	Desmodium canadense		
Joe Pye Weed	Eupatorium maculatum		
Boneset	Eupatorium perfoliatum		
Sweet Joe Pye Weed	Eupatorium purpureum		
Grass Leaf Goldenrod	Euthamia graminifolia		
Sneezeweed	Helenium Autumnale		
Great St. Johnswort	Hypericum ascyron		
Northern Blue Flag Iris	Iris versicolor		
Meadow Blazing Star	Liatris ligulistylis		
Prairie Blazing Star	Liatris pychnostachya		
Dense Blazing Star	Liatris spicata		
Cardinal Flower	Lobelia cardinalis		
Great Blue Lobelia	Lobelia siphilitica		
Monkey Flower	Mimulus ringens		
Sensitive Fern	Onoclea sensibilis		
Mountain Mint	Pycnanthemum virginianum		
Riddell's Goldenrod	Solidago ridellii		
New England Aster	Symphyotricum novae-angliae		
Blue Vervain	Verbena Hastata		
Golden Alexanders	Zizia aurea		

3 REVEGETATION UNIT-3 MASTER LIST

REVEGETATION UNIT-3: Emergent Plant Species List

Soil Moisture: Below Water Line / Wet

Common Name	Scientific Name	Size	Remarks
			Contractor to select species from list for the appropriate site conditions; field verification and approval by Owner Representative required. Install perennials 18" on center (specified per plan) in random groups (12-36 count per group); 3-5 species per site
Species		4" Container	
Common Arrowhead	Sagittaria latifolia		
Hard Stem Bulrush	Scirpus acutus		
Three Square Bulrush	Scirpus pungens		
Soft Stem Bulrush	Scirpus validus		
Giant burreed	Sparganium eurycarpum		

4 REVEGETATION UNIT-2 SEED MIX

REVEGETATION UNIT-2: PERMANENT NATIVE WET-TRANSITIONAL SEED MIX

Seeding Rate: 4 lb/acre (82.5 seeds/square foot)

Common Name	Scientific Name	% of Mix	Seeds/Sq. Ft.	Total (PLS lb)
Grasses				
Fringed Brome	Bromus ciliatus	3.00%	0.20	0.04
Blue Joint Grass	Calamagrostis canadensis	0.50%	2.10	0.01
Fowl Bluegrass	Poa palustris	2.00%	3.80	0.02
Sedges & Rushes				
Bebb's Sedge	Carex bebbii	8.00%	4.00	0.10
Bicknell's Sedge	Carex bicknellii	6.00%	1.50	0.07
Plains Oval Sedge	Carex brevior	6.00%	2.60	0.07
Bottlebrush Sedge	Carex comosa	4.00%	1.80	0.05
Fringed Sedge	Carex crinita	4.00%	1.40	0.05
Porcupine Sedge	Carex hystericina	4.00%	1.30	0.05
Lake Sedge	Carex lacustris	1.00%	0.20	0.01
Palm Sedge	Carex muskingumensi	8.00%	3.40	0.1
Pointed-Broom Sedge	Carex scoparia	8.00%	9.90	0.10
Fox Sedge	Carex stipata	8.00%	4.00	0.10
Brown Fox Sedge	Carex vulpinoidea	8.00%	11.80	0.10
Great Spike Rush	Eleocharis palustris	1.00%	0.70	0.01
Common Rush	Juncus effusus	0.60%	8.30	0.01
Softstem Bulrush	Scirpus validus	5.00%	2.30	0.06
Green Bulrush	Scirpus atrovirens	0.50%	3.40	0.01
Three Square Rush	Scirpus pungens	5.00%	0.90	0.06
Forbs				
Sweet Flag	Acorus americanus	2.00%	0.20	0.02
Water Plantain	Alisma subcordatum	4.00%	3.50	0.05
Northern Blue Flag Iris	Iris versicolor	5.00%	0.10	0.06
Monkey Flower	Mimulus ringens	0.40%	13.50	0.01
Common Arrowhead	Saggitaria latifolia	1.00%	0.90	0.01
Giant Bur Reed	Sparganium eruycarpum	5.00%	0.10	0.06

5 REVEGETATION UNIT-4 SEED MIX

REVEGETATION UNIT-4: MNDOT 25-131 LOW-MAINTENANCE TURF SEED

Seeding Rate: 250 lb/ac

Common Name	Scientific Name	% of Mix
Grasses		
Hard Fescue	Festuca longifolia	25.00%
Chewing Fescue	Festuca rubra var. commutate	25.00%
Creeping Red Fescue	Festuca rubra var. rubra	25.00%
Sheeps Fescue	Festuca ovina	25.00%

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

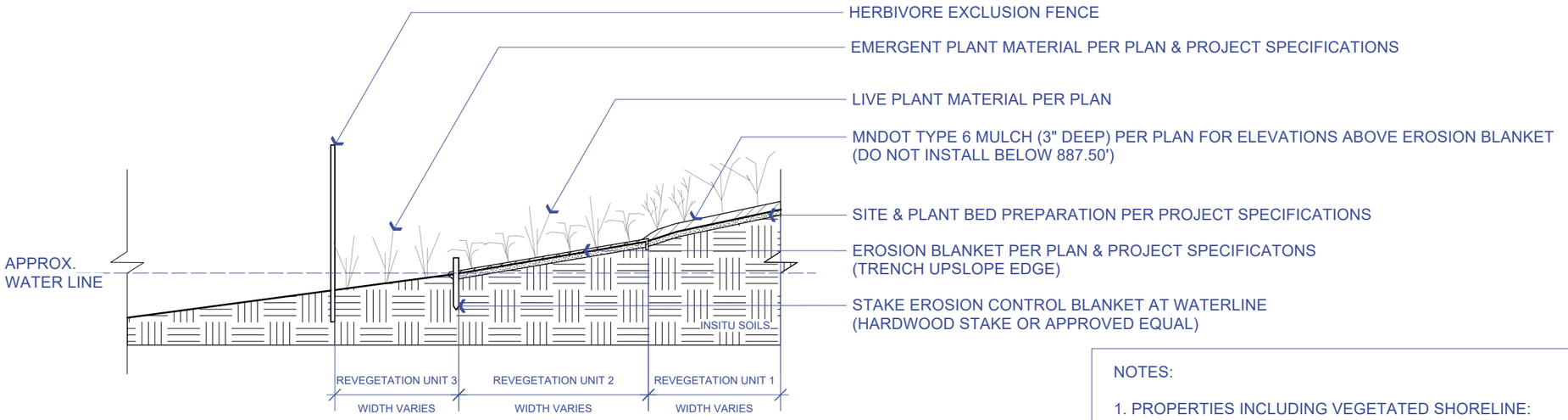
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: NA

PLANT MATERIAL LISTS & SEED MIXES

L201

1 VEGETATED STANDARD SHORELINE CROSS-SECTION
Scale: 1/4" = 1'-0"

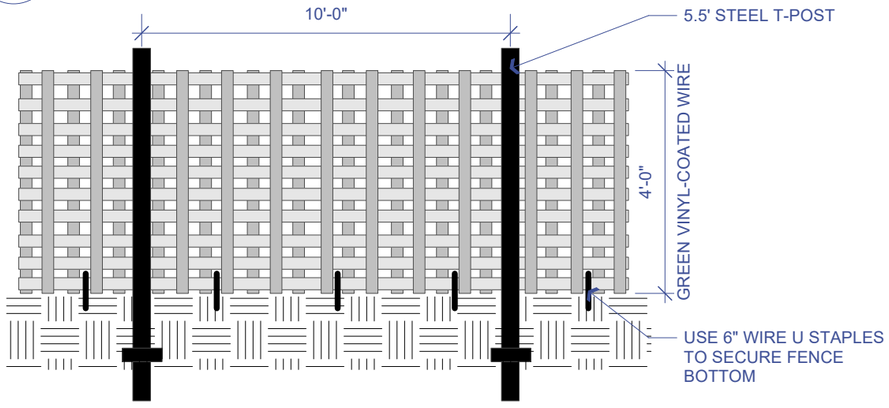


NOTES:

1. PROPERTIES INCLUDING VEGETATED SHORELINE:
   - -3123 WOODBRIDGE ST
   - -234 OWASSO LN E
   - -3221 WOODBRIDGE ST
   - -3225 WOODBRIDGE ST
   - -410 W HORSESHOE DR

2. CONTRACTOR TO FOLLOW MNDOT STANDARD PLATE GUIDELINES FOR TEMPORARY AND PERMANENT EROSION CONTROL ON SITES. SEE ATTACHED MNDOT STANDARD PLATES FOR MORE DETAIL.

2 HERBIVORE EXCLUSION FENCE DETAIL
NOT TO SCALE



RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

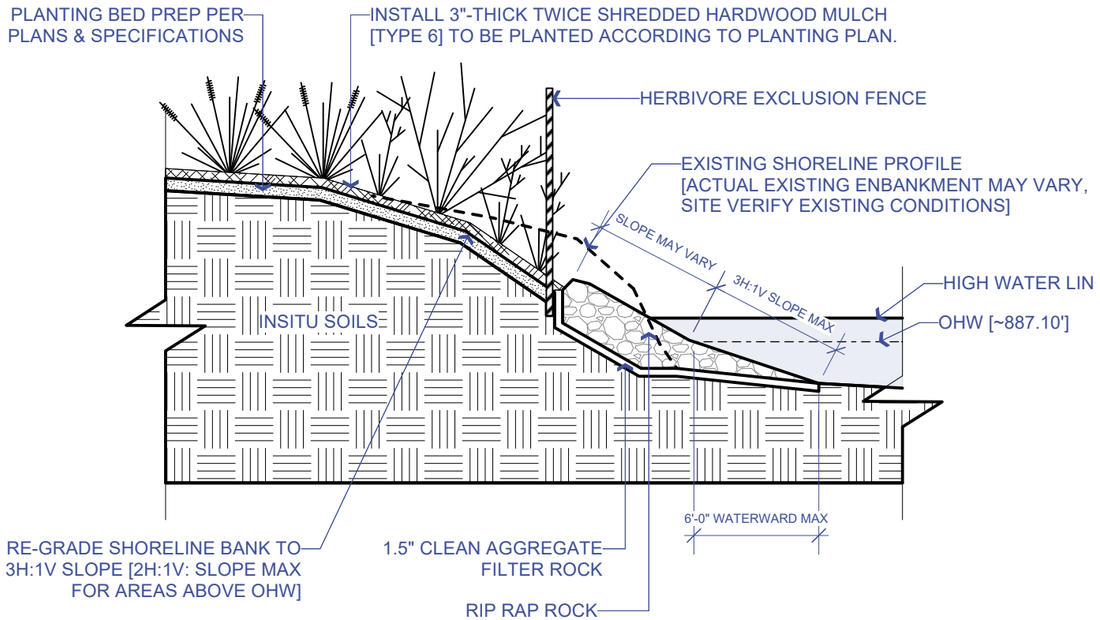
SCALE: NA

SITE DETAILS

L301

1 RIP RAP STANDARD SHORELINE CROSS-SECTION

Scale: 1/4" = 1'-0"



NOTES:

1. RIP RAP GRADATION TO BE 6-24" NATURAL FIELDSTONE ROCK, USE MNDOT CLASS III RIP RAP ROCK OR APPROVED EQUAL. VERIFY SIZING WITH RAMSEY COUNTY STAFF PRIOR TO PURCHASE & INSTALLATION.

2. THE LARGEST ROCK OF THE RIP RAP SHOULD BE PLACED OVER THE TOE AND END TO ANCHOR THE INSTALLATION. USE TYPE A TOE DESIGN [SEE NRCS TECH NOTE 2 FIGURE 2-5] DUMPED ROCK WILL BEST ADJUST ITSELF TO AN UNEVEN AREA. HAND PLACED ROCK IS EASILY DISRUPTED.

3. RIP RAP SLOPE NOT TO EXCEED 3:1 WATERWARD OF THE OHW. [FOLLOW NATURAL SHORE ALIGNMENT]

4. INSTALL FILTER/SETTING BED OF 1.5" CLEAN WASHED AGGREGATE. APPROXIMATELY 6" THICKNESS OF FILTER BED ROCK. [DO NOT USE LANDSCAPE FABRIC]

5. RE-GRADE AREA ABOVE RIP RAP [3H:1V SLOPE PREFERRED, 2H:1V SLOPE MAXIMUM]. INSTALL 3"-THICK TWICE SHREDDED HARDWOOD MULCH [MNDOT TYPE 6]. PLANT AREA WITH NATIVE SPECIES PER REVEGETATION UNIT.

6. THE RIP RAP MUST BE NO MORE THAN 6 FEET WATERWARD OF THE ORDINARY HIGH WATER LEVEL.

7. THICKNESS OF RIP RAP PERPENDICULAR TO THE SLOPE TO BE APPROXIMATELY 24" TO ENSURE PROPER ROCK COVERAGE.

8. HERBIVORE EXCLUSION FENCE TO BE INSTALLED AROUND ENTIRE PERIMETER OF NATIVE PLANTING. EXCLUSION FENCE TO BE INSTALLED PER PLANS & SPECIFICATIONS.

9 EXISTING BANK HEIGHT, WATER LEVEL, AND SITE CONDITIONS MAY VARY. CONTRACTOR TO SITE VERIFY EXISTING SITES AT ALL LOCATIONS DURING BID PREPARATION AND PRIOR TO DELIVERY AND INSTALLATION OF MATERIALS.

10. PROPERTIES INCLUDING RIP RAP SHORELINE:
- -218 OWASSO LN E
- -226 OWASSO LN E
- -3225 WOODBRIDGE ST
- -410 W HORSESHOE DR

11. CONTRACTOR TO FOLLOW MNDOT STANDARD PLATE GUIDELINES FOR TEMPORARY AND PERMANENT EROSION CONTROL ON SITES. SEE ATTACHED MNDOT STANDARD PLATES FOR MORE DETAIL.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

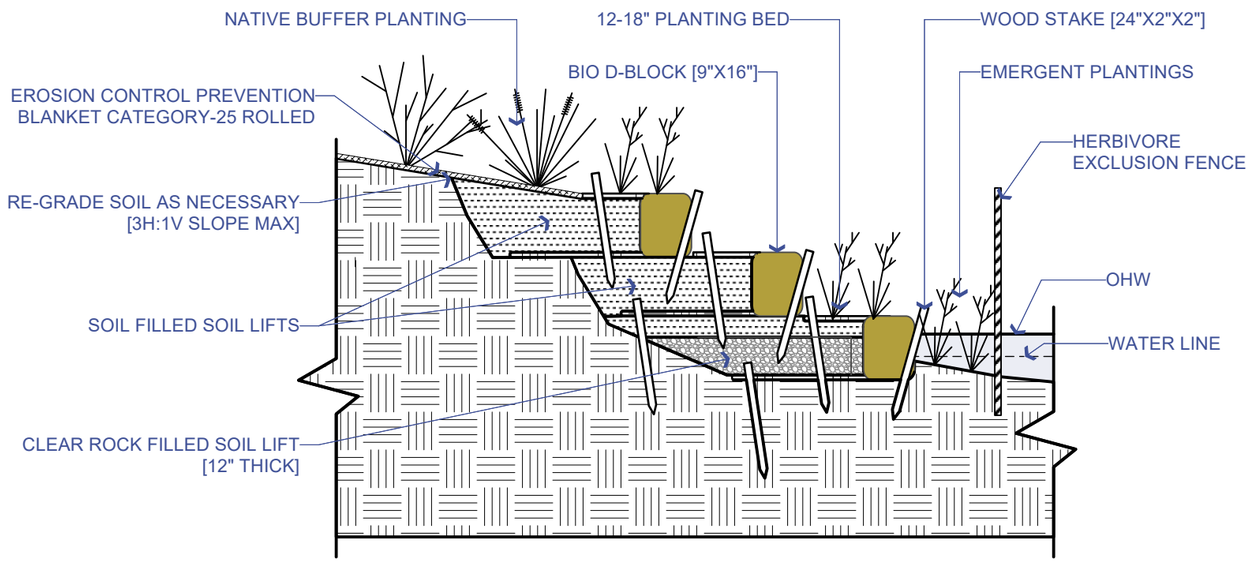
SCALE: NA

SITE DETAILS

L302

1 BIO D-BLOCK STANDARD SHORELINE CROSS-SECTION

Scale: 1/4" = 1'-0"



NOTES:

1. INSTALL 3 ROWS OF BIO D-BLOCK ALONG SHORELINE. INSTALL PER MANUFACTURERS SPECIFICATION.

2. 12-18" WIDE PLANTING BED TO BE INCLUDED BETWEEN STAGGERED ROWS OF BIO D-BLOCK. PLANT WITH NATIVE SPECIES PER REVEGETATION UNIT NOTED ON PLANS.

3. FIRST LAYER OF BIO D-BOCK TO HAVE BASE LAYER OF CLEAR AGGREGATE ROCK INSTALLED TO ANCHOR AND STABILIZE TOE.

4. HERBIVORE EXCLUSION FENCE TO BE INSTALLED AROUND ENTIRE PERIMETER OF NATIVE PLANTING. EXCLUSION FENCE TO BE INSTALLED PER PLANS & SPECIFICATIONS.

5. INSTALL ROLLED EROSION PREVENTION BLANKET PER PLANS & SPECIFICATIONS AND 3"-THICK MULCH PER REVEGTATION UNITS NOTED ON PLAN.

6. BIO D-BLOCK 16-400 [16"x9"x10'] MATIERAL TO BE USED OR APPROVED EQUAL. SEE MANUFACTURERS SPECIFICATIONS FOR ADDTIONAL INFORMATION AND INSTALLATION INSTRUCTIONS.

7. PROPERTIES INCLUDING BIO D-BLOCK SHORELINE PROFILE:
   -3241 WOODBRIDGE ST
   -3233 WOODBRIDGE ST

8. CONTRACTOR TO FOLLOW MNDOT STANDARD PLATE GUIDELINES FOR TEMPORARY AND PERMANENT EROSION CONTROL ON SITES. SEE ATTACHED MNDOT STANDARD PLATES FOR MORE DETAIL.

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

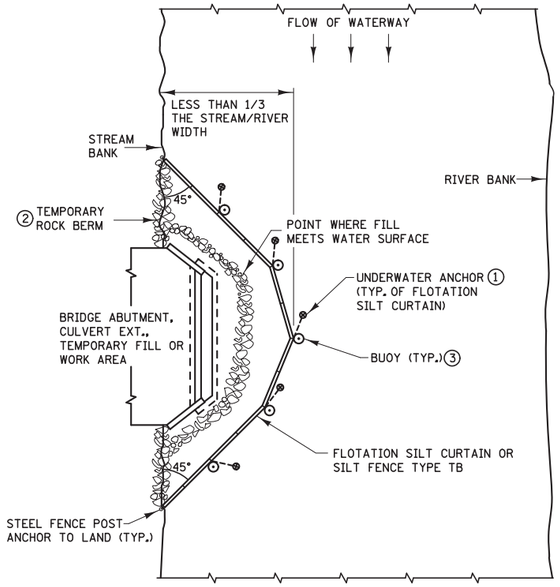
DESIGNER: BTO
DATE: 3/10/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

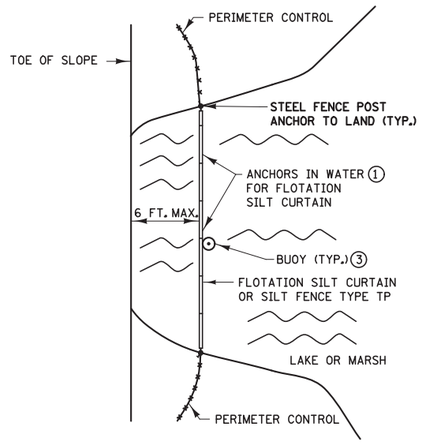
SCALE: NA

SITE DETAILS

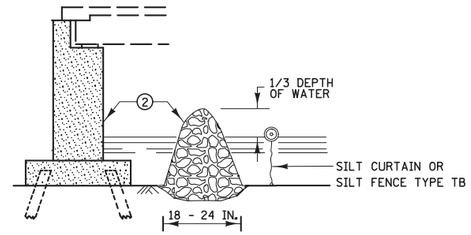
L303



PLAN VIEW FOR STREAM ⑤



PLAN VIEW FOR LAKE OR MARSH ⑤

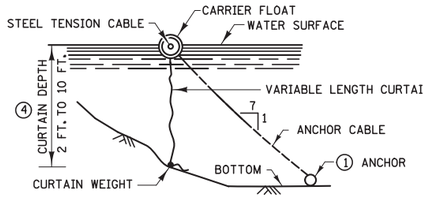


TEMPORARY ROCK BERM
FOR SEDIMENT CONTROL

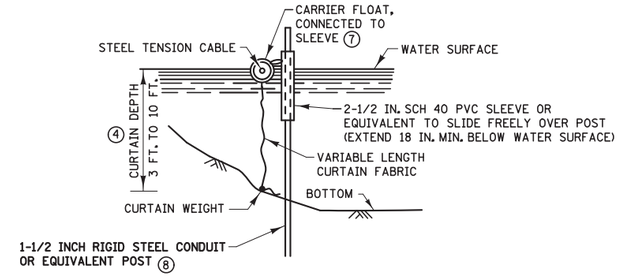
INSTALLATION GUIDELINES
SILT FENCE TYPE TB
MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: STILL WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

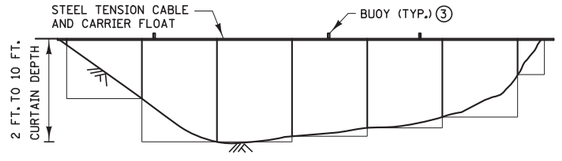
INSTALLATION GUIDELINES ④
FLOTATION SILT CURTAIN
TYPE: MOVING WATER
MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.



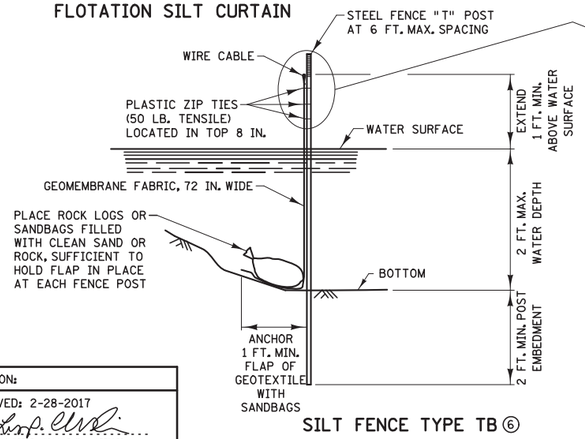
FLOTATION SILT CURTAIN



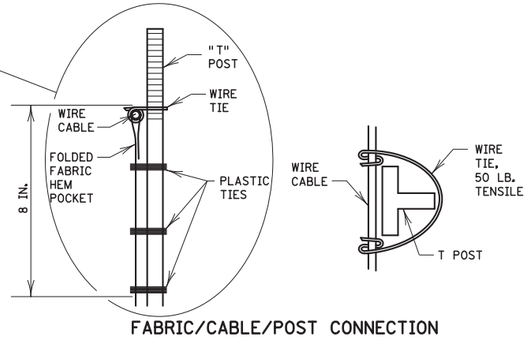
ALTERNATE FLOTATION SILT CURTAIN



FRONT VIEW FOR FLOTATION SILT CURTAIN



SILT FENCE TYPE TB ⑥



FABRIC/CABLE/POST CONNECTION

NOTES:

SEE SPECS. 2573, 3886, 3887 & 3893.

① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.

② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.

③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.

④ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR SILT FENCE TYPE TB.

⑤ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.

⑥ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.

⑦ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.

⑧ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

REVISION:
APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405 | 1 OF 8
APPROVED: 2-28-2017
REVISED:
STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

TEMPORARY SEDIMENT CONTROL
SILT CURTAIN OR SILT FENCE TYPE TB

RAMSEY COUNTY
RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

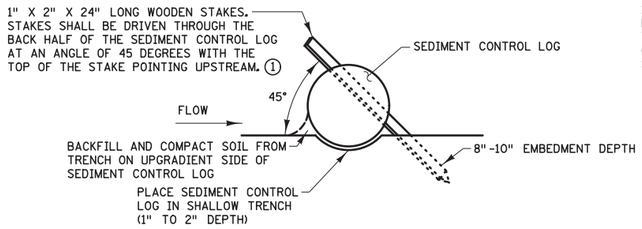
DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

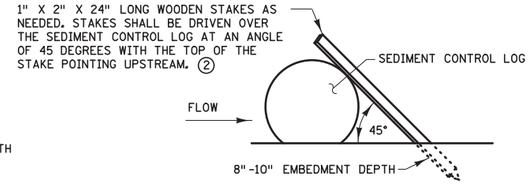
SCALE: NA

SITE DETAILS

L304

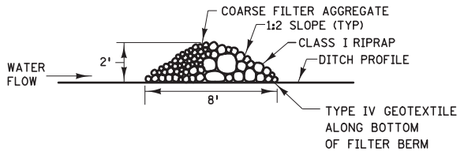


TYPES: STRAW, WOOD FIBER, OR COIR

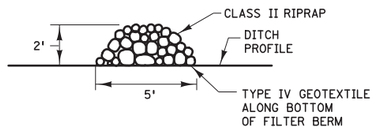


TYPES: WOOD CHIP, COMPOST, OR ROCK

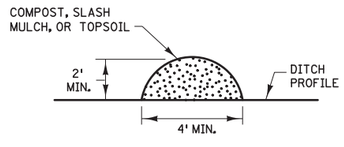
SEDIMENT CONTROL LOGS



TYPE 3 (ROCK WEEPER)

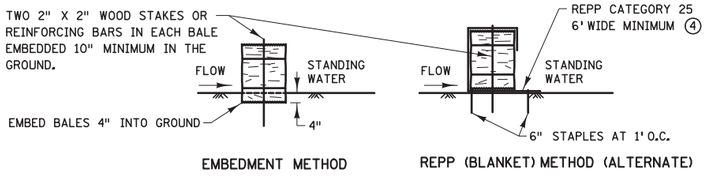


TYPE 5 (ROCK)



TYPE 1 (COMPOST), TYPE 2 (SLASH MULCH), OR TYPE 4 (TOPSOIL)

FILTER BERMS



EMBEDMENT METHOD

REPP (BLANKET) METHOD (ALTERNATE)

BALE BARRIERS (3)

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

SEE SPECS. 2573, 3149, 3874, 3882, 3885, 3886, AND 3897.

(1) SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1' FOR DITCH CHECKS OR 2' FOR OTHER APPLICATIONS.

(2) PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.

(3) TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6" MAXIMUM DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14" X 18" X 36" LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.

(4) INSTEAD OF TRENCHING, PLACE BALE ON THE REPP (BLANKET) AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

REVISION:

APPROVED: JANUARY 8, 2020

MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.405	2 OF 8
APPROVED: 1-8-2020	TEMPORARY SEDIMENT CONTROL
REVISED:	FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS
STATE PROJ. NO.	(T.H.) SHEET NO. OF SHEETS

PLOTTED/REVISED: 24-JAN-2020

PLOT NAME: s405_2_spn
PATH & FILENAME: DT\DesignStandards\Development\StandardPlansDEV\400_Series\s405_2_spn.dgn

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

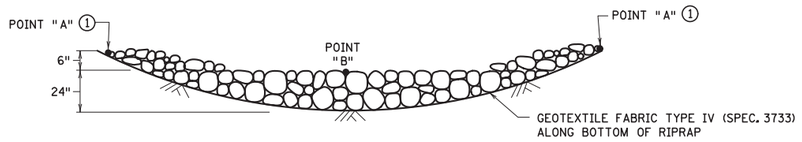
DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

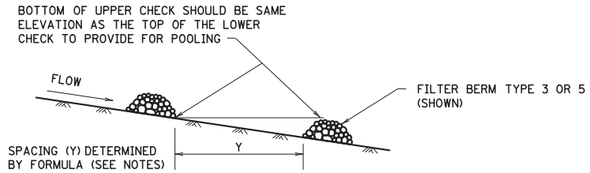
SCALE: NA

SITE DETAILS

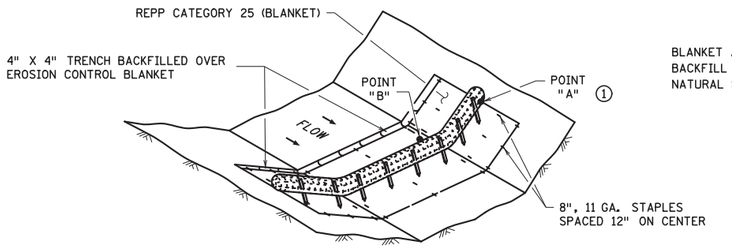
L305

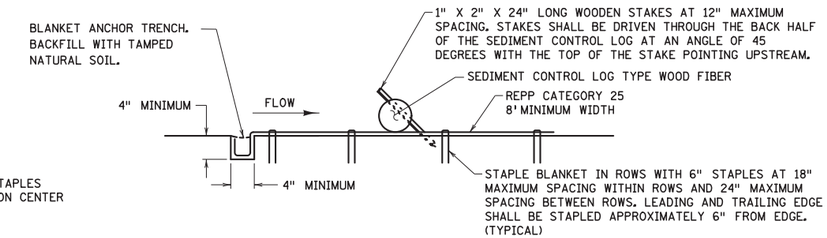


ROCK DITCH CHECKS
FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ③
FOR USE ON ROUGH-GRADED AREAS
ONLY FOR USE OUTSIDE CLEAR ZONE ②

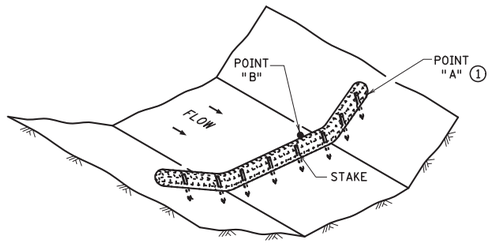


DITCH CHECK SPACING
FOR ALL FILTER BERM TYPES





SEDIMENT CONTROL LOG TYPE REPP (BLANKET) SYSTEM ④



SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST ⑤
FOR USE ON ROUGH GRADED AREAS

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT.)}}{\text{\% CHANNEL SLOPE}} \times 100$$

① POINT "A" MUST BE A MINIMUM OF 6" HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

② ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE ARE TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.

③ DITCH GRADE 3% - 5%, MAX. FLOW VELOCITY 12 FT./SEC.

④ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 4.5 FT./SEC.

⑤ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 1.5 FT./SEC.

REVISION:
APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 | 3 OF 8

APPROVED: 1-8-2020
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
DITCH CHECK

STATE PROJ. NO. | (T.H.) | SHEET NO. OF SHEETS

PLOTTED/REVISED: 24-JAN-2020
PLOT NAME: s405_3_spn
PATH & FILENAME: O:\S\DesignStandards\Development\StandardPlansDEV\400_Series\s405_3_spn.dgn

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

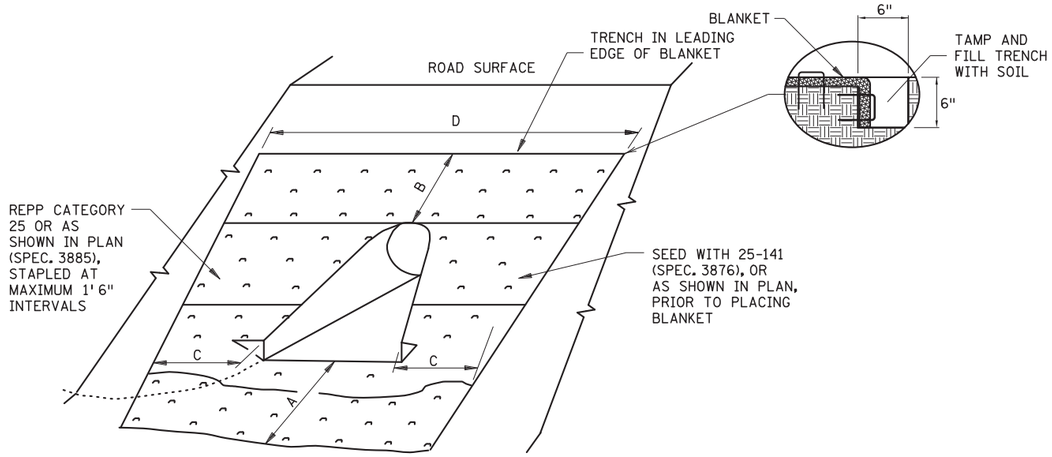
DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

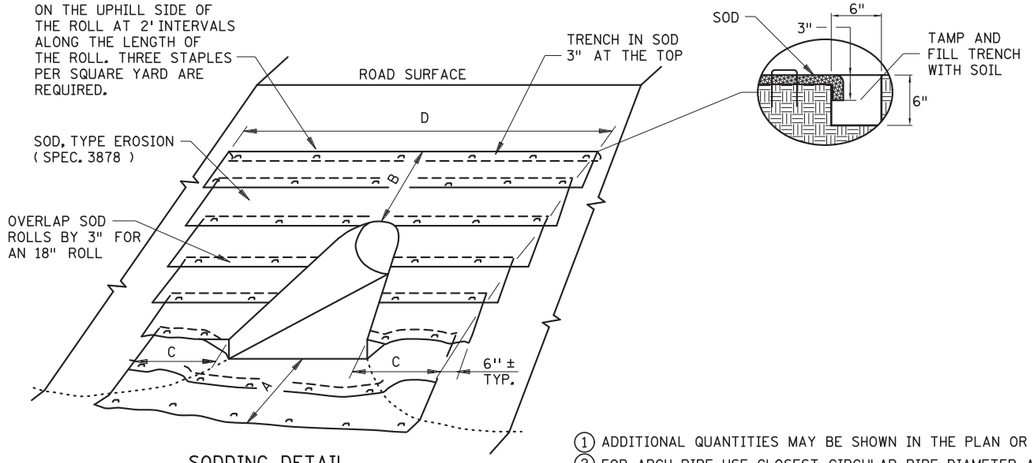
SCALE: NA

SITE DETAILS

L306



ROLLED EROSION PREVENTION PRODUCT (BLANKET) & SEED DETAIL



SODDING DETAIL

CULVERT INLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	9	9	8	8	N/A	N/A	3'	1.5'	3'	13'
18"	13	12	12	14	16	N/A	3'	3'	3'	16'
21"	14	14	14	16	18	14	3'	3'	3'	17'
24"	16	15	16	19	21	17	3'	3'	3'	18'
27"	N/A	20	N/A	N/A	N/A	N/A	3'	4.5'	3'	20'
30"	23	22	25	30	32	N/A	3'	4.5'	3'	22'
36"	34	34	39	48	51	37	4.5'	4.5'	4.5'	27'
42"	43	40	51	64	N/A	N/A	4.5'	6'	4.5'	30'
48"	54	50	66	82	N/A	N/A	4.5'	7.5'	4.5'	34'
54"	65	58	81	102	N/A	N/A	4.5'	9'	4.5'	37'
60"	69	59	91	115	N/A	N/A	4.5'	9'	4.5'	39'
66"	69	63	N/A	N/A	N/A	N/A	4.5'	9'	4.5'	39'
72"	78	72	99	122	N/A	N/A	4.5'	10.5'	4.5'	41'

CULVERT OUTLET APRON ①										
CULVERT DIAMETER ②	SOD OR REPP (SQ. YDS.)						"A"	"B"	"C"	"D"
	CIRCULAR AND ARCH PIPE METAL APRON (PLATE 3123, PLATE 3122)	CIRCULAR AND ARCH PIPE CONCRETE APRON (PLATE 3100, PLATE 3110)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:4 SLOPE (PLATE 3148)	CIRCULAR AND ARCH PIPE METAL SAFETY APRON 1:6 SLOPE (PLATE 3148)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:6 SLOPE (PLATE 3128)	CIRCULAR CORRUGATED METAL PIPE SAFETY APRON 1:4 SLOPE (PLATE 3128)				
15"	10	10	9	10	N/A	N/A	4.5'	1.5'	3'	13'
18"	13	13	12	14	15	N/A	6'	1.5'	3'	14'
21"	16	14	16	18	19	15	6'	1.5'	3'	15'
24"	18	18	18	21	22	18	7.5'	1.5'	3'	16'
27"	N/A	19	N/A	N/A	N/A	N/A	7.5'	1.5'	3'	17'
30"	23	23	24	28	29	N/A	9'	1.5'	3'	18'
36"	36	35	38	47	48	37	10.5'	1.5'	4.5'	23'
42"	43	40	47	58	N/A	N/A	12'	1.5'	4.5'	25'
48"	50	46	57	70	N/A	N/A	13.5'	1.5'	4.5'	27'
54"	57	50	67	84	N/A	N/A	15'	1.5'	4.5'	29'
60"	74	63	90	113	N/A	N/A	16.5'	1.5'	6'	33'
66"	75	67	N/A	N/A	N/A	N/A	16.5'	1.5'	6'	33'
72"	77	70	92	114	N/A	N/A	16.5'	1.5'	6'	34'

NOTES:

REPP = ROLLED EROSION PREVENTION PRODUCT.

AREA SHOWN IN SQUARE YARDS IS FOR ONE CULVERT END.

QUANTITIES ARE CALCULATED TO INCLUDE SOD REQUIRED TO PROVIDE A 3" OVERLAP ON ALL 18" WIDE ROLLS. THIS ALLOWS FOR SHRINKAGE OF THE SOD.

FOR PIPE ARCHES USE EQUIVALENT PIPE DIAMETER TO APPROXIMATE AREA.

FOR CORRUGATED POLYETHYLENE PIPE METAL APRON (PLATE 3129), USE THE METAL APRON COLUMN (PLATE 3123).

AREAS AND DIMENSIONS ARE APPROXIMATE AND ARE BASED ON APRON SIDE SLOPES OF NO STEEPER THAN 1:2, UNLESS INDICATED AS FOR SAFETY APRONS.

CARE SHOULD BE TAKEN IN SELECTING SOD TO STABILIZE THE APRON. RIP-RAP SHOULD BE USED FOR FLOW VELOCITIES GREATER THAN 6 FPS.

① ADDITIONAL QUANTITIES MAY BE SHOWN IN THE PLAN OR REQUIRED BY THE ENGINEER.
② FOR ARCH PIPE USE CLOSEST CIRCULAR PIPE DIAMETER AND APRON SLOPE. DIAMETERS LARGER THAN 72" REQUIRE SPECIAL DESIGNS.

REVISION:

APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 2 OF 3

APPROVED: 1-8-2020
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL

TURF ESTABLISHMENT DETAIL AT CULVERT ENDS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PLOTTED/REVISED: 24-JAN-2020
PLOT NAME: s404_2_spn
PATH & FILENAME: DTS\DesignStandards\Development\StandardPlansDEV\400_Series\s404_2_spn.dgn

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

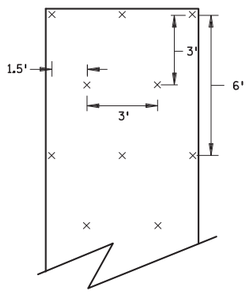
DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

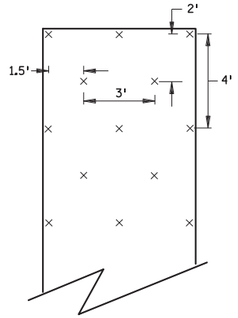
SCALE: NA

SITE DETAILS

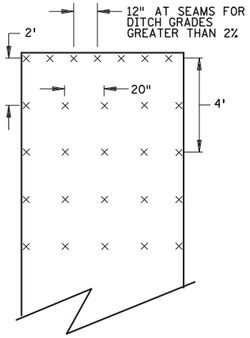
L307



SLOPES FLATTER THAN 1:2
120 STAPLES PER 100 SQ YD

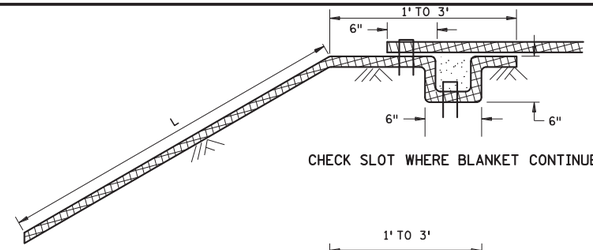


SLOPES 1:2 TO 1:1
170 STAPLES PER 100 SQ YD

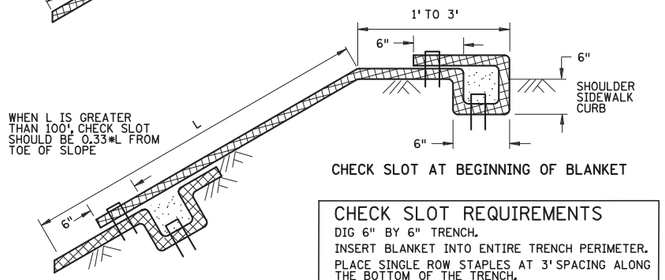


CHANNEL AND DITCH APPLICATIONS
350 STAPLES PER 100 SQ YD

BLANKET STAPLE PATTERN



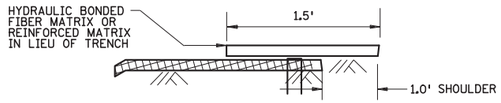
CHECK SLOT WHERE BLANKET CONTINUES



CHECK SLOT AT BEGINNING OF BLANKET

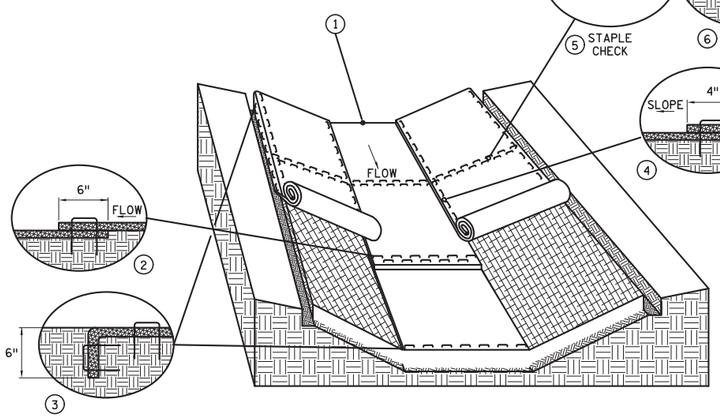
CHECK SLOT REQUIREMENTS

DIG 6" BY 6" TRENCH.
INSERT BLANKET INTO ENTIRE TRENCH PERIMETER.
PLACE SINGLE ROW STAPLES AT 3' SPACING ALONG THE BOTTOM OF THE TRENCH.
BACKFILL TRENCH WITH SOIL AND TAMP.
PLACE SINGLE ROW STAPLES AT 3' SPACING ON OVERLAP.

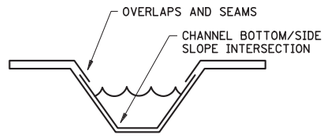


CHECK SLOT ALTERNATIVE
PLACE SINGLE ROW STAPLES AT 12" SPACING

CHECK SLOT DETAILS



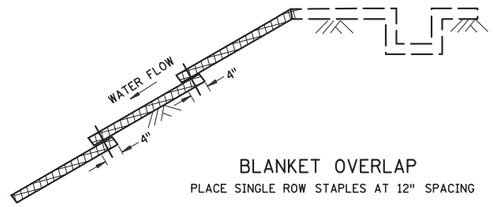
DITCH BLANKET STAPLE DETAIL



DITCH BLANKET CRITICAL POINTS (7)

NOTES:

1. USE CHECK SLOT DETAIL (NO ALTERNATES).
2. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND 4" ON CENTER.
3. USE 6" X 6" TRENCH TO PLACE BLANKET. PLACE SINGLE ROW OF STAPLES ON TOP AND TRENCH SIDES AT 12" SPACING. BACKFILL TRENCH WITH SOIL AND TAMP.
4. PLACE SINGLE ROW OF STAPLES AT 12" SPACING.
5. USE STAPLE CHECK FOR CHANNEL SLOPES LESS THAN 2.5%. GRADE AT 100' INTERVALS. PLACE DOUBLE ROW OF STAPLES STAGGERED 4" APART AND AT 4" SPACING.
6. USE BLANKET CHECKS FOR THE FOLLOWING SLOPES:
   2.5%-3% 100' INTERVALS
   3%-5% 50' INTERVALS
   5%-7% 25' INTERVALS
7. CRITICAL POINTS SHALL BE SECURED WITH PROPER STAPLE PATTERNS.



BLANKET OVERLAP
PLACE SINGLE ROW STAPLES AT 12" SPACING

GENERAL BLANKET INSTALLATION REQUIREMENTS

REPP = ROLLED EROSION PREVENTION PRODUCT.
PREPARE SOIL AS PER SPECIFICATION 2574.
LAY PARALLEL OR PERPENDICULAR TO THE DIRECTION OF WATER FLOW.
OVERLAP ADJACENT STRIP EDGES A MINIMUM OF 4".
OVERLAP BLANKET 6" (MINIMUM) AT EACH END. OVERLAP BOTTOM END OF UPPER BLANKET OVER TOP END OF LOWER BLANKET. STAPLE ALONG OVERLAP EVERY 1.5'.
THE UPPERMOST BLANKET OF ALL SLOPE APPLICATIONS MUST START IN A CHECK SLOT. IF SLOPE LENGTH (L) IS 100' OR GREATER, INSERT BLANKET INTO A CHECK SLOT ⅓ FROM THE BOTTOM OF THE SLOPE.

REVISION:
APPROVED: JANUARY 8, 2020
MARNI KARNOWSKI
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.404 | 3 OF 3
APPROVED: 1-8-2020
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

PERMANENT EROSION CONTROL
REPP (BLANKET) STAPLE PATTERN FOR SLOPES

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PLOTTED/REVISED: 24-JAN-2020
PLOT NAME: s404_3.spn
PATH & FILENAME: DT\DesignStandards\Development\StandardPlansDEV\400_Series\s404_3.spn.dgn

RAMSEY COUNTY
RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

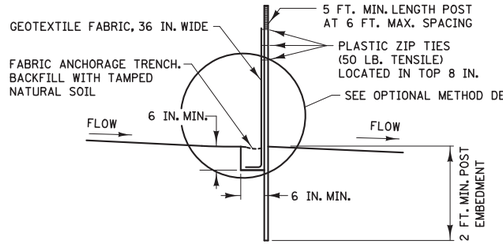
DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

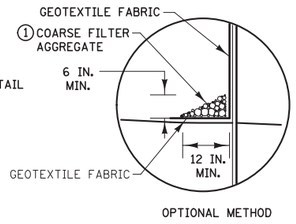
NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: NA

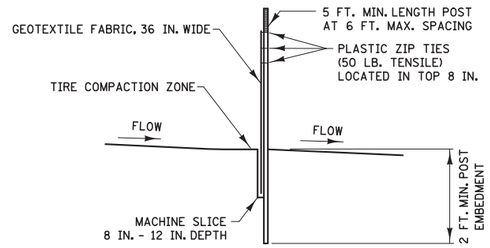
SITE DETAILS

L308

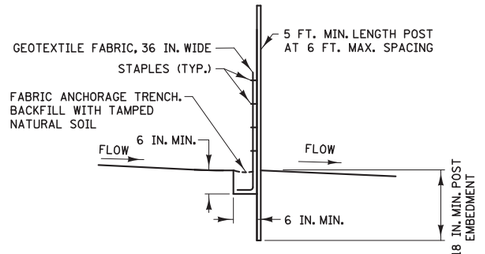




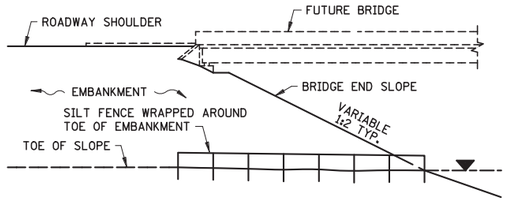
SILT FENCE TYPE HI ②
(HAND INSTALLED)



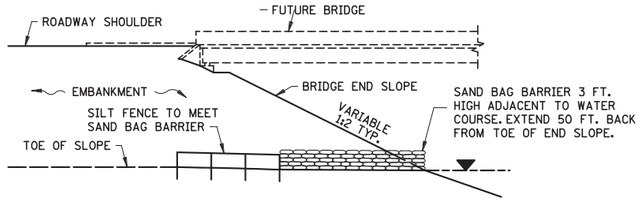
SILT FENCE TYPE MS ②
(MACHINE SLICED)



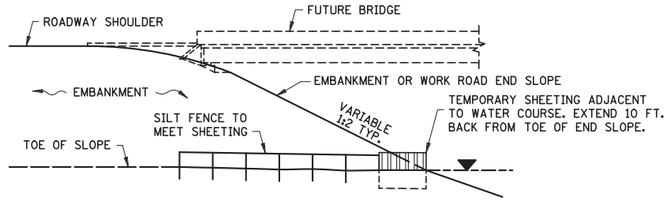
SILT FENCE TYPE PA ③
(PREASSEMBLED)



SILT FENCE ONLY ④

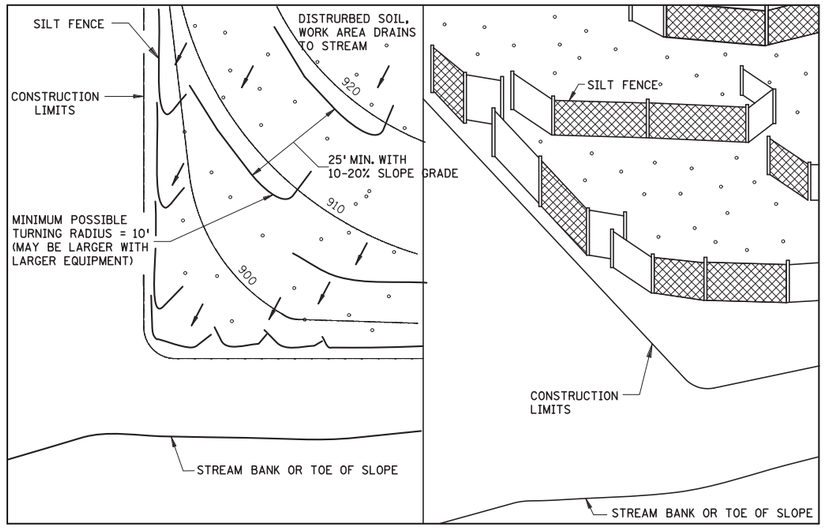


SILT FENCE WITH SAND BAGS ⑤



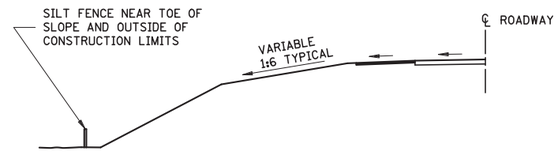
SILT FENCE WITH SHEETING ⑥

INSTALLATION AT BRIDGE EMBANKMENT ADJACENT TO WATER



PLAN VIEW PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.

② TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.

③ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

④ WATER COURSE FLOW VELOCITY: STANDING. CONTRIBUTING SLOPE AREA: 1./2 ACRE.

⑤ WATER COURSE FLOW VELOCITY: 1 TO 7 FT./SEC. CONTRIBUTING SLOPE AREA: 1. ACRE.

⑥ WATER COURSE FLOW VELOCITY: 8 TO 15 FT./SEC. CONTRIBUTING SLOPE AREA: 3 ACRES.

REVISION:
APPROVED: 2-28-2017
CHIEF ENVIRONMENTAL OFFICER

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 | 6 OF 8
APPROVED: 2-28-2017
REVISED:
STATE DESIGN ENGINEER

TEMPORARY SEDIMENT CONTROL
SILT FENCE

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

PLOTTED/REVISED: 4-APR-2018
IPLOT NAME: s405_6_spp
PATH & FILENAME: 07\Design Standards\Development\New Border\400_Series\s405_6_spp.dgn

RAMSEY COUNTY

RAMSEY COUNTY SWCD
2015 VAN DYKE STREET
MAPLEWOOD, MN 55109
651-266-7280
www.ramseycounty.us

PROJECT: LAKE OWASSO SHORELINE
LOCATION:

WATERSHED DISTRICT:

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

DESIGNER: BTO
DATE: 2/15/2022
REVISION:
REVISION:
REVISION:
REVISION:
REVISION:
CHECKED BY:
TAA:

NOTES:
ORIGINAL SHEET SIZE: 11" x 17"

SCALE: NA

SITE DETAILS

L309

Exhibit C: Bid Form

BID FORM

LAKE OWASSO SHORELINE RESTORATION

SHOREVIEW, MN

THIS BID FOR: LAKE OWASSO SHORELINE RESTORATION

IS SUBMITTED (VIA EMAIL) TO:

Attn: Paige Ahlborg (paige.ahlborg@rwmwd.org)

c/o Ramsey Washington Metro Watershed District

Little Canada, MN 55117

ARTICLE 1

1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the procedure included in the Bidding Documents; to perform and furnish all Work as specified or indicated in the Bidding Documents for the Contract Price and within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and Contract Agreement as specified with the Owner.

ARTICLE 2

2.01 In submitting this Bid, Bidder represents, as more fully set forth in the Contract Documents, and incorporated into the Agreement by reference, that:

A. Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all of which is hereby acknowledged):

No.	Date	Addendum Number	Signature
1			
2			
3			

B. The contractor installing the shoreline restoration shall have experience in installing and maintaining similar projects and shall meet the qualification requirements described in Section A-8 of the General Conditions and Requirements of the Specifications and Project Provisions to Bidders.

C. Bidder understands that the Work must be substantially complete by the date indicated in the Contract Documents; Specifications and Project Provisions to Bidders.

D. Bidder understands that Owner has limited funds for the project, and that alternates may be eliminated from the Contract based on Bids.

E. Bidder has familiarized himself/herself with the nature and extent of the Bidding Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

F. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, studies, and drawings which pertain to the surface and subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as Bidder considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.

G. Bidder has reviewed and checked all information and data with respect to existing Underground Facilities and Utilities at or contiguous to the site whether shown or indicated, or not shown or indicated, on the Drawings and Bidder assumes full responsibility for the accurate location of said Underground Facilities and Utilities prior to the performance of all elements of the Work. No additional examinations, investigations, explorations, tests, reports or similar information or data in respect of said Underground Facilities and Utilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

H. Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, studies, and drawings with the terms and conditions of the Bidding Documents.

I. Bidder has given Owner and Owner Representative written notice of all conflicts, errors or discrepancies that it has discovered in the Bidding Documents and the written resolution thereof by Owner and Owner Representative is acceptable to Bidder.

J. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding.

K. This Bid has been arrived at the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with any other Bidder or vendor of materials, supplies, equipment or services described in the Bidding Documents designed to, or acting to, limit independent bidding or competition.

L. This Bid has not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any Bond furnished with the Bid, and will not be communicated to any such person prior to the opening of the Bid.

ARTICLE 3

3.01 Bidder will complete the Work for the following price(s) as referenced in Section A for Unit Price, Measurement and Payment of the Specifications:

A. BID ITEMS

Item #	Item Description	Unit	Estimated Quantity	Unit Price	Item Cost
1	NATIVE PERENNIAL: 2" PLUG	EA	5,074.00		
2	NATIVE PERENNIAL: 4" POT	EA	473		
3	TEMPORARY EXCLUSION FENCE	LF	1,856.00		
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	84.75		
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF) [SEEDING]	SF	4,325.00		
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	4,325.00		
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	2,075.00		
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX) [SEEDING]	SF	2,075.00		
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	83		
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	59.25		
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	450		
12	TREE REMOVAL & GRUBBING	EA	7		
13	CLEARING – UNDERSTORY BRUSH / PLANTS & SCRUB TREES UNDER 4” DIAMETER	SF	800.00		
14	EXISTING VEGETATION/TURF REMOVAL & SOIL BED PREPARARTION	AC	0.39		
15	GRADING (SHORELINE SHAPING)	CY	300		
16	CONSTRUCTION SURVEYING	LS	1		
17	MOBILIZATION	LS	1		
18	SILT FENCE; TYPE TB	SITE	6		
19	BIO LOGS/SILT FENCE OR OTHER EROSION CONTROL AS NEEDED	SITE	4		
20	STABILIZED CONSTRUCTION EXIT	LS	1		
21	SITE RESTORATION – (TURF REPAIR)	SITE	10		
22	2022 ANNUAL MAINTENANCE	LS	1		
23	2023 ANNUAL MAINTENANCE	LS	1		
	Project Subtotal				

TOTAL OF EXTENSIONS

(in words)_____ U.S. Dollars ($_____)

3.02 Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) Estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids. Final payment for all unit price Bid items will be based on actual quantities of work performed as determined in accordance with the Contract Documents.

ARTICLE 4

4.01 Bidder agrees that the entire Work will be substantially complete and completed and ready for final payment in accordance with the Owner, and within the number of calendar days, or by the date, provided in the Specifications and Project Provisions.

4.02 Bidder accepts the provisions of the Bidding Documents as to liquidate damages in the event of failure to complete the Work on time.

ARTICLE 5

5.01 Bidder understands and agrees that Owner reserves the right to reject any or all Bids and to waive formalities. It is further understood and agreed that this Bid may not be withdrawn within forty-five (45) calendar days following opening of Bids.

ARTICLE 6

6.01 The terms used in this Bid which are defined in the other Contract Documents have the meanings assigned to them in the Contract Documents.

ARTICLE 7

7.01 Communications concerning this Bid shall be addressed to the address of Bidder indicated below.

This Bid is submitted by:

Company Name: _____

By (Typed or Printed): _____

Signature: _____

Title: _____

Official Address: _____

_____

_____

_____

Phone: ( ) _____

Federal Tax I.D. No. _____

Date: _____

ATTACHMENT A

RESPONSIBLE CONTRACTOR AND CERTIFICATION OF COMPLIANCE

PROJECT TITLE: LAKE OWASSO SHORELINE RESTORATION PROJECT

Minn. Stat. §16.285, Subd,. 7, **IMPLEMENTATION.** any prime contractor or subcontractor that does not meet the minimum criteria in subdivision 3 or fails to verify it meets those criteria is not a responsible contractor and is not eligible to be awarded a construction contract for the project or to perform work on the project.

Minn. Stat. §16.285, Subd. 3. **RESPONSIBLE CONTRACTOR, MINIMUM CRITERIA.** "Responsible contractor" means a contractor that conforms to the responsibility requirements in the solicitation document for its portion of the work on the project and verifies that it meets the following minimum criteria:

1. The Contractor:
    a. is in compliance with workers' compensation and unemployment insurance requirements;
    b. is currently registered with the Department of Revenue and the Department of Employment and Economic Development if it has employees;
    c. has a valid federal tax identification number or a valid Social Security number if an individual; and
    d. has filed a certificate of authority to transact business in Minnesota with the secretary of state if a foreign corporation or cooperative.
2. The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 177.24, 177.25, 177.41 to 177.44, 181.13, 181.14, or 181.722, and has not violated United States Code, title 29, sections 201 to 219, or United States Code, title 40, sections 3141 to 3148. For purposes of this clause, a violation occurs when a contractor or related entity:
    a. repeatedly fails to pay statutorily required wages or penalties on one or more separate projects for a total underpayment of $25,000 or more within the three-year period;
    b. has been issued an order to comply by the commissioner of labor and industry that has become final;
    c. has been issued at least two determination letters within the three-year period by the Department of Transportation finding an underpayment by the contractor or related entity to its own employees;
    d. has been found by the commissioner of labor and industry to have repeatedly or willfully violated any of the sections referenced in this clause pursuant to section 177.27;
    e. has been issued a ruling or findings of underpayment by the administrator of the Wage and Hour Division of the United States Department of Labor that have become final or have been upheld by an administrative law judge or the Administrative Review Board; or
    f. has been found liable for underpayment of wages or penalties or misrepresenting a construction worker as an independent contractor in an action brought in a court having jurisdiction. Provided that, if the contractor or related entity contests a determination of underpayment by the Department of Transportation in a contested case proceeding, a violation does not occur until the contested case proceeding has concluded with a determination that the contractor or related entity underpaid wages or penalties.

3. The contractor or related entity is in compliance with and, during the three-year period before submitting the verification, has not violated section 181.723 or chapter 326B. For purposes of this clause, a violation occurs when a contractor or related entity has been issued a final administrative or licensing order.

4. The contractor or related entity has not, more than twice during the three-year period before submitting the verification, had a certificate of compliance under section 363A.36 revoked or suspended based on the provisions of section 363A.36, with the revocation or suspension becoming final because it was upheld by the Office of Administrative Hearings or was not appealed to the office.

5. The contractor or related entity has not received a final determination assessing a monetary sanction from the Department of Administration or Transportation for failure to meet targeted group business, disadvantaged business enterprise, or veteran-owned business goals, due to a lack of good faith effort, more than once during the three-year period before submitting the verification.

6. The contractor or related entity is not currently suspended or debarred by the federal government or the state of Minnesota or any of its departments, commissions, agencies, or political subdivisions; and

7. All subcontractors that the contractor intends to use to perform project work have verified to the contractor through a signed statement under oath by an owner or officer that they meet the minimum criteria listed in clauses (1) to (6).

Minn. Stat. 1§16.285, Subd. 5. **SUBCONTRACTOR VERIFICATION.** A prime contractor or subcontractor shall include in its verification of compliance under subdivision 4 a list of all of its first-tier subcontractors that it intends to retain for work on the project.

If a prime contractor or any subcontractor retains additional subcontractors on the project after submitting its verification of compliance, the prime contractor or subcontractor shall obtain verifications of compliance from each additional subcontractor with which it has a direct contractual relationship and shall submit a supplemental verification confirming compliance with subdivision 3, clause (7),within 14 days of retaining the additional subcontractors.

A prime contractor shall submit to the contracting authority upon request copies of the signed verifications of compliance from all subcontractors of any tier pursuant to subdivision 3, clause (7). A prime contractor and subcontractors shall not be responsible for the false statements of any subcontractor with which they do not have a direct contractual relationship. A prime contractor and subcontractors shall be responsible for false statements by their first-tier subcontractors with which they have a direct contractual relationship only if they accept the verification of compliance with actual knowledge that it contains a false statement.

Minn.Stat. §16.285, Subd. 4. **VERIFICATION OF COMPLIANCE.** A contractor responding to a solicitation document of a contracting authority shall submit to the contracting authority a signed statement under oath by an owner or officer verifying compliance with each of the minimum criteria in subdivision 3 at the time that it responds to the solicitation document.

A contracting authority may accept a sworn statement as sufficient to demonstrate that a contractor is a responsible contractor and shall not be held liable for awarding a contract in reasonable reliance on that statement. Failure to verify compliance with any one of the minimum criteria or a false statement under oath in a verification of compliance shall render the prime contractor or subcontractor that makes the false statement ineligible to be awarded a construction contract on the project for which the verification was submitted.

A false statement under oath verifying compliance with any of the minimum criteria may result in termination of a construction contract that has already been awarded to a prime contractor or subcontractor that submits a false statement. A contracting authority shall not be liable for declining to award a contract or terminating a contract based on a reasonable determination that the contractor

CERTIFICATION

By signing this document, I certify that I am an owner or officer of the company, and I swear under oath that:

1) **My company meets each of the Minimum Criteria to be a responsible contractor as defined herein and is in compliance with Minn. Stat. §16.285,**
2) **I have included THIS FORM (Attachment A), with my company's solicitation response**

Authorized Signature of Owner or Officer:	**Printed Name:**
Title:	**Date:**
Company Name:	

ATTACHMENT B
(Draft Example)

CONTRACT DOCUMENTS

LAKE OWASSO SHORELINE RESTORATION PROJECT

SHOREVIEW, MINNESOTA

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

NOTICE OF AWARD

Dated: _____

OWNER: Ramsey Washington Metro Watershed District

TO CONTRACTOR: _____

_____

_____

CONTRACT FOR: Lake Owasso Shoreline Restoration Project

Owner has requested that we notify you that your Bid dated _____ has been accepted as the successful Bidder and _____, has been awarded the contract to perform the Work. The Contract Price is stated in the Agreement.

_____ must comply with the following conditions precedent within fifteen (15) days of the date of this Notice of Award, that is by _____.

1. Return to Owner three fully executed counterparts of the Agreement (attached).
2. Performance and Payment Bond
3. Certificate of Insurance and endorsement(s)

Failure to comply with these conditions within the time specified will entitle Owner to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

OWNER: Ramsey Washington Metro Watershed District

By: _____

(AUTHORIZED SIGNATURE)

ACKNOWLEDGEMENT OF NOTICE

_____

CONTRACTOR

By: _____

(AUTHORIZED SIGNATURE)

_____

(TITLE)

_____

(DATE)

CONTRACT DOCUMENTS

LAKE OWASSO SHORELINE RESTORATION PROJECT

SHOREVIEW, MINNESOTA

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

FORM OF AGREEMENT

THIS AGREEMENT is by and between Ramsey-Washington Metro Watershed District (hereinafter called Owner) and _____ (hereinafter called Contractor).

Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents for Lake Owasso Shoreline Restoration Project. The Work is generally described in the General Requirements Section of the Technical Specifications. The Work to be provided under the Contract Documents may be the whole or only a part of the total construction for the Project.

Article 2. CONTRACT TIMES

2.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

2.02 *Dates of Substantial Completion and Final Payment*

A. The number of calendar days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Times) are set forth in the Instructions to Bidders except as may be stated below:

No exceptions.

LAKE OWASSO SHORELINE RESOTRATION PROJECT
TOTAL OPINION OF COST
DATE: 3/23/2022

Item #	Item Description	Unit	Estimated Quantity	Unit Price	Item Cost
1	NATIVE PERENNIAL: 2" PLUG	EA	5,074.00	$ 3.00	$ 15,222.00
2	NATIVE PERENNIAL: 4" POT	EA	473	$ 9.00	$ 4,257.00
3	TEMPORARY EXCLUSION FENCE	LF	1,856.00	$ 5.50	$ 10,208.00
4	MULCH MATERIAL TYP 6 (3" DEPTH)	CY	84.75	$ 95.00	$ 8,051.25
5	SEED MIXTURE 25-131 (LOW MAINTENANCE TURF) [SEEDING]	SF	4,325.00	$ 0.78	$ 3,373.50
6	ROLLED EROSION PREVENTION CATEGORY 30	SF	4,325.00	$ 3.74	$ 16,175.50
7	ROLLED EROSION PREVENTION CATEGORY 25	SF	2,075.00	$ 5.74	$ 11,910.50
8	SEED MIXTURE SPECIAL (NATIVE WET-TRANSITIONAL MIX) [SEEDING]	SF	2,075.00	$ 0.99	$ 2,054.25
9	RIP RAP ROCK (NATURAL FIELD STONE 6-24" DIAMETER)	TON	83	$ 160.00	$ 13,280.00
10	RIP RAP FILTER ROCK (1.5" WASHED ANGUALR ROCK)	TON	59.25	$ 120.00	$ 7,110.00
11	BIO D-BLOCK 16-400 (16"x9"x10' BLOCKS)	LF	450	$ 40.00	$ 18,000.00
12	TREE REMOVAL & GRUBBING	EA	7	$ 1,800.00	$ 12,600.00
13	CLEARING – UNDERSTORY BRUSH / PLANTS & SCRUB TREES UNDER 4” DIAMETER	SF	800.00	$ 4.25	$ 3,400.00
14	EXISTING VEGETATION/TURF REMOVAL & SOIL BED PREPARARTION	AC	0.39	$ 13,000.00	$ 5,070.00
15	GRADING (SHORELINE SHAPING)	CY	300	$ 30.00	$ 9,000.00
16	CONSTRUCTION SURVEYING	LS	1	$ 1,200.00	$ 1,200.00
17	MOBILIZATION	LS	1	$ 3,200.00	$ 3,200.00
18	SILT FENCE; TYPE TB	SITE	6	$ 950.00	$ 5,700.00
19	BIO LOGS/SILT FENCE OR OTHER EROSION CONTROL AS NEEDED	SITE	4	$ 325.00	$ 1,300.00
20	STABILIZED CONSTRUCTION EXIT	LS	1	$ 750.00	$ 750.00
21	SITE RESTORATION – (TURF REPAIR)	SITE	10	$ 225.00	$ 2,250.00
22	2022 ANNUAL MAINTENANCE	LS	1	$ 7,800.00	$ 7,800.00
23	2023 ANNUAL MAINTENANCE	LS	1	$ 7,200.00	$ 7,200.00
	Project Subtotal	**$**			**169,112.00**

Request for Board Action

Board Meeting Date: April 6, 2022 **Agenda Item No:** 7B

Preparer: Tina Carstens, Administrator

Item Description: 2022 Targeted Retrofit Projects Accept Plans & Solicit Bids

Background:
See attached memo for more information on two targeted retrofit projects, St. Pascal Baylon Church/Regional Catholic School and Mounds Park Academy.

Applicable District Goal and Action Item:

Goal: Achieve quality surface water – The District will maintain or improve surface water quality to support healthy ecosystems and provide the public with a wide range of water-based benefits.

Action Item: Implement retrofit water quality improvement projects.

Staff Recommendation:
Staff recommends approval of the preliminary design, estimated costs, and proposed project schedule, and direct staff to finalize the design and bidding documents and solicit bid proposals.

Financial Implications:
This project will be funded through the Targeted Retrofit Fund where there are sufficient funds available.

Board Action Requested:
Approve the preliminary design, estimated costs, and proposed project schedule, and direct staff to finalize the design and bidding documents and solicit bid proposals.

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: RWMWD Board of Managers
From: Marcy Bean, Andrea Wedul, Andrew Papke-Larson and Erin Anderson Wenz
Subject: 2022 Targeted Retrofit Projects- Request for Bidding Authorization
Date: March 31, 2022
c: Paige Ahlborg and Tina Carstens

Summary

The purpose of RWMWD's Targeted Retrofit program is to design, provide bid assistance for, and oversee the construction of BMP retrofits on previously identified commercial, school, and faith-based properties throughout the District. The locations of the 2022 Targeted Retrofit Projects proposed for construction are shown in Figures 1, 2, and 3 below.

St. Pascal Baylon Church/Regional Catholic School (Saint Paul): This is a 3.5-acre site with significant impervious surfaces. We propose a tree trench and small rain garden to retrofit a portion of the existing parking lot. By reorienting a few parking spaces and working with the existing drainage of the site, we can maximize the tree trench sizing while minimizing impacts on the parking lot's function. The owner looks forward to additional trees on site.

Figure 1: The St. Pascal Baylon Church project includes a tree trench and a rain garden that will remove phosphorus and sediment from stormwater that travels to Battle Creek.

Mounds Park Academy (Maplewood): This opportunity results from years of outreach collaboration between school and watershed staff and work with students. A portion of unused parking lot will be removed to construct a rain garden to treat runoff before it enters the school's pond. The school is interested in funding the creation of an outdoor learning space alongside the rain garden.

Figure 2: The Mounds Park Academy project includes rain gardens that will remove phosphorus and sediment from stormwater that ultimately travels to Wakefield Lake.

Engineer's Opinion of Cost and Water Quality Treatment Estimate

A summary of the updated (95%) engineer's opinion of probable cost and water quality treatment estimate is included in the table below.

Table 1: Summary of 95% opinion of probable costs and water quality treatment estimate

Proposed concept	Engineer opinion of cost for construction	Engineer opinion of cost range (-5% to +10%)	BMP average annual TP removal (lb/year)	Annualized cost per pound of TP removal
St. Pascal's (tree trench and rain garden)	$ 366,000	$348,000 to $403,000	1.1	$23,700
Mounds Park Academy (rain garden)	$163,000	$155,000 to $179,000	4.4	$2,500

The current engineer's opinion of probable cost for the project ranges from -5% to +$10. These opinions of cost include a 20% contingency and reflect a 95% design level of accuracy. This contingency reflects the current uncertainty in bid prices, which have recently been elevated due to supply chain issues.

RWMWD Prioritization Tool

Both projects are at the top of RWMWD's water quality project prioritization list. They are only surpassed by projects that do not yet have willing partnerships and final designs (e.g., the Valley Creek Plaza Target and the Beaver Lake Living Streets projects). Both projects are tributary to an impaired water and will count towards that lake's water quality TMDL goals. Both project score high for community as well. Table 2 summarizes each project's scores per each goal in RWMWD's Watershed Management Plan.

Table 2: Summary of RWMWD Prioritization Tool Scores for Mounds Park Academy and St. Pascal Baylon Church and Regional Catholic School Targeted Retrofit Projects

Plan Goal Categories	Scores per Plan Goal Category	
	Mounds Park Academy	St. Pascal Baylon Church and Regional Catholic School
1. Water Quality	4.5	1.5
2. Ecosystem	1.0	1.0
3. Flooding	0.0	0.0
4. Groundwater	2.5	2.0
5. Community	4.0	8.0
6. Manage Organization	2.5	2.5

A description of the credits that each project received in the tool under each of RWMWD's Plan Goal categories is included below.

St. Pascal Baylon Church/Regional Catholic School Prioritization Tool Credits:

RWMWD Goal 1. Achieve quality surface water

- Project is in/tributary to impaired subwatershed (Battle Creek)
- TP removal (lbs/yr) (1.1 lbs)

RWMWD Goal 2. Achieve healthy ecosystems

- Project provides habitat connection opportunities

RWMWD Goal 4. Support sustainable groundwater

- Project promotes infiltration

RWMWD Goal 5. Inform and empower communities

- District priority equity area
- Project improves community attractiveness or value
- Project provides an opportunity for volunteer engagement in the District
- Project fosters collaboration with cities, watershed management organizations, educational institutions, and other stakeholders to develop and implement shared communication and messaging strategies

RWMWD Goal 6. Manage organization effectively

- Easy to construct/implement (i.e., logistically easy, shovel-ready project)
- Partner will provide operations and maintenance
- Willing project partners

Mounds Park Academy Prioritization Tool Credits:

RWMWD Goal 1. Achieve quality surface water

- $/lb TP removed lower than $10,300/lb/year
- Project is in/tributary to impaired subwatershed (Wakefield Lake)
- Project reduces the impervious area
- TP removals (lbs/yr) (4.4 lbs)

RWMWD Goal 2. Achieve healthy ecosystems

- Project provides habitat connection opportunities

RWMWD Goal 4. Support sustainable groundwater

- Project promotes infiltration
- Project provides groundwater recharge potential

RWMWD Goal 5. Inform and empower communities

- Project improves community attractiveness or value
- Project provides an opportunity for volunteer engagement in the District
- Project fosters collaboration with cities, watershed management organizations, educational institutions, and other stakeholders to develop and implement shared communication and messaging strategies

RWMWD Goal 6. Manage organization effectively

- Easy to construct/implement (i.e., logistically easy, shovel-ready project)
- Partner will provide operations and maintenance
- Willing project partners

Specifications Outline

In addition to the drawings attached, bid documents are being completed that include the following specifications:

Front-End Specifications:

Advertisement for Bid

Instruction to Bidders

Form of Agreement

General Conditions

Supplementary Conditions

General Requirements:

Summary of Work

Measurement and Payment

Payment Procedures

Safety

Closeout Procedures

Technical Specifications:

Concrete Forming

Cast-in-Place Concrete

Site Clearing, Preparation, and Demolition

Excavation and Fill

Erosion and Sedimentation Control

Exterior Improvements

Walks, Curbs, and Bituminous Pavement

Painted Pavement Markings

Herbaceous Plant Establishment

Tree and Shrub Installation

Storm Utility Drainage Piping

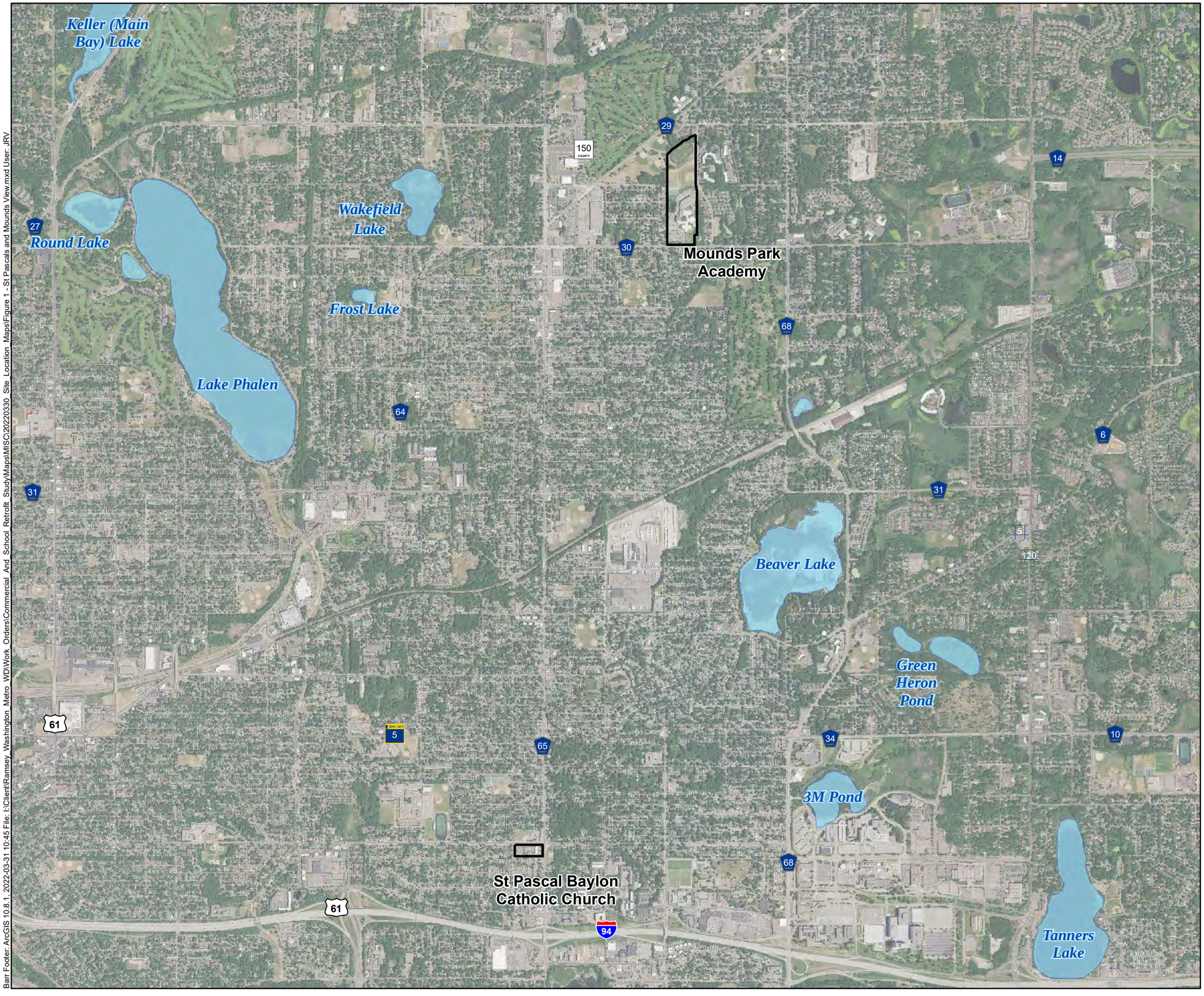
Storm Drainage Structures

Schedule

Pending Board approval to put these projects out to bid after the April Board meeting, construction at both sites will start in June 2022. Mounds Park Academy has requested that construction be largely completed during the summer months, with substantial completion before the fall session starting August 24, 2022.

Attachments

95% Draft Planset for RWMWD's 2022 BMP Retrofit Projects at Mounds Park Academy Stormwater BMP Improvements and St. Pascal Baylon Catholic Church Stormwater BMPs



Site Parcels

Lakes and Ponds

N

2,000 1,000 0 2,000 Feet

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

BARR

Figure 3

ST PASCAL BAYLON CATHOLIC CHURCH AND MOUNDS PARK ACADEMY
Ramsey Washington Metro Watershed District

Imagery: USDA; 2021

Barr Footer: ArcGIS 10.8.1, 2022-03-31 10:45 File: I:\Client\Ramsey_Washington_Metro_WD\Work_Orders\Commercial_And_School_Retrofit_Study\Maps\MISC\20220330_Site_Location_Maps\Figure 1 - St Pascals and Mounds View.mxd User: JRV

BARR	**PREPARED BY: BARR ENGINEERING COMPANY**		SHEET:	1	OF	1
			CREATED BY:	MDB3	DATE:	3/25/2022
ENGINEER'S OPINION OF PROBABLE PROJECT COST			CHECKED BY:		DATE:	
PROJECT:	St. Pascal Baylon Catholic Church 95% Design		APPROVED BY:		DATE:	
LOCATION:	Ramsey Washington Metro Watershed District		ISSUED:		DATE:	
PROJECT #:	23621172		ISSUED:		DATE:	
OPINION OF COST - SUMMARY			ISSUED:		DATE:	

Engineer's Opinion of Probable Project Cost

St. Pascal Baylon Catholic Church

BMP Retrofit (95% Design)

Base Bid Items

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost	
General						
	Mobilization/Demobilization/Traffic Control/Erosion Control	L.S.	1	$ 31,000.00	$ 31,000	1,2,3,4,5,6
	Inlet Protection	EA	4	$ 250.00	$ 1,000	1,2,3,4,5,6
	6" Sediment Control Log	L.F.	520	$ 5.00	$ 2,600	1,2,3,4,5,6
				Subtotal	$ 34,600	
Removals and Repaving						
	Excavate, Haul, and Dispose	C.Y.	651	$ 15.00	$ 9,761	1,2,3,4,5,6
	Remove and Dispose of Bituminous Pavement	SY	1272	$ 6.00	$ 7,630	1,2,3,4,5,6
	Remove and Salvage Class 5 Aggregate	CY	282	$ 17.00	$ 4,799	1,2,3,4,5,6
	Sawcut Curb and Gutter	L.F.	6	$ 10.00	$ 60	1,2,3,4,5,6
	Sawcut Concrete (Sidewalk)	L.F.	20	$ 10.00	$ 200	1,2,3,4,5,6
	Sawcut Bituminous Pavement	L.F.	440	$ 10.00	$ 4,400	1,2,3,4,5,6
	Remove turf and topsoil	AC	0.008	$ 5,000.00	$ 39	1,2,3,4,5,6
	Remove pavement markings	L.S.	1	$ 1,000.00	$ 1,000	1,2,3,4,5,7
	Remove existing 4'H chain link fence	L.F.	265	$ 4.00	$ 1,060	1,2,3,4,5,6
				Subtotal	**$ 28,949**	
General Parking Lot Work						
	12" Mn/DOT Class 5 aggregate base	TON	273	$ 50.00	$ 13,634	1,2,3,4,5,6
	2" bituminous wear course (SPWEA340B) - 1nd course	SY	1,145	$ 20.00	$ 22,904	1,2,3,4,5,6
	Bituminous tack course	SY	1,145	$ 0.30	$ 344	1,2,3,4,5,6
	2" bituminous wear course (SPWEA340B) - 2nd course	SY	1,145	$ 15.00	$ 17,178	1,2,3,4,5,6
	Painted pavement markings, incl. layout	L.S.	1	$ 2,500.00	$ 2,500	1,2,3,4,5,6
	New fencing to match existing	LF	260	$ 70.00	$ 18,200	1,2,3,4,5,6
Curb and Gutter for SW Management						
	Mn/DOT B612 Concrete Curb & Gutter	L.F.	190	$ 26.00	$ 4,940	1,2,3,4,5,6
	Utility curb (back of rain garden, no gutter by sidewalk)	L.F.	59	$ 26.00	$ 2,000	1,2,3,4,5,6
	Concrete Curb (for splash block)	LF	8	$ 200.00	$ 1,600	1,2,3,4,5,6
.	3" rock mulch & landscape fabric	SY	38	$ 17.50	$ 665	1,2,3,4,5,6
	4" concrete walk w/ 6" Class 5 aggregate base (replacement)	SF	60	$ 10.00	$ 600	1,2,3,4,5,6
				Subtotal	**$ 84,565**	
Tree Trench BMP						
	2"-4" Clean Washed Angular Granite	TON	316	$ 65.00	$ 20,519	1,2,3,4,5,6
	Filtration Soil washed into angular granite	CY	185	$ 92.00	$ 17,020	1,2,3,4,5,6
	Geotextile Filter Fabric (All - tree trench, asphalt, and curb)	SY	1,186	$ 5.00	$ 5,931	1,2,3,4,5,6
	60" dia. Manhole w/ closed lid, complete	EA	2	$ 8,500.00	$ 17,000	1,2,3,4,5,6
	2' x 3' pre-cast concrete catch basin with base slab, complete	EA	3	$ 4,500.00	$ 13,500	1,2,3,4,5,6
	Neenah inlet frame and grate	EA	3	$ 3,000.00	$ 9,000	1,2,3,4,5,7
	Concrete swale	S.Y.	56	$ 100.00	$ 5,556	1,2,3,4,5,6
	6" SDR35 or dual wall CPP underdrain pipe - Underdrain	LF	104	$ 30.00	$ 3,120	1,2,3,4,5,6
	6" Overflow Pipe - Solid SDR	EA	3	$ 725.00	$ 2,175	1,2,3,4,5,6
	6" SDR35 or dual wall CPP underdrain pipe - Distribution Pipe (Perforated)	LF	285	$ 30.00	$ 8,550	1,2,3,4,5,6
	6" DIA. SOLID SDR35 OR SCH 40 OVERFLOW PIPE W/ ATRIUM INLET	EA	3	$ 500.00	$ 1,500	1,2,3,4,5,6
	Connect Draintile to Storm Sewer/Catch Basin	EA	1	$ 750.00	$ 750	1,2,3,4,5,6
	Soil Loosening	SY	456	$ 2.00	$ 912	1,2,3,4,5,6
	Planting Soil	CY	7	$ 85.00	$ 566	1,2,3,4,5,6
	Precast Concrete Tree box with Concrete Frame	EA	3	$ 8,500.00	$ 25,500	1,2,3,4,5,6
	2" - 4" dia. clean washed angular granite as rock mulch	TON	1	$ 65.00	$ 46	1,2,3,4,5,6
	Tree staking w/ 3"dia. cedar stakes & guying	EA	3	$ 900.00	$ 2,700	1,2,3,4,5,6
	#20 Cont. Tree (Tree Trench)	EA	3	$ 850.00	$ 2,550	1,2,3,4,5,6
				Subtotal	**$ 136,894**	
Raingarden						
	Dry-stacked stone landscape retaining wall	SFF	117	$ 75.00	$ 9,000	1,2,3,4,5,6
	4" Perforated CPEP Draintile	L.F.	37	$ 10.00	$ 370	1,2,3,4,5,6
	12" SCH 40 PVC Pipe	L.F.	17	$ 30.00	$ 1,000	1,2,3,4,5,6
	Draintile Cleanout	EA	2	$ 325.00	$ 1,000	1,2,3,4,5,6
	Connect Draintile to Storm Sewer/Catch Basin	EA	2	$ 750.00	$ 2,000	1,2,3,4,5,6
	Splash block assembly	EA	1	$ 600.00	$ 1,000	1,2,3,4,5,6
	Planting Soil (12" depth- 75% Sand, 25% Leaf compost- MnDOT Grade II)	C.Y.	10	$ 90.00	$ 1,000	1,2,3,4,5,6
	Twice-Shredded Hardwood Mulch (3" depth)	C.Y.	5	$ 65.00	$ 330	1,2,3,4,5,6
	Soil Loosening	SY	62	$ 2.00	$ 120	1,2,3,4,5,6
	#1 Cont. Perennial (Furnish & Install)	EA	164	$ 24.00	$ 4,000	1,2,3,4,5,6
				Subtotal	**$ 19,820**	
	CONSTRUCTION SUBTOTAL				$304,828	1,2,3,4,5,6,7,8
	CONSTRUCTION CONTINGENCY (20%)				$61,000	1,4,8
	ESTIMATED CONSTRUCTION COST				**$366,000**	1,2,3,4,5,6,7,8
	ESTIMATED TOTAL PROJECT COST				$366,000	1,2,3,4,5,6,7,8
	ESTIMATED ACCURACY RANGE	**-5%**			**$348,000**	4,6,8
		10%			**$403,000**	4,6,8

Notes

[1] Quantities based on Design Work Completed (90%).

[2] Unit Prices Based on Information Available at This Time.

[3] Limited Soil Boring and Field Investigation Information Available.

[4] This design level (Class 1, 70-100% design completion per ASTM E 2516-11) cost estimate is based on 90% designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. 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 -5% to +10%. 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.

[5] Estimate assumes that projects will not be located on contaminated soil.

[6] Estimate costs are to design, construct, and permit each alternative. The estimated costs do not include maintenance, monitoring or additional tasks following construction.

[7] Furnish and Install pipe cost per linear foot includes all trenching, bedding, backfilling, compaction, and disposal of excess materials

[8] Estimate costs are reported to nearest thousand dollars.

BARR	PREPARED BY: BARR ENGINEERING COMPANY	SHEET:	1	OF	1
		CREATED BY:	MDB3	DATE:	3/25/2022
ENGINEER'S OPINION OF PROBABLE PROJECT COST		CHECKED BY:		DATE:	
PROJECT:	Mounds Park Academy 95% Design	APPROVED BY:		DATE:	
LOCATION:	Ramsey Washington Metro Watershed District	ISSUED:		DATE:	
PROJECT #:	23621172	ISSUED:		DATE:	
OPINION OF COST - SUMMARY		ISSUED:		DATE:	

Engineer's Opinion of Probable Project Cost

Mounds Park Academy

BMP Retrofit (95% Design)

Base Bid Items

Bid Item	Description	Unit	Estimated Quantity	Unit Price	Estimated Cost	
General						
	Mobilization/Demobilization/Traffic Control/Erosion Control	L.S.	1	$ 12,000	$ 12,000	1,2,3,4,5,6
	Inlet Protection	EA	2	$ 250	$ 500	1,2,3,4,5,6
	Tree Protection Fencing	L.F.	163	$ 5	$ 800	1,2,3,4,5,6
	Silt Fence	L.F.	242	$ 8	$ 1,900	1,2,3,4,5,6
				Subtotal	**$ 15,200**	
Removals						
	Remove and Dispose Asphalt	SY	696	$ 5	$ 3,500	1,2,3,4,5,6
	Strip and Stockpile Topsoil	CY	27	$ 21	$ 600	1,2,3,4,5,6
	Remove Concrete Curb and Gutter	L.F.	189	$ 15	$ 2,800	1,2,3,4,5,6
	Clear and Grub	AC	0.500	$ 5,000	$ 2,500	1,2,3,4,5,6
	Excavate, Haul, and Dispose of Material Offsite	C.Y.	519	$ 18	$ 9,300	1,2,3,4,5,6
	Sawcut Curb and Gutter	L.F.	20	$ 25	$ 500	1,2,3,4,5,6
	Sawcut Bituminous Pavement full depth (4" assumed)	L.F.	234	$ 4	$ 900	1,2,3,4,5,6
				Subtotal	**$ 20,100**	
Pavement						
	2" Thick Bituminous Wearing Coarse & Tack Coat	S.Y.	303	$ 16	$ 4,800	1,2,3,4,5,6
	2" Thick Bituminous Base Course	S.Y.	303	$ 2	$ 600	1,2,3,4,5,6
	Mn/DOT B612 Concrete Curb & Gutter	L.F.	149	$ 26	$ 3,900	1,2,3,4,5,6
	Utility Curb	L.F.	50	$ 26	$ 1,300	1,2,3,4,5,6
				Subtotal	**$ 10,600**	
Stormwater Management						
	4" Perforated CPEP Draintile	L.F.	135	$ 10	$ 1,400	1,2,3,4,5,6,7
	6" SCH 40 Solid PVC	L.F.	47	$ 36	$ 1,700	1,2,3,4,5,6,7
	Planting Soil (12" depth- 75% Sand, 25% Leaf compost- MnDOT Grade II)	C.Y.	81	$ 90	$ 7,200	1,2,3,4,5,6
	Draintile Cleanout	EA	3	$ 600	$ 1,800	1,2,3,4,5,6
	Riprap	SF	57	$ 110	$ 6,300	1,2,3,4,5,6
	Rainguardian Foxhole Precast inlet and grates, complete	EA	1	$ 8,000	$ 8,000	1,2,3,4,5,6
	4" Black Powder Coated Landscape Edging	L.F.	197	$ 15	$ 3,000	1,2,3,4,5,6
	Twice-Shredded Hardwood Mulch (3" depth)	C.Y.	28	$ 65	$ 1,800	1,2,3,4,5,6
	#1 Cont. Perennial (Furnish & Install)	EA	511	$ 25	$ 12,800	1,2,3,4,5,6
	#2 Cont. Shrub (Furnish & Install)	EA	44	$ 50	$ 2,200	1,2,3,4,5,6
	#10 Cont. Tree (Furnish & Install)	EA	7	$ 500	$ 3,500	1,2,3,4,5,6
	Soil Loosening	SY	483	$ 2	$ 1,000	1,2,3,4,5,6
	Native Seed Mix	AC	0.10	$ 8,000	$ 800	1,2,3,4,5,6
				Subtotal	**$ 51,500**	
Outdoor Classroom						
Ramp and Crossing						
	Type A Vehicular Concrete	S.Y.	16	$ 100	$ 1,600	1,2,3,4,5,6
	Type B Vehicular Concrete (Stamped Concrete)	S.Y.	28	$ 125	$ 3,500	1,2,3,4,5,6
	Stamped Concrete Finishing	SF	250	$ 7	$ 1,800	1,2,3,4,5,6
Sidewalk, Ramp						
	Ped. Curb Ramp (utility curb with truncated dome)	EA	2	$ 2,000	$ 4,000	1,2,3,4,5,6
	Tipout curb & gutter (at ped. curb ramp) w/ transitions	L.F.	30	$ 50	$ 1,500	1,2,3,4,5,6
	Concrete Walk	S.Y.	98	$ 60	$ 5,900	1,2,3,4,5,6
	Class 5 (for concrete walk)	TON	47	$ 46	$ 2,100	1,2,3,4,5,6
Classroom						
	Decomposed Granite Surfacing (Crushed Stone 6" deep)	SY	37	$ 50	$ 1,800	1,2,3,4,5,6
	Native Stone Seat Wall (24" total + Masonry Adhesive)	SFF	146	$ 60	$ 8,800	1,2,3,4,5,6
	Concrete Base (for seat wall)	S.Y.	24	$ 100	$ 2,400	1,2,3,4,5,6
	Class 5 (for seat wall)	TON	4	$ 46	$ 200	1,2,3,4,5,6
	Fine Filter Aggregate (Sand - for seat wall)	CY	1	$ 85	$ 100	1,2,3,4,5,6
	Native Stone Fire Pit (24" total + Masonry Adhesive)	SFF	33	$ 60	$ 2,000	1,2,3,4,5,6
	Class 5 (for fire Pit)	TON	1	$ 46	$ 30	1,2,3,4,5,6
	Fine Filter Aggregate (Sand - for fire pit)	CY	0	$ 85	$ 20	1,2,3,4,5,6
	Flagstone (Slate - 1" thick)	SF	78	$ 40	$ 3,100	1,2,3,4,5,6
	Class 5 (for flagstone)	TON	1	$ 46	$ 50	1,2,3,4,5,6
	Fine Filter Aggregate (Sand - for flagstone)	CY	0.48	$ 85	$ 40	1,2,3,4,5,6
				Subtotal	**$ 38,900**	
	CONSTRUCTION SUBTOTAL				$136,000	1,2,3,4,5,6,7,8
	CONSTRUCTION CONTINGENCY (20%)				$27,000	1,4,8
	ESTIMATED CONSTRUCTION COST				**$163,000**	1,2,3,4,5,6,7,8
	ESTIMATED TOTAL PROJECT COST				$163,000	1,2,3,4,5,6,7,8
	ESTIMATED ACCURACY RANGE	**-5%**			**$155,000**	4,6,8
		10%			**$180,000**	4,6,8

Notes

[1] Quantities based on Design Work Completed (95%).

[2] Unit Prices Based on Information Available at This Time.

[3] Limited Soil Boring and Field Investigation Information Available.

[4] This design level (Class 1, 70-100% design completion per ASTM E 2516-11) cost estimate is based on 90% designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. 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 -5% to +10%. 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.

[5] Estimate assumes that projects will not be located on contaminated soil.

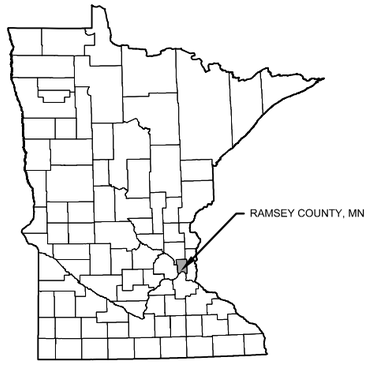
[6] Estimate costs are to design, construct, and permit each alternative. The estimated costs do not include maintenance, monitoring or additional tasks following construction.

[7] Furnish and Install pipe cost per linear foot includes all trenching, bedding, backfilling, compaction, and disposal of excess materials

[8] Estimate costs are reported to nearest thousand dollars.

BMP RETROFIT PROJECTS

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
2022 BMP RETROFIT PROJECT
SAINT PAUL, MINNESOTA



PROJECT LOCATION MAP

1 SITE MAP
NOT TO SCALE

2 SITE MAP
NOT TO SCALE

3 VICINITY MAP
NOT TO SCALE

INDEX OF SHEETS

* SEE PROJECT SPECIFIC TITLE PAGE FOR PROJECT RELATED SHEET INDEX

CONTACTS:

WATERSHED PROJECT MANAGER:
PAIGE AHLBORG
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
PHONE: 651-792-7964
EMAIL: PAIGE.AHLBORG@RWMWD.ORG

LANDSCAPE ARCHITECT/CONSTRUCTION OBSERVER:
MARCY BEAN
BARR ENGINEERING CO.
PHONE: 952-842-3511
EMAIL: MBEAN@BARR.COM

GOPHER STATE ONE CALL

GOPHER STATE ONE CALL:
CALL BEFORE YOU DIG.
1-800-252-1166

PROJECT COORDINATE SYSTEM:

HORIZONTAL: RAMSEY COUNTY COORDINATES, NAD83
VERTICAL: NAVD88

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
DATE RELEASED								

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

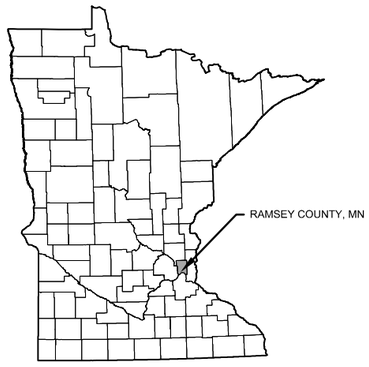
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

PROJECT LOCATION & SHEET INDEX

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	G-00
REV. No.	B

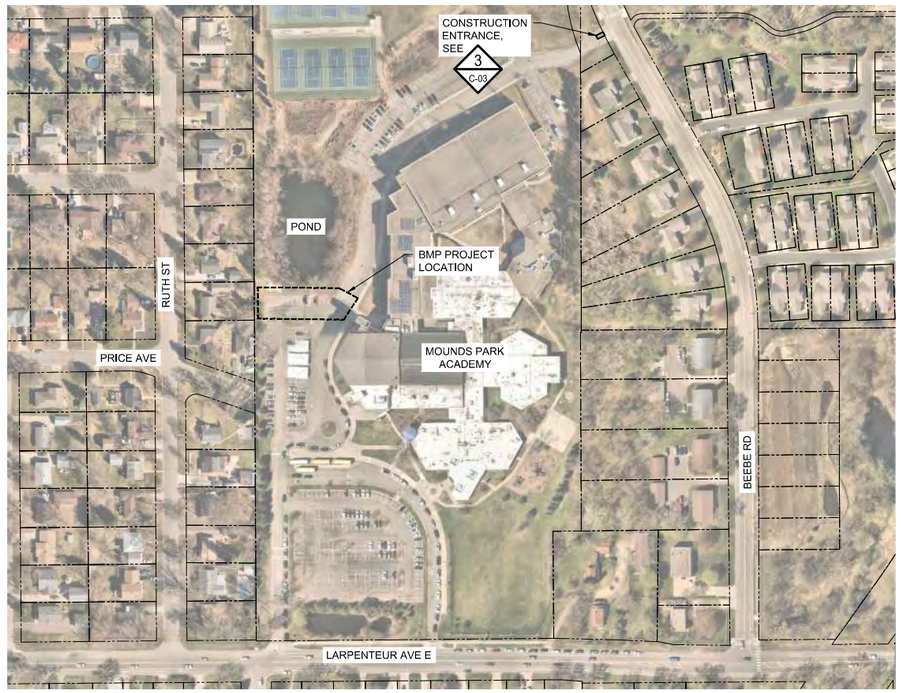
MOUNDS PARK ACADEMY STORMWATER BMP IMPROVMENTS

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
2022 BMP RETROFIT PROJECT
SAINT PAUL, MINNESOTA



PROJECT LOCATION MAP

1 VICINITY MAP
NOT TO SCALE



2 SITE MAP
NOT TO SCALE

INDEX OF SHEETS

CONTACTS:

WATERSHED PROJECT MANAGER:
PAIGE AHLBORG
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
PHONE: 651-792-7964
EMAIL: PAIGE.AHLBORG@RWMWD.ORG

LANDSCAPE ARCHITECT/CONSTRUCTION OBSERVER:
MARCY BEAN
BARR ENGINEERING CO.
PHONE: 952-842-3511
EMAIL: MBEAN@BARR.COM

GOPHER STATE ONE CALL

GOPHER STATE ONE CALL:
CALL BEFORE YOU DIG.
1-800-252-1166

PROJECT COORDINATE SYSTEM:

HORIZONTAL: RAMSEY COUNTY COORDINATES, NAD83
VERTICAL: NAVD88

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME MARCY D. BEAN

SIGNATURE

DATE 03/28/2022 LICENSE # 48430

	02/28/22	03/28/22					
CLIENT	—	—	—	—	—	—	—
BID	—	—	—	—	—	—	—
CONSTRUCTION	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
	—	—	—	—	—	—	—
RELEASED TO/FOR	A	B	C	0	1	2	3
	DATE RELEASED						

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKET POINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

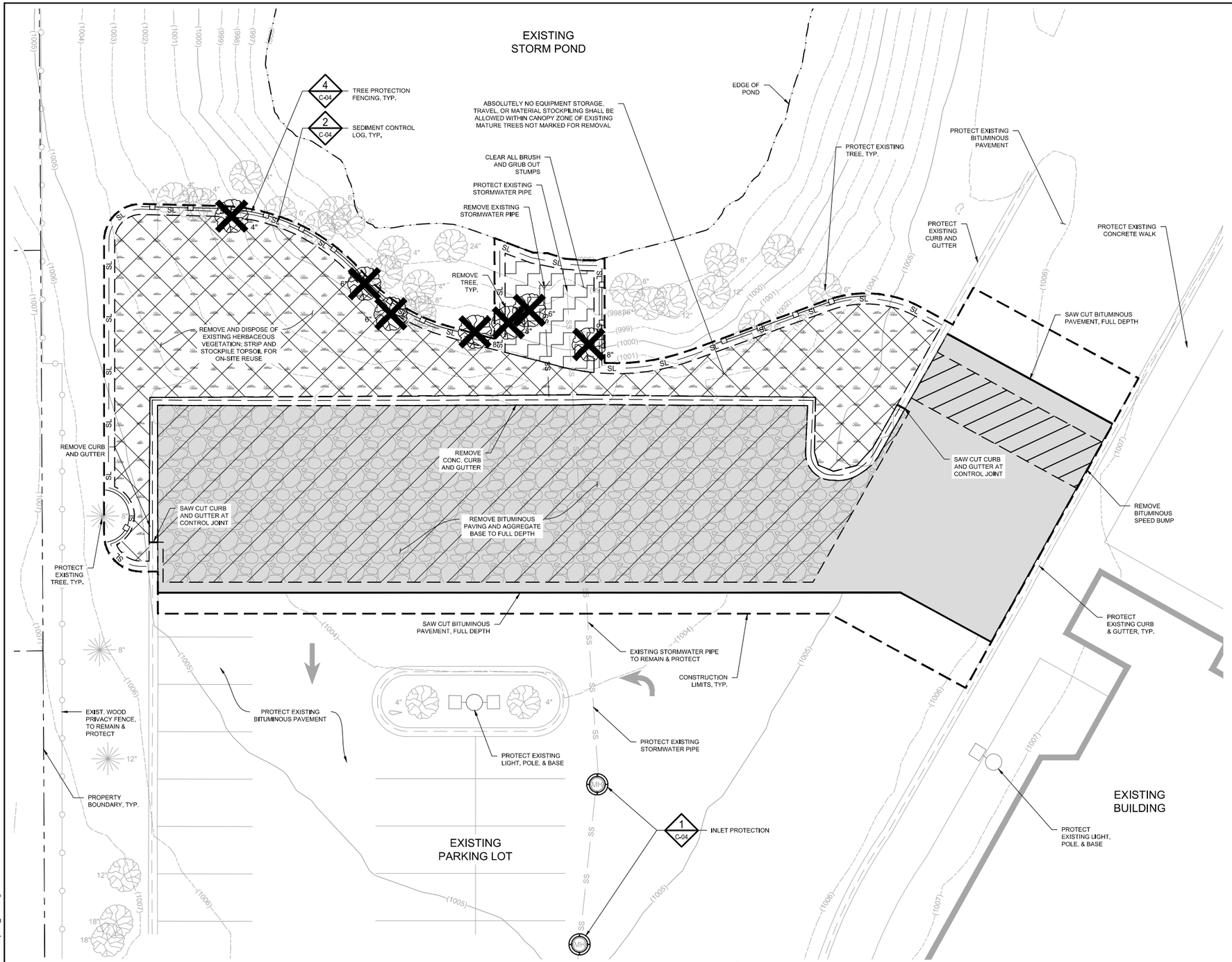
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

MOUNDS PARK ACADEMY
SAINT PAUL, MN

SITE LOCATION & SHEET INDEX

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
G-01	B



LEGEND

- CONSTRUCTION LIMITS
- EXISTING CONCRETE WALKS
- STRIP VEGETATION AND STOCKPILE TOPSOIL
- CLEAR AND GRUB TREES AND BRUSH
- REMOVE BITUMINOUS PAVING ONLY
- FULL-DEPTH BITUMINOUS PAVING AND AGGREGATE BASE REMOVAL
- EXISTING BUILDING
- (1005) EXISTING MAJOR (5') CONTOUR
- (1004) EXISTING MINOR (1') CONTOUR
- SL SEDIMENT CONTROL LOG
- SS EXISTING STORM PIPE W/F.E.S., TO REMOVE
- SS EXISTING STORM PIPE, TO REMOVE
- SS EXISTING STORM PIPE, TO REMAIN
- E EXISTING ELECTRIC UTILITY, TO REMAIN
- GAS EXISTING GAS UTILITY, TO REMAIN
- EASEMENT
- FENCING, TO REMAIN
- TREE PROTECTION FENCING
- SAW CUT, PAVEMENT TYPE AS NOTED
- CURB & GUTTER, TO REMOVE
- CURB & GUTTER, TO REMAIN
- (MH) STORM MANHOLE
- STORMWATER INLET PROTECTION
- EXISTING LIGHT STANDARD, TO REMAIN
- DECIDUOUS 12" / 12" CONIFEROUS — EXISTING TREE TO REMAIN, D.B.H. AS NOTED
- DECIDUOUS 8" / 8" CONIFEROUS — EXISTING TREE FOR REMOVAL, D.B.H. AS NOTED

GENERAL NOTES

1. SAWCUT FULL DEPTH AT JOINT BETWEEN BITUMINOUS PAVEMENT AND CURB. PROTECT EXISTING BITUMINOUS PAVEMENT. IF DAMAGED DURING WORK, PATCH BITUMINOUS PAVEMENT. ASPHALT PATCHING IS INCIDENTAL TO THE BID ITEM PRICE.
2. THE CONTRACTOR SHALL HAVE ACCESS TO STREET SWEEPING EQUIPMENT AT ALL TIMES. THE CONTRACTOR SHOULD BE AWARE OF WEATHER CONDITIONS AND SWEEP ANY STREETS WITH DEBRIS PRIOR TO ANY RAINFALL EVENT. STOCKPILING ON THE STREET DURING ANY RAINFALL EVENT SHALL NOT BE ALLOWED.
3. COORDINATE WITH OWNER TO ENSURE ACCEPTABLE TRAFFIC CONTROL REQUIREMENTS.
4. PROVIDE A CONSTRUCTION ENTRANCE, AS NEEDED, WHERE CONSTRUCTION VEHICLE MAY BE TRACKING SEDIMENT FROM THE WORK ARE ON TO ADJACENT PAVEMENT.
5. PRIVATE SUBGRADE ELECTRICAL SERVICE TO EXISTING LIGHT STANDARDS IS NOT SHOWN. VERIFY LOCATION WITH OWNER PRIOR TO EXCAVATION AND PROTECT EXISTING SERVICE.

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	03/28/2022	03/28/2022					
BID							
CONSTRUCTION							
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

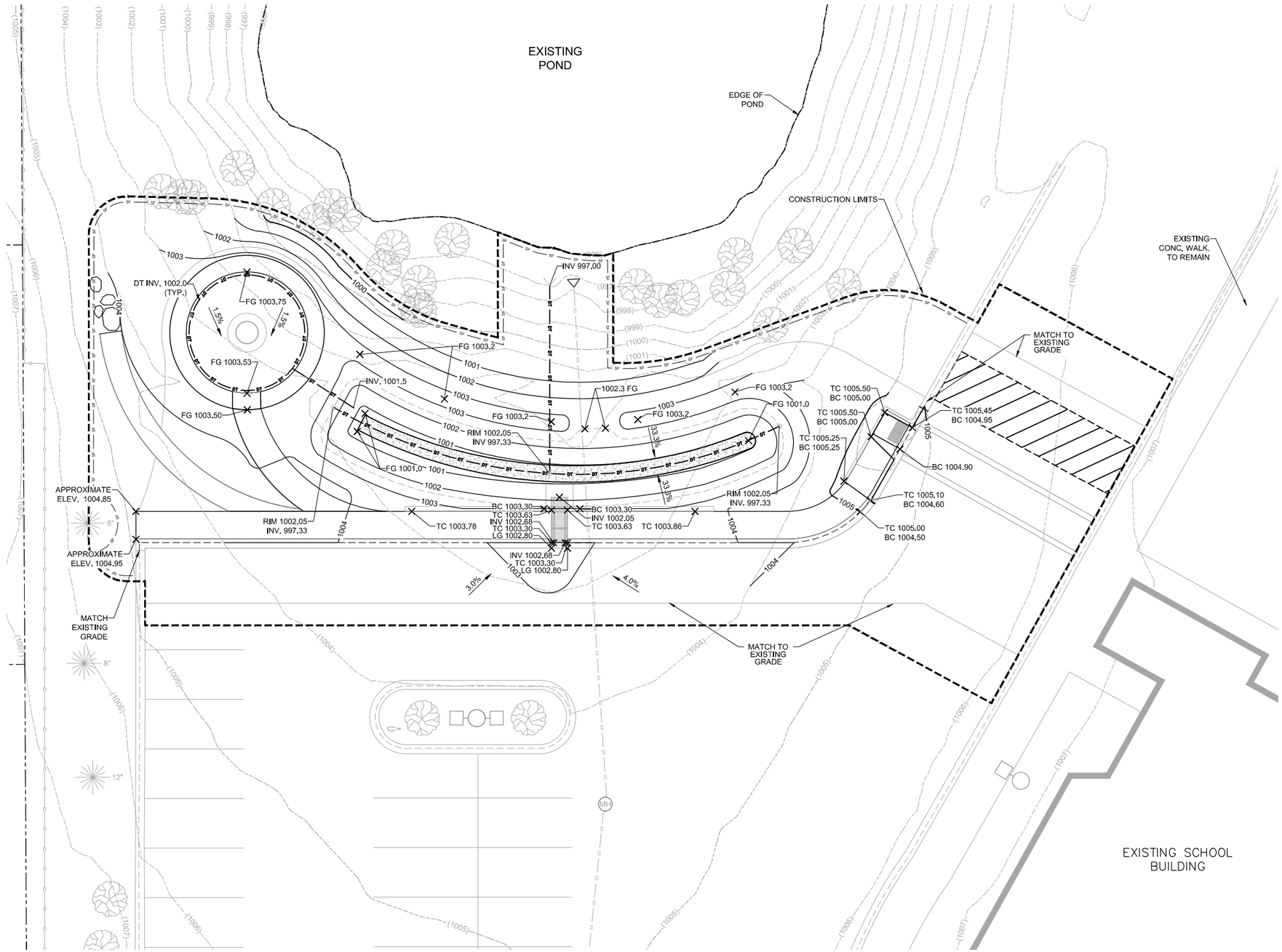
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO
WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
REMOVALS & EROSION CONTROL PLAN

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
C-01	B



LEGEND

- PROPOSED CURB & GUTTER
- DRAIN TILE AND CLEANOUT
- CONSTRUCTION LIMITS
- SEDIMENT CONTROL LOG
- (1000) EXISTING MAJOR (5') CONTOUR
- (1001) EXISTING MINOR (1') CONTOUR
- 1000 PROPOSED MAJOR (5') CONTOUR
- 1001 PROPOSED MINOR (1') CONTOUR
- EXISTING STORMWATER UTILITY
- EXISTING ELECTRIC UTILITY
- EXISTING GAS UTILITY
- EXISTING EASEMENT
- EXISTING TREE TO PROTECT IN PLACE
- TC 1005.45 PROPOSED SPOT ELEVATION (IN FT) TOP OF CURB
- BC 1005.45 PROPOSED SPOT ELEVATION (IN FT) BOTTOM OF CURB
- LG 1005.45 PROPOSED SPOT ELEVATION (IN FT) LIP OF GUTTER

GENERAL NOTES

1. MAKE ARRAGEMENTS FOR THE OWNER'S REPRESENTATIVE TO BE ONSITE WHILE SAND TRENCHES ARE EXCAVATED AND SUBGRADE SOILS ARE LOOSENED.
2. NO RUBBER TIRED EQUIPMENT IN BASIN AFTER LOOSENING. LOW GROUND PRESSURE TRACKED EQUIPMENT ONLY.
3. ANY COMPACTION OF PREVIOUSLY LOOSENED SOIL MUST BE RELOOSENED. RELOOSENING OF SOILS SHALL BE DONE AT CONTRACTOR'S EXPANSE.

1 / - PLAN: GRADING PLAN

0 10 20
SCALE IN FEET

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	CLIENT	BID	CONSTRUCTION	RELEASED TO/FOR
	03/28/2022	03/28/2022		
	A	B	C	DATE RELEASED
	0	1	2	3

BARR
Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

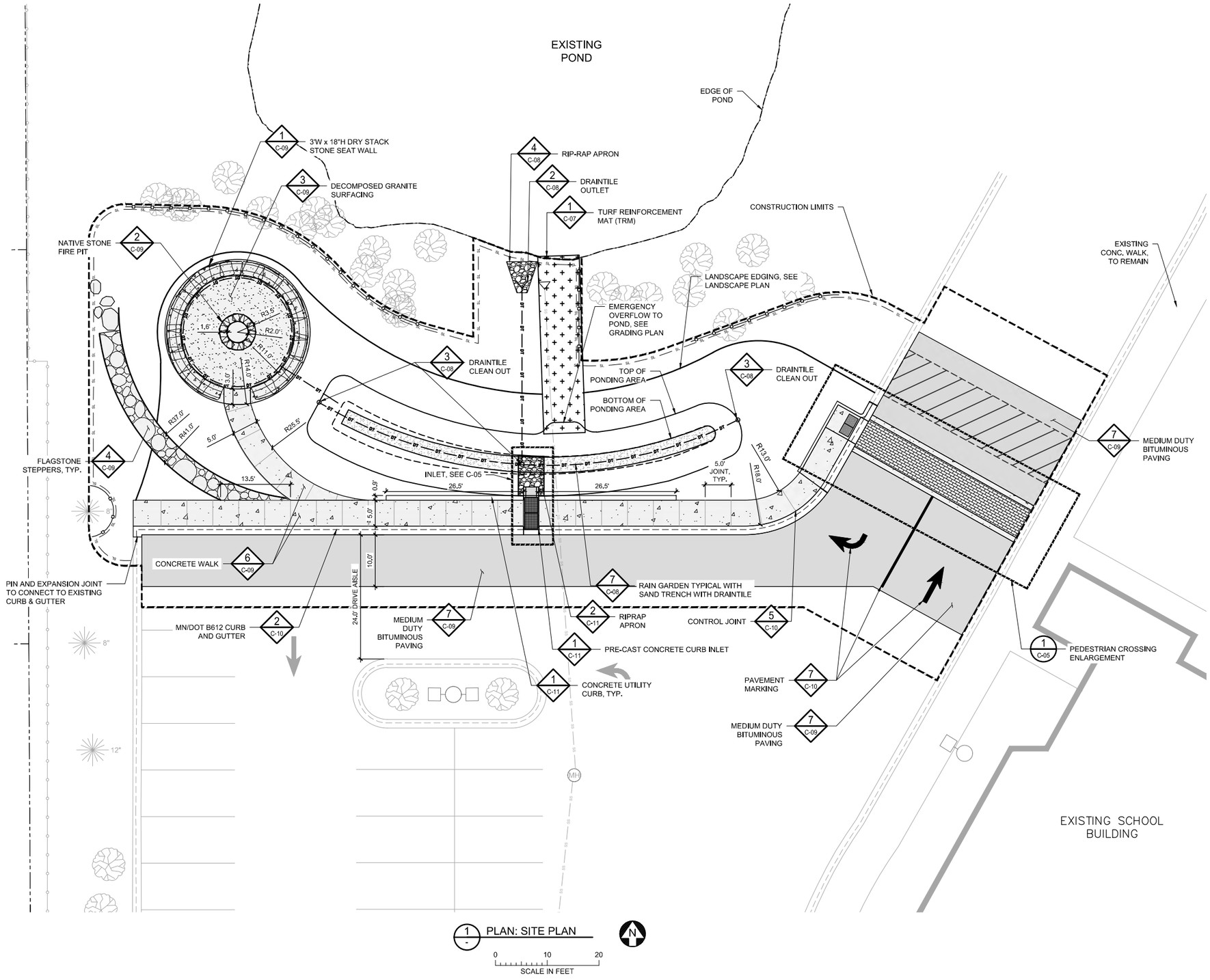
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
GRADING PLAN

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-02
REV. No. B

CADD USER: Andrew M. Papke-Larson FILE: M:\DESIGN\23621172.05\MOUNDS PARK ACADEMY - 2022\23621172_MOUNDS_PARK_C-02_GRADING.DWG PLOT SCALE: 1:2 PLOT DATE: 3/25/2022 10:55 AM
XREFS: Drawing - M:\Design\23621172.05\CIVIL\ BASE\BASE_C50_SURVEY_INITIAL_MAPLEWOOD_CITY_HALL.dwg Images in Drawing - M:\Design\23621172.04\MEP2 jpg M:\Design\23621172.04\MEP2.jpg M:\Design\23621172.03\23620939116_BASE_C50_SURVEY_INITIAL_MAPLEWOOD_CITY_HALL.dwg
mek2 M:\Design\23621172.03\23621172\03_Maplewood City Hall_C-01.dwg Plot at 0 10/18/2017 11:24:10



1 - PLAN: SITE PLAN

0 10 20
SCALE IN FEET

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

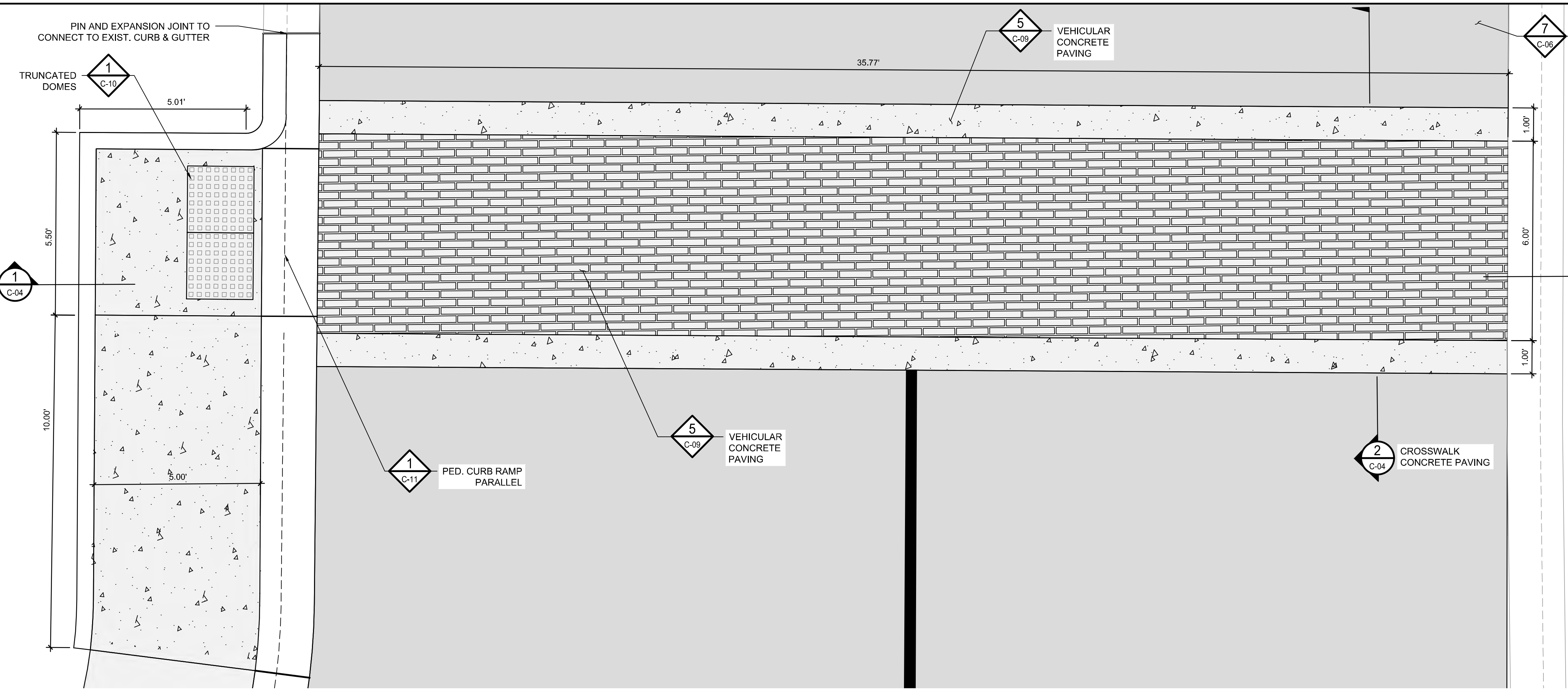
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
SITE PLAN

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
C-03	B

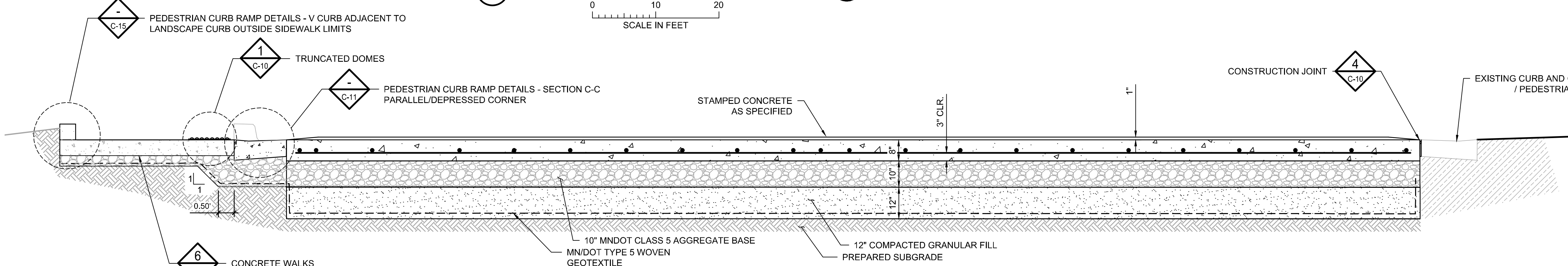


1 - PLAN: PEDESTRIAN CROSSING ENLARGEMENT

0 10 20 SCALE IN FEET

LEGEND

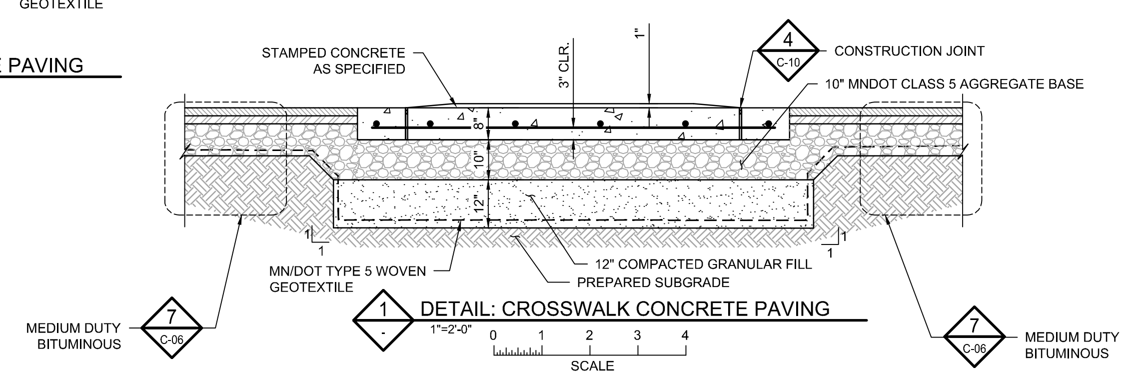
- EXISTING CONCRETE WALKS
- PROPOSED CONCRETE WALKS
- PROPOSED BITUMINOUS PAVING
- PROPOSED CURB & GUTTER
- PROPOSED STAMPED CONCRETE PEDESTRIAN CROSSING
- TRUNCATED DOME



1 - DETAIL: CROSSWALK CONCRETE PAVING

1"=2'-0"

0 1 2 3 4 SCALE



1 - DETAIL: CROSSWALK CONCRETE PAVING

1"=2'-0"

0 1 2 3 4 SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

CADD USER: Andrew M. Papke-Larson FILE: M:\DESIGN\23621172.05\MOUNDS PARK ACADEMY - 2022\23621172_MOUNDS_PARK_C-04_ SITE PLAN ENLARGEMENT.DWG PLOT SCALE: 1:2 PLOT DATE: 3/25/2022 10:55 AM
Xrefs in Drawing - M:\Design\23621172.03\2362117203_MAPLEWOOD CITY HALL_DESIGNBASEv2.dwg M:\Design\23621172.03\2362003116_BASE_C3D_SURVEY_INITIAL_MAPLEWOOD_CITY_HALL.dwg
Images in Drawing - M:\Design\23621172.04\MEK2.jpg M:\Design\23621172.04\MEK2.jpg
mek2 M:\Design\23621172.03\2362117203_Maplewood City Hall_C-01.dwg Plot at 0 10/18/2017 11:24:10

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE ______

PRINTED NAME ______

DATE 03/28/2022 REG. NO. 48430

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	02/28/2022	03/28/2022					
BID							
CONSTRUCTION							
	DATE RELEASED						

BARR

Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

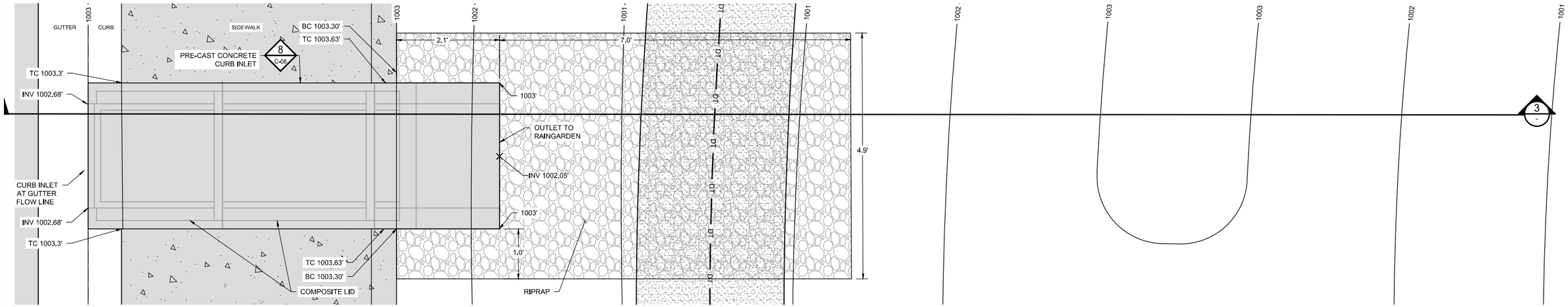
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
SITE PLAN ENLARGEMENT

BARR PROJECT No. 23621172.05

CLIENT PROJECT No. -

DWG. No. C-04 REV. No. B

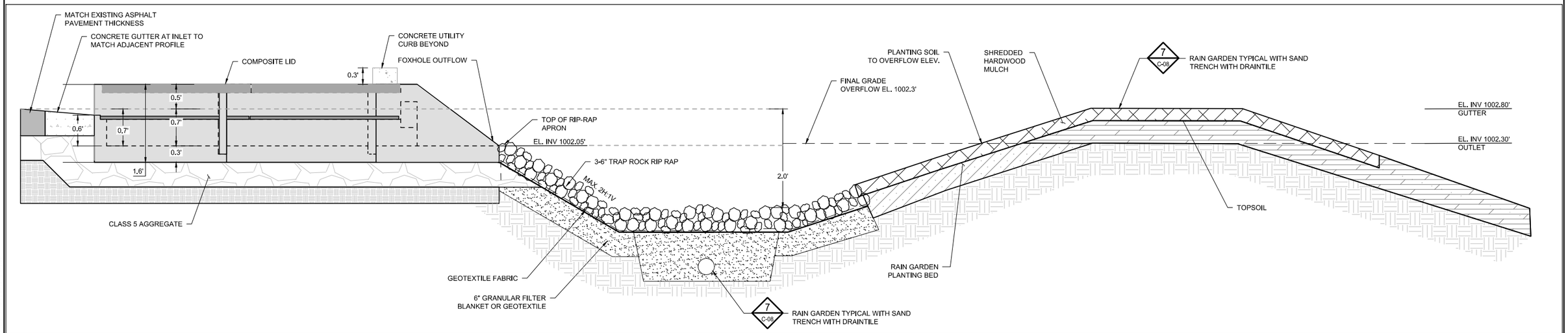


2 DETAIL: STORMWATER CURB INLET AND RAIN GARDEN

1"=1'-0"

0 1 2

SCALE IN FEET



3 SECTION: STORMWATER CURB INLET AND RAIN GARDEN

1"=1'-0"

0 1 2

SCALE IN FEET

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
DATE RELEASED								

BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

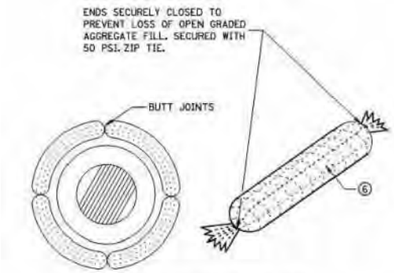
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO
WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
SITE PLAN ENLARGEMENT

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	C-05
REV. No.	B



ROCK LOG/COMPOST LOG

NOTES:
SEE SPECS. 2573, 3137, & 3886.

DEVICES MUST BE ADJUSTED ACCORDINGLY AS TO NOT CAUSE FLOODING ON ROADWAY THAT WOULD IMPEED TRAFFIC FLOW.

① ALL GEOTEXTILE USED FOR INLET PROTECTION SHALL BE MONOFILAMENT IN BOTH DIRECTIONS, MEETING SPEC. 3886.

② FINISHED SIZE, INCLUDING POCKETS WHERE REQUIRED SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

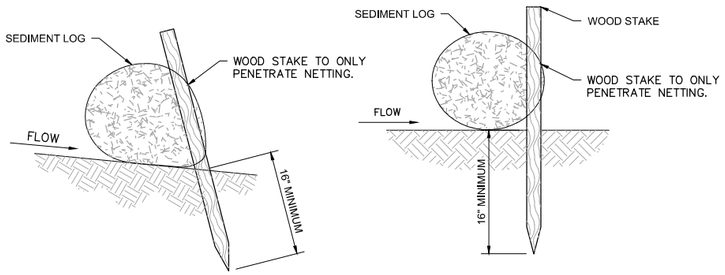
③ INSTALLATION NOTES:
DO NOT PLACE FILTER BAG INSERT IN INLETS SHALLOWER THAN 30 INCHES, MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE. THE PLACED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE OF 3 INCHES BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES. WHERE NECESSARY THE CONTRACTOR SHALL CLINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3 INCH SIDE CLEARANCE.

④ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2 INCH X 4 INCH OR USE A ROCK SOCK OR SAND BAGS IN PLACE OF THE FLAP POCKETS.

⑤ SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.

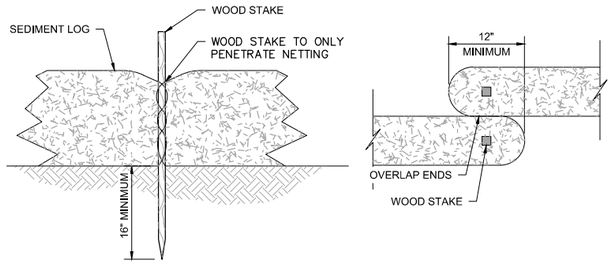
⑥ GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED AGGREGATE CONSISTING OF SOUND DURABLE PARTICLES OF COARSE AGGREGATE CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.

1 - DETAIL: INLET PROTECTION - FILTER SACK
NOT TO SCALE



SIDE VIEW ON SLOPE

SIDE VIEW FLAT



FRONT VIEW

TOP VIEW

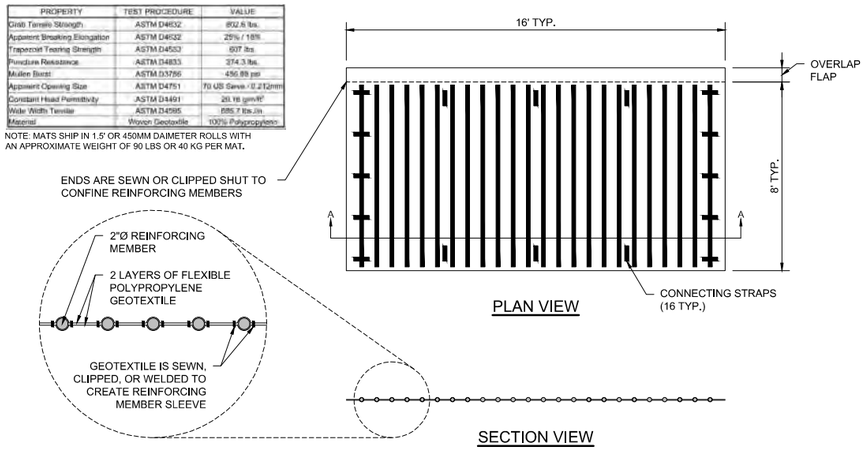
2 - DETAIL: SEDIMENT CONTROL LOG - STAKING
NOT TO SCALE

NOTES:

1. SEDIMENT LOG SHOULD BE INSTALLED ALONG CONTOURS (CONSTANT ELEVATION).
2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
3. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN REACHING 1/2 OF LOG HEIGHT.
4. SEDIMENT LOG SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIRED OR REPLACED AS REQUIRED.

PROPERTY	TEST PROCEDURE	VALUE
Grab Tensile Strength	ASTM D4632	802.6 lbs.
Apparent Breaking Elongation	ASTM D4632	25% / 18%
Trapezoid Tearing Strength	ASTM D4533	607 lbs.
Puncture Resistance	ASTM D4833	374.3 lbs.
Mullen Burst	ASTM D3786	450.89 psi
Apparent Opening Size	ASTM D4751	70 US Sieve / 0.212mm
Constant Head Permittivity	ASTM D4491	20.16 gpm/ft²
Wide Width Tensile	ASTM D4595	685.7 lbs./in
Material	Woven Geotextile	100% Polypropylene

NOTE: MATS SHIP IN 1.5' OR 450MM DAIMETER ROLLS WITH AN APPROXIMATE WEIGHT OF 90 LBS OR 40 KG PER MAT.



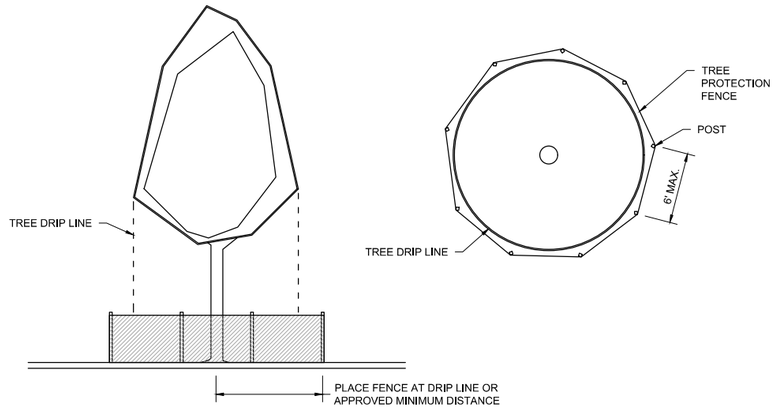
PLAN VIEW

SECTION VIEW

NOTES:

1. ENTRANCE SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIRED OR REPLACED TO PREVENT TRACKING OFFSITE.
2. ENTRANCE SHALL BE REMOVED IN CONJUNCTION WITH FINAL GRADING AND SITE STABILIZATION.

3 - DETAIL: CONSTRUCTION ENTRANCE - RUMBLE STRIP MAT
NOT TO SCALE



NOTES:

1. TREE PROTECTION FENCING SHALL BE INSTALLED ACCORDING TO PLAN PRIOR TO DEMOLITION OR OTHER SITE WORK. ANY RELOCATION OF THE TREE PROTECTION FENCING TO BE APPROVED BY THE ENGINEER PRIOR TO ADJUSTMENT. TREE PROTECTION FENCING SHALL BE MAINTAINED FOR THE DURATION OF THE CONSTRUCTION PROCESS.
2. CONSTRUCTION MATERIALS, STOCKPILES, EQUIPMENT, VEHICLES, AND TEMPORARY FACILITIES SHALL NOT BE STORED OR OPERATED WITHIN THE TREE PROTECTION ZONE.
3. ROOTS OUTSIDE OF THE TREE PROTECTION ZONE EXPOSED OR DAMAGED DURING EXCAVATION OR OTHER CONSTRUCTION ACTIVITY SHALL BE CLEANLY CUT AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
4. ADDITIONAL TREE PROTECTION MEASURES MAY BE REQUIRED.

4 - DETAIL: TREE PROTECTION FENCING
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
	DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

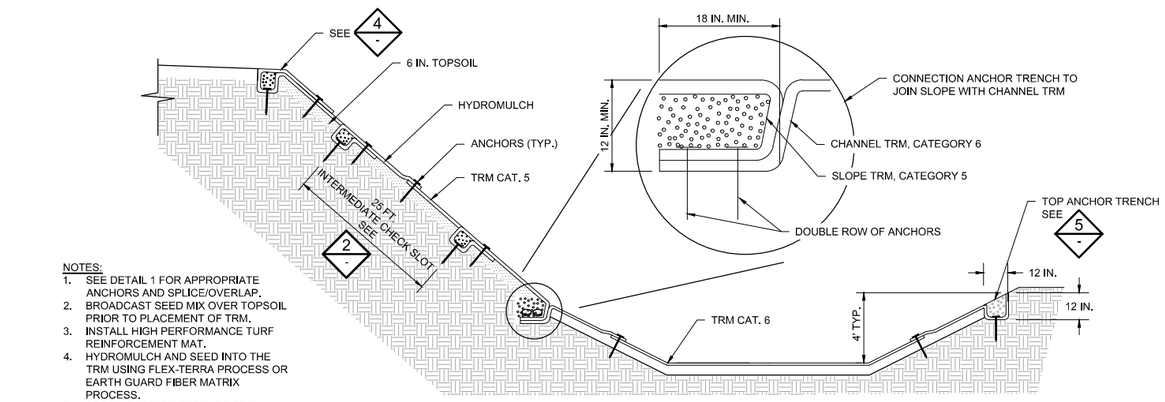
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

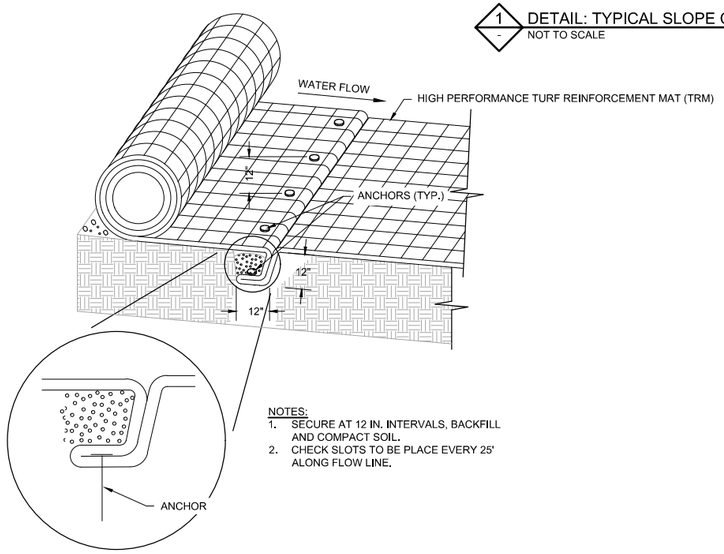
MOUNDS PARK ACADEMY
EROSION CONTROL & DRAINTILE DETAILS

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	C-08
REV. No.	B



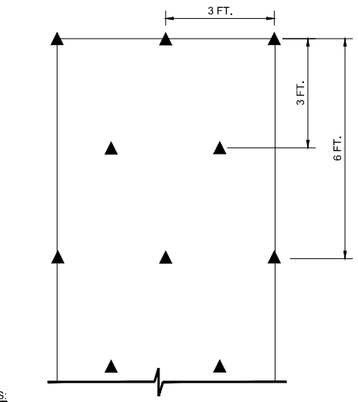
NOTES:
1. SEE DETAIL 1 FOR APPROPRIATE ANCHORS AND SPLICE/OVERLAP.
2. BROADCAST SEED MIX OVER TOPSOIL PRIOR TO PLACEMENT OF TRM.
3. INSTALL HIGH PERFORMANCE TURF REINFORCEMENT MAT.
4. HYDROMULCH AND SEED INTO THE TRM USING FLEX-TERRA PROCESS OR EARTH GUARD FIBER MATRIX PROCESS.
5. SEEDING IS INCIDENTAL TO TRM INSTALLATION

1 - DETAIL: TYPICAL SLOPE CROSS SECTION
NOT TO SCALE



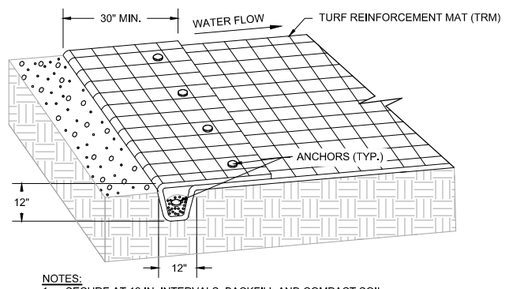
NOTES:
1. SECURE AT 12 IN. INTERVALS, BACKFILL AND COMPACT SOIL.
2. CHECK SLOTS TO BE PLACE EVERY 25' ALONG FLOW LINE.

2 - DETAIL: INTERMITTENT CHECK SLOT
NOT TO SCALE



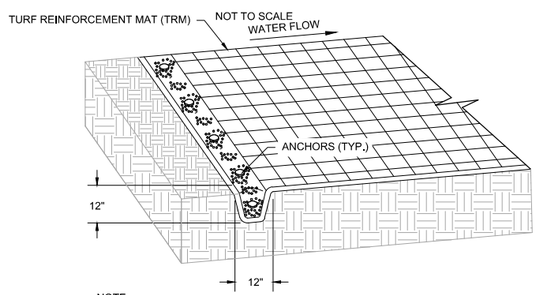
NOTES:
1. PLACE 3-4 PINS/SY FOR HIGH FLOW CHANNEL.
2. PLACE 2-3 PINS/SY FOR LOW FLOW CHANNEL.
3. OVERLAP BETWEEN ROLLS IS 6 IN. MINIMUM FOR CATEGORY 5.
4. OVERLAP BETWEEN ROLLS IS 12 IN, MINIMUM FOR CATEGORY 6.
5. SPLICE BETWEEN ROLLS IS 18 IN. MINIMUM
6. ALWAYS INSTALL DOUBLE ROW OF PINS SPACED 18" APART AT ALL ROLL SPLICES.
7. INSTALL PINS DOWN THE CENTER OF EACH MAT STAGGERING THE OUTSIDE PINS.
8. 18 IN. STEEL NAIL WITH 1-1/2 IN. WASHER OR 18 IN. U-SHAPED WIRE STAPLES.
9. METAL GEOTEXTILE PINS CAN BE USED TO ANCHOR TRM TO THE GROUND SURFACE.

3 - DETAIL: TRM ANCHORS & SPLICE/OVERLAP FOR CHANNELS
NOT TO SCALE



NOTES:
1. SECURE AT 12 IN. INTERVALS, BACKFILL AND COMPACT SOIL.
2. FOR SLOPES, CONSTRUCT TOP ANCHOR TRENCH 2 FT. BEYOND CREST OF SLOPE.

4 - DETAIL: TOP ANCHOR TRENCH
NOT TO SCALE



NOTE:
1. SECURE AT 12 IN. INTERVALS, BACKFILL AND COMPACT SOIL

5 - DETAIL: EDGE TERMINATION ANCHOR TRENCH
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE _____

PRINTED NAME _____

DATE 03/28/2022 REG. NO. 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
	DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

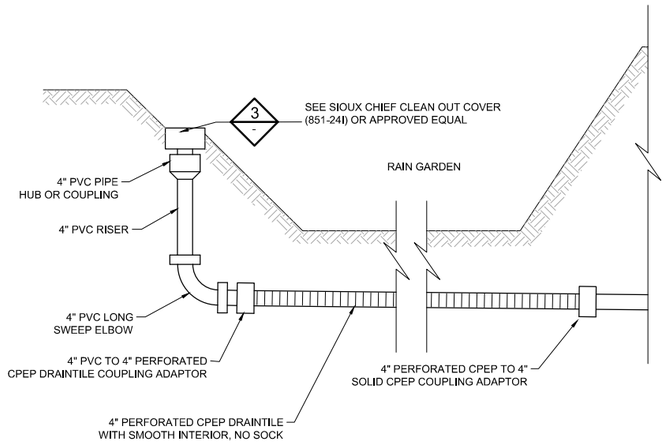
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

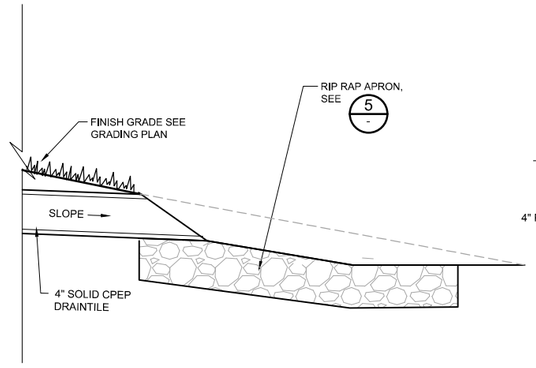
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
EROSION CONTROL & DRAINTILE DETAILS

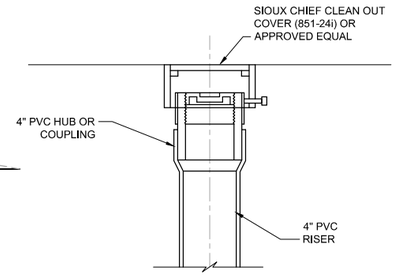
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-07
REV. No. B



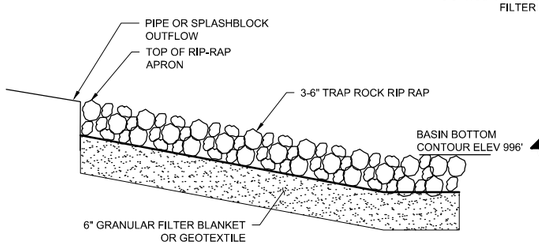
1 DETAIL: DRAINTILE SYSTEM WITH CLEAN OUT
NOT TO SCALE



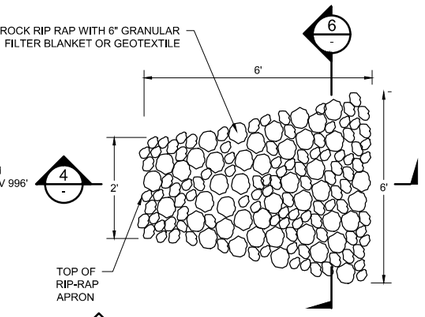
2 DETAIL: OUTLET WITH RIP RAP
NOT TO SCALE



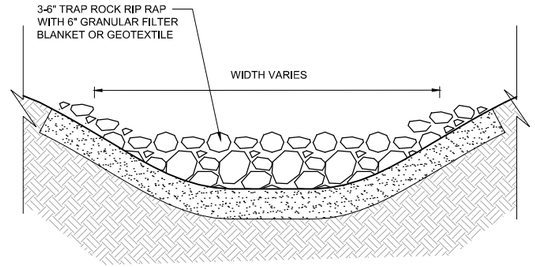
3 DETAIL: DRAINTILE CLEAN OUT
NOT TO SCALE



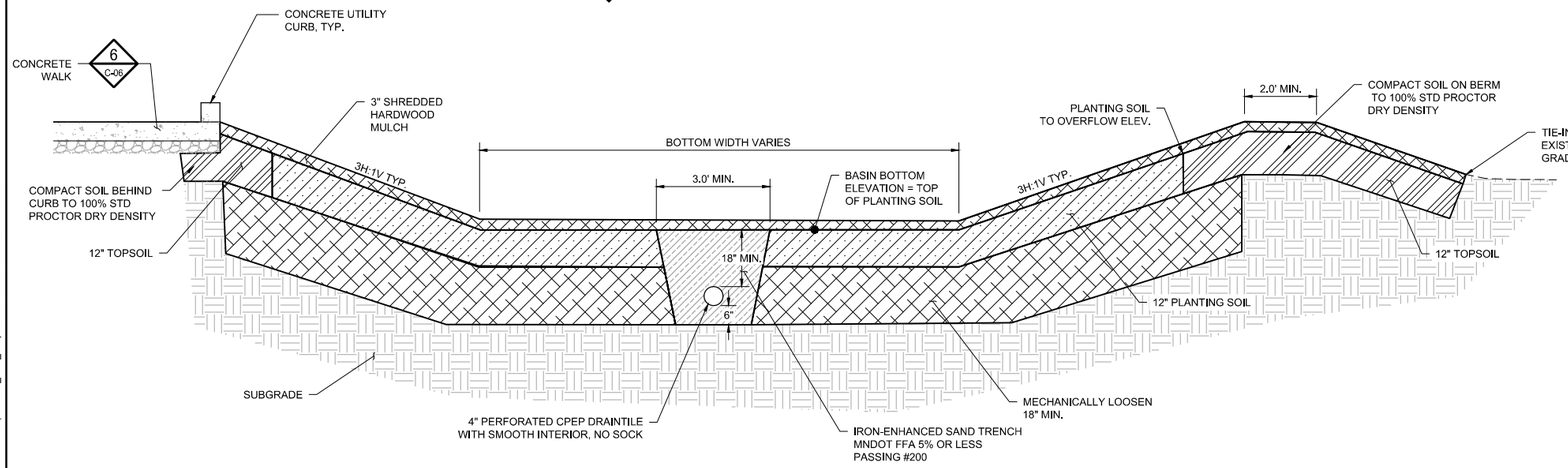
4 SECTION: RIP-RAP APRON
NOT TO SCALE



5 DETAIL: RIP-RAP APRON
NOT TO SCALE

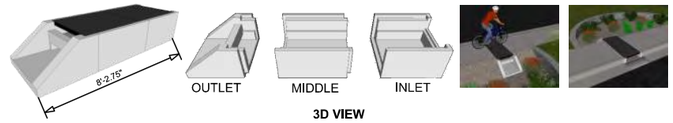


6 SECTION: RIP-RAP APRON
NOT TO SCALE

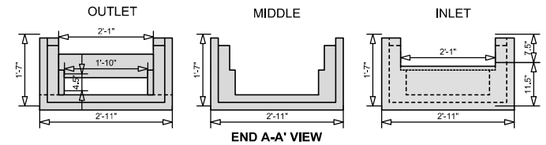


7 DETAIL: RAIN GARDEN TYPICAL WITH SAND TRENCH WITH DRAINTILE

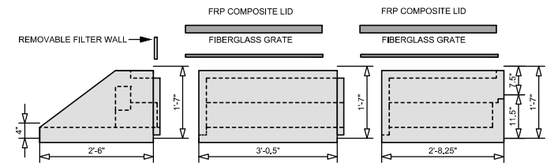
RAIN GUARDIAN FOXHOLE MODULAR PRETREATMENT CHAMBER
BIORETENTION PONDING DEPTH: 9" TYPICAL DETAIL



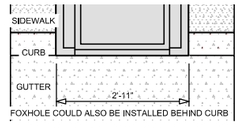
3D VIEW



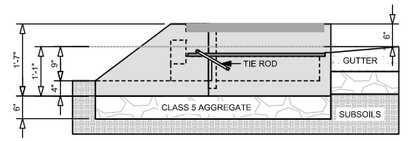
END A-A' VIEW



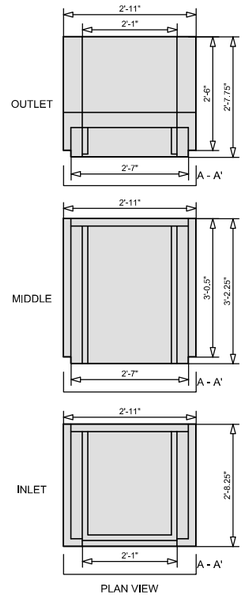
ELEVATION VIEW



INSTALLED PLAN VIEW - INLET ONLY



INSTALLED ELEVATION VIEW - INLET/OUTLET ONLY



PLAN VIEW

SPECIFICATIONS
1. STEEL REINFORCED, COLD JOINT SECURED MONOLITHIC CONCRETE STRUCTURES (INLET 875 LBS, MIDDLE 965 LBS, AND OUTLET 730 LBS). CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS. CONCRETE AIR ENTRAINED (4% TO 8% BY VOLUME). MANUFACTURED AND DESIGNED TO ASTM C858.
2. 2-POINT PICK USING RECESSED LIFTING POCKETS WITH A STANDARD HOOK.
3. FIBERGLASS GRATE (11 LBS/PIECE).
4. FRP COMPOSITE LID (38 LBS/PIECE) WITH CONCENTRATED LOAD CAPACITY OF 11,200 LBS.

INSTALLATION NOTES
1. INSTALL A CLASS 5 BASE (COMPACTED TO 95% STANDARD PROCTOR). THE DISTANCE FROM THE BACK OF THE CURB MAY VARY BASED ON SITE CONDITIONS. EXCAVATE 1' 7" BELOW THE GUTTERLINE ELEVATION (I.E. THE BIORETENTION OVERFLOW ELEVATION) TO ACCOMMODATE THE 9" PONDING DEPTH, 6" CLASS 5 AGGREGATE, AND 4" RAIN GUARDIAN FOXHOLE BASE (INCLUDED). THEREFORE, THE TOP OF THE CLASS 5 COMPACTED BASE IS PRECISELY 1' 1" BELOW THE GUTTERLINE ELEVATION. THE TOP OF THE RAIN GUARDIAN FOXHOLE INLET POINT WILL BE 7-1/2" ABOVE THE TOP OF THE CONCRETE BASE AND 1-1/2" BELOW THE GUTTERLINE ELEVATION TO ACCOMMODATE A SLOPED INLET FROM THE GUTTER TO THE RAIN GUARDIAN FOXHOLE.

2. SET RAIN GUARDIAN FOXHOLE INLET FIRST, FOLLOWED BY MIDDLE SECTION(S), AND FINALLY THE OUTLET ON THE PREPARED CLASS 5 BASE. POSITION RAIN GUARDIAN FOXHOLE OUTLET PIECE SO PRIMARY OUTLET ALIGNS WITH TOE OF BASIN SIDE SLOPE TO AVOID SOIL INTERFERENCE WITH REMOVABLE FILTER WALL.

3. SECURE MODULAR FOXHOLE PIECES AT EACH JOINT USING PROVIDED GALVANIZED TIE RODS.

4. INSTALL EXPANSION/CONTRACTION JOINT MATERIAL OR A SHEET OF POLY TO SERVE AS A BOND BREAK BETWEEN RAIN GUARDIAN FOXHOLE AND CONCRETE INLET BEFORE POURING INLET.

5. REMOVABLE FILTER WALL SHOULD BE INSTALLED WITH FILTER FABRIC FACING THE RAIN GUARDIAN FOXHOLE INLET.

8 DETAIL: PRE-CAST CONCRETE CURB INLET
NOT TO SCALE

OUT FOR REVIEW (NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								

DATE RELEASED

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

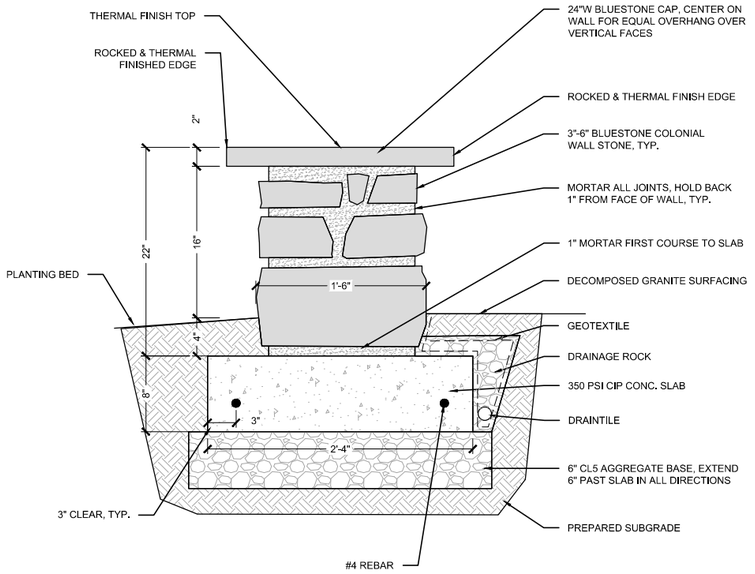
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

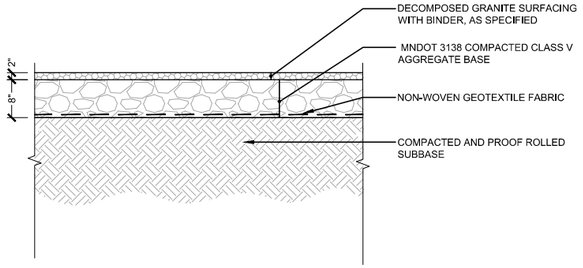
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

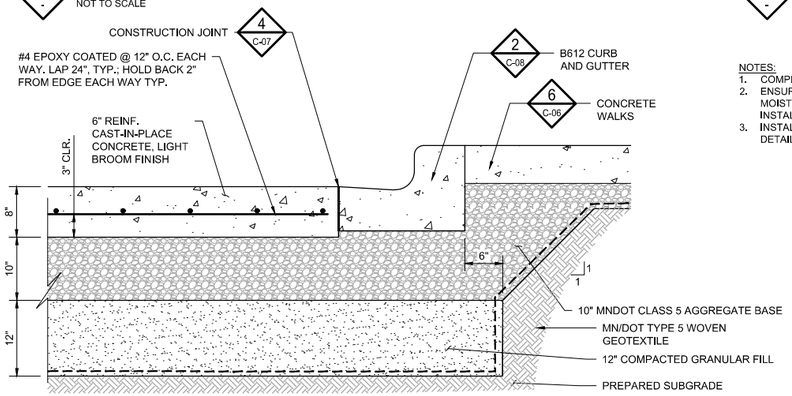
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-08
REV. No. B

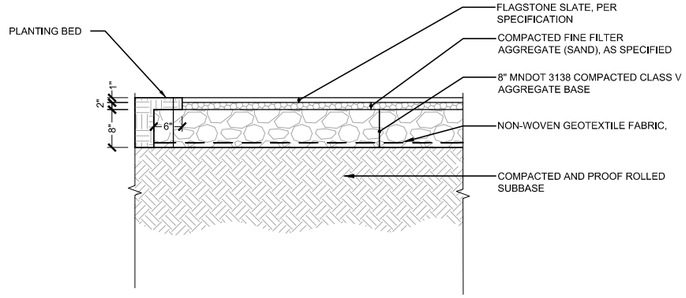


1 DETAIL: NATIVE STONE SEAT WALL
1-1/2"=1'-0"
0 3 6 9 1 2
SCALE



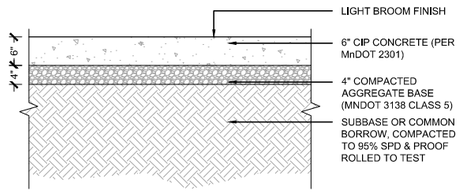
3 DETAIL: DECOMPOSED GRANITE SURFACING
NOT TO SCALE

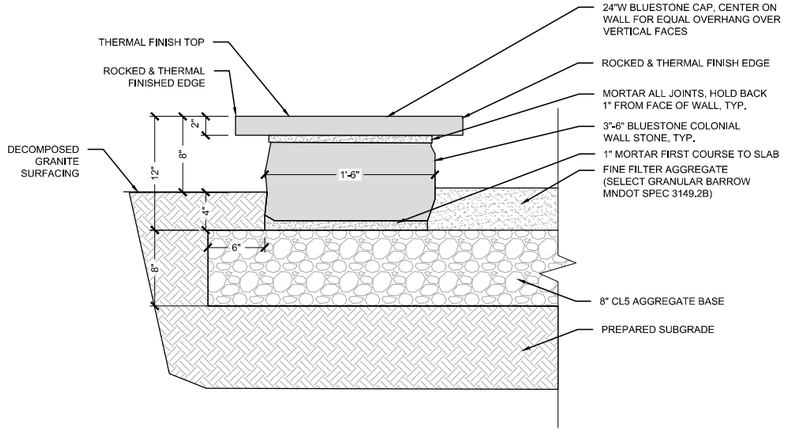




4 DETAIL: FLAGSTONE STEPPERS
NOT TO SCALE

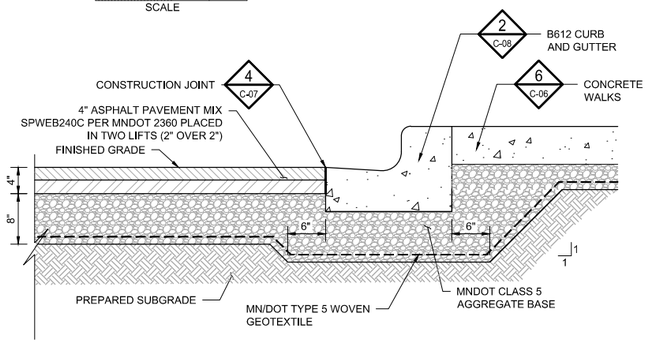
NOTES:
1. COMPLY WITH ALL MnDOT STANDARDS IN INSTALLATION.
2. ENSURE BASE IS PROPERLY COMPACTED AND TO CORRECT MOISTURE CONTENT PER PROJECT STANDARDS BEFORE INSTALLING CONCRETE.
3. INSTALL EXPANSION AND CONTROL JOINTS PER PROJECT DETAILS, TYP.



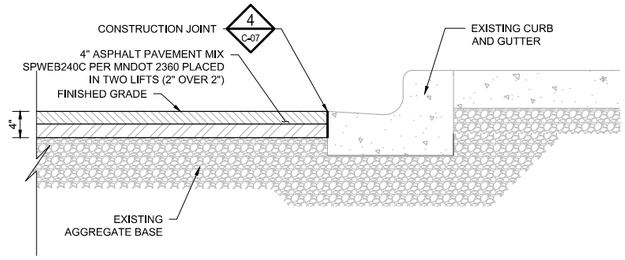


2 DETAIL: NATIVE STONE FIRE PIT
1-1/2"=1'-0"
0 3 6 9 1 2
SCALE

5 DETAIL: VEHICULAR CONCRETE PAVING
1"=1'-0"
0 1 2
SCALE



6 DETAIL: CONCRETE WALKS
NOT TO SCALE



7 DETAIL: MEDIUM DUTY BITUMINOUS
1"=1'-0"
0 1 2

8 DETAIL: MEDIUM DUTY BITUMINOUS AND EXISTING AGGREGATE BASE
1"=1'-0"
0 1 2

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT		03/28/2022	03/28/2022					
BID								
CONSTRUCTION								
	DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

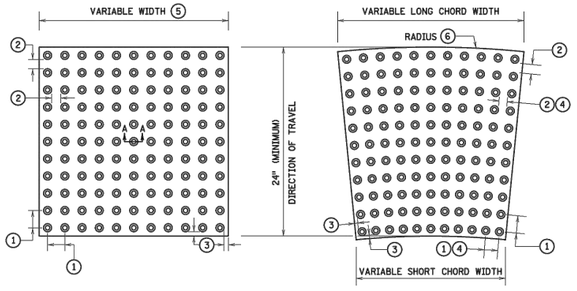
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

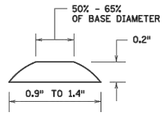
MOUNDS PARK ACADEMY
PLAN DETAILS

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
C-09	B



RECTANGULAR PLATES

RADIAL PLATES



SECTION A-A
TRUNCATED DOME

TYPICAL RADIAL TRUNCATED DOME PLATES

RADIUS (FEET) (7)	LONG CHORD WIDTH (INCHES)	SQUARE FEET PER PLATE	PLATES REQUIRED FOR 90 DEGREE TURN
10	23 1/2	3.53	8
15	18 13/16	2.93	15
15	23 1/2	3.67	12
20	18 13/16	3.00	20
20	18 7/8	2.98	20
25	20 1/2	3.28	23
25	23 9/16	3.77	20
30	22 5/8	3.65	25
35	22	3.56	30

NOTES:

DETECTABLE WARNING SURFACES SHALL FOLLOW THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).

DETECTABLE WARNINGS CONSIST OF TRUNCATED DOMES ALIGNED IN A SQUARE OR RADIAL GRID PATTERN.

DETECTABLE WARNINGS ARE REQUIRED:
- -WHERE RAMPS, LANDINGS, OR BLENDED TRANSITIONS PROVIDE A FLUSH PEDESTRIAN CONNECTION TO THE ROADWAY.
- -WHERE PEDESTRIAN ACCESS ROUTES CROSS COMMERCIAL DRIVEWAYS THAT ARE PROVIDED WITH TRAFFIC CONTROL DEVICES OR OTHERWISE PERMITTED TO OPERATE LIKE A PUBLIC ROADWAY.
- -AT PEDESTRIAN RAILWAY CROSSINGS.
- -ON RAIL PLATFORMS WHERE BOARDING EDGES ARE NOT PROTECTED.

DETECTABLE WARNINGS SHALL EXTEND:
- -A MINIMUM OF 24" IN THE DIRECTION OF TRAVEL.
- -THE FULL WIDTH OF THE RAMP, LANDING, OR BLENDED TRANSITION, WITHIN 3" OF FULL WIDTH ON EITHER END.
- -THE FULL LENGTH OF THE PUBLIC USE AREA OF A RAIL PLATFORM.

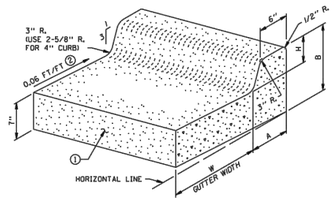
DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT GUTTER, ROADWAY, OR WALKWAY, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. CONTRAST MAY BE PROVIDED ON THE FULL RAMP SURFACE, EXCLUDING THE FLARED SIDES.

FOR MNDOT PROJECTS, SEE MNDOT'S APPROVED/QUALIFIED PRODUCT LISTS.

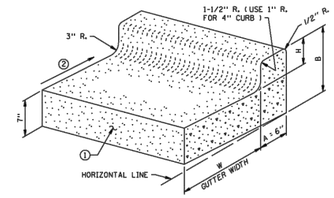
ALL TRUNCATED DOME SYSTEMS SHALL BE PLACED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER.

(1) CENTER-TO-CENTER DOME SPACING: 1.6" MINIMUM, 2.4" MAXIMUM.
(2) BASE-TO-BASE DOME SPACING: 0.65" MINIMUM.
(3) DOME BASE TO PLATE EDGE SPACING: 0.35" MINIMUM, 0.75" MAXIMUM.
(4) SPACING VARIES ON RADIAL PLATES.
(5) TYPICAL WIDTHS AVAILABLE: 12", 18", 24", 30", 36". CHECK WITH MANUFACTURERS FOR AVAILABLE WIDTHS.
(6) ON RADIAL PLATE, RADIUS DEFINED AT BACK OF CURB.
(7) TYPICAL RADII. CHECK WITH MANUFACTURERS FOR AVAILABLE RADII.

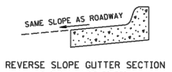
APPROVED AUGUST 23, 2010 — STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION — DETECTABLE WARNING SURFACE TRUNCATED DOMES	SPECIFICATION REFERENCE 2531 2563 — REVISED 01-09-2020 W.J.E.	STANDARD PLATE NO. 7038A



DESIGN B



DESIGN V



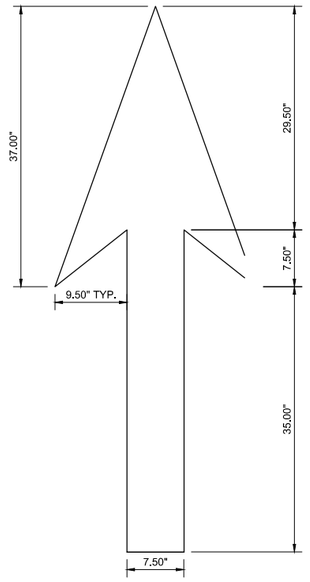
REVERSE SLOPE GUTTER SECTION
(FORMS MAY BE TILTED)

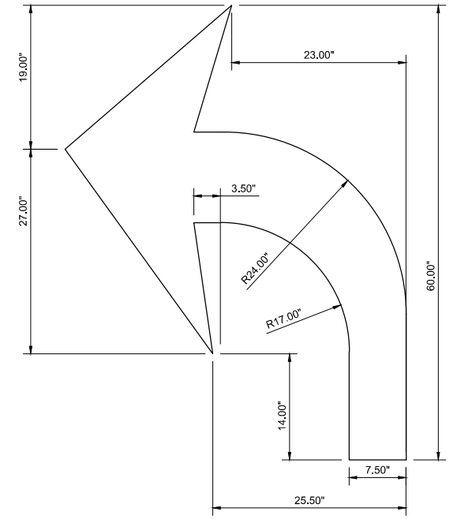
NOTES:
(1) LONGITUDINAL JOINT WHEN ADJACENT TO RIGID PAVEMENT OR BASE.
SEE STANDARD PLANS MANUAL FOR JOINT INFORMATION.
(2) SLOPE 0.06 FT/FT NORMAL, UNLESS OTHERWISE SPECIFIED. IF A DIFFERENT GUTTER SLOPE IS PERMITTED, THE FORM MAY BE TILTED.

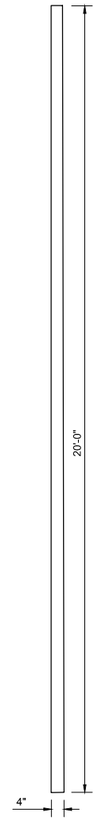
DESIGN B			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE	
H	A	B		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	7-3/8"	11-1/2"	B412	0.0421	23.8	B418	0.0529	18.9	B424	0.0637	15.7	B430	0.0745	13.4	B436	0.0853	11.7
6	8"	13-1/2"	B612	0.0474	21.1	B618	0.0582	17.2	B624	0.0690	14.5	B630	0.0798	12.5	B636	0.0906	11.0
8	8-5/8"	15-1/2"	B812	0.0529	18.9	B818	0.0637	15.7	B824	0.0745	13.4	B830	0.0853	11.7	B836	0.0962	10.4
9	9"	16-5/8"	B912	0.0559	17.9	B918	0.0667	15.0	B924	0.0775	12.9	B930	0.0883	11.3	B936	0.0991	10.1
10	9-3/8"	17-5/8"	B1012	0.0589	17.0	B1018	0.0697	14.4	B1024	0.0805	12.4	B1030	0.0913	11.0	B1036	0.1021	9.8

DESIGN V			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE		DESIGN NO.	CONCRETE	
H	A	B		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.		CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	6"	11-3/8"	V412	0.0396	25.3	V418	0.0504	19.9	V424	0.0612	16.4	V430	0.0720	13.9	V436	0.0828	12.1
6	6"	13-3/8"	V612	0.0426	23.5	V618	0.0534	18.7	V624	0.0642	15.6	V630	0.0750	13.4	V636	0.0858	11.7
8	6"	15-3/8"	V812	0.0457	21.9	V818	0.0565	17.7	V824	0.0673	14.9	V830	0.0781	12.8	V836	0.0889	11.3
9	6"	16-3/8"	V912	0.0472	21.2	V918	0.0580	17.2	V924	0.0688	14.5	V930	0.0796	12.6	V936	0.0904	11.1
10	6"	17-3/8"	V1012	0.0487	20.5	V1018	0.0595	16.8	V1024	0.0703	14.2	V1030	0.0811	12.4	V1036	0.0919	10.9

APPROVED MARCH 11, 1994 — ACTING STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION — CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V	SPECIFICATION REFERENCE 2531 — REVISION DATE 2-28-05	STANDARD PLATE NO. 7100H



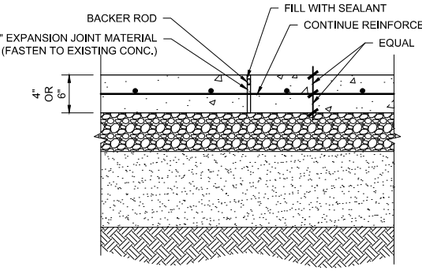




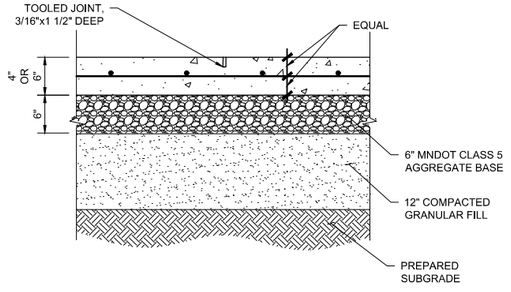
2 DETAIL: CURB AND GUTTER
NOT TO SCALE

7 DETAIL: ARROW PAVEMENT MARKING
NOT TO SCALE

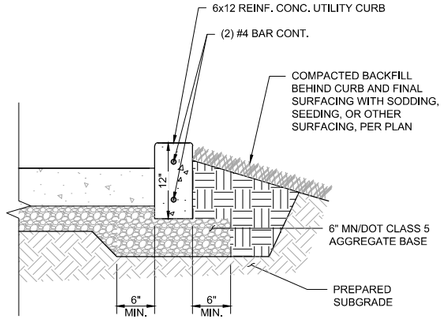
1 DETAIL: TRUNCATED DOMES
NOT TO SCALE



4 DETAIL: CONSTRUCTION JOINT
1"=1'-0"
0 1 2



5 DETAIL: CONTROL JOINT
1"=1'-0"
0 1 2



6 DETAIL: CONCRETE UTILTY CURB
1"=1'-0"
0 1 2

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277
Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN 55435 Ph: 1-800-632-2277 Fax: (952) 832-2601 www.barr.com

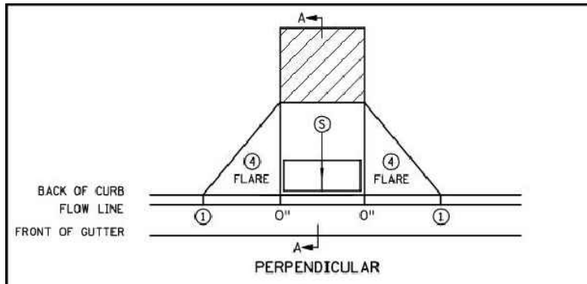
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

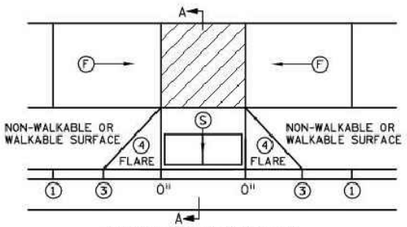
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

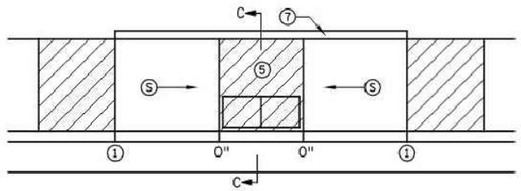
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-10
REV. No. B



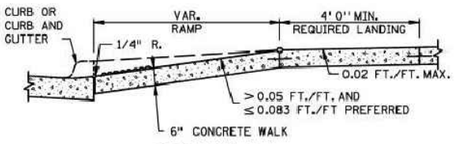
PERPENDICULAR



TIERED PERPENDICULAR

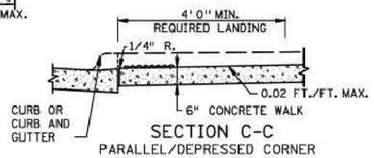


PARALLEL



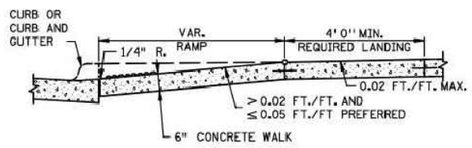
SECTION A-A

PERPENDICULAR/TIERED/DIAGONAL



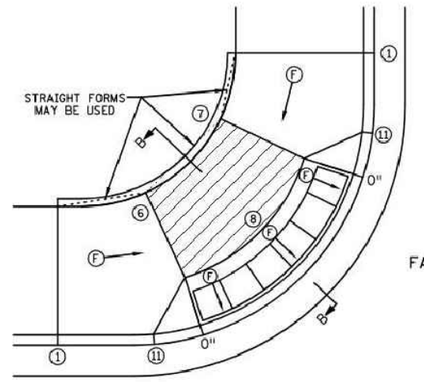
SECTION C-C

PARALLEL/DEPRESSED CORNER

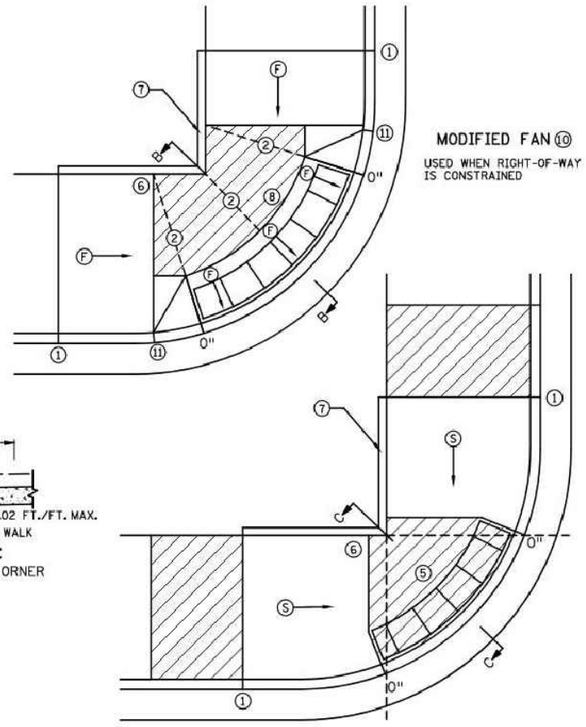


SECTION B-B

FAN



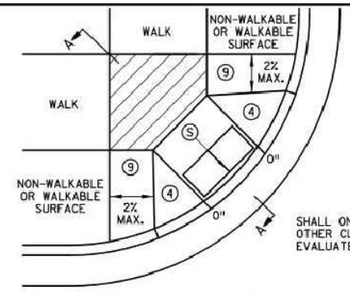
FAN (10)



MODIFIED FAN (10)

USED WHEN RIGHT-OF-WAY IS CONSTRAINED

DEPRESSED CORNER



DIAGONAL

SHALL ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL, THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH (EXCEPT AS STATED IN (6) BELOW.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

(1) MATCH FULL HEIGHT CURB.

(2) 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.

(3) 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.

(4) SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.

(5) DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.

(6) THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)

(7) WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

(8) A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.

(9) PAVE FULL WALK WIDTH.

(10) "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

(11) INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4'X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X'' CURB HEIGHT

REVISION:

APPROVED: 11-04-2021

JEFFREY J. PETERSON
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 1 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
	DATE RELEASED						

BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

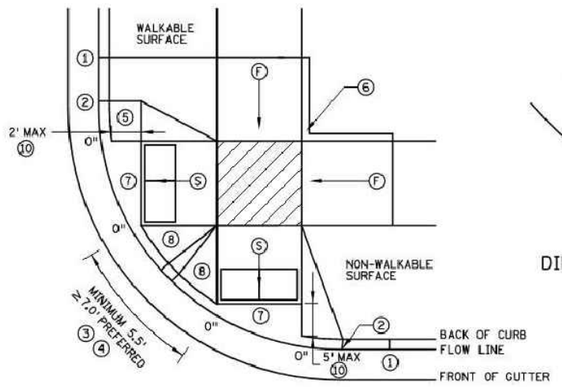
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

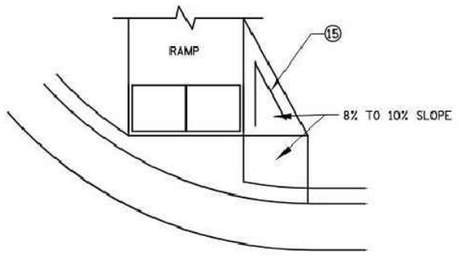
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-11
REV. No. B

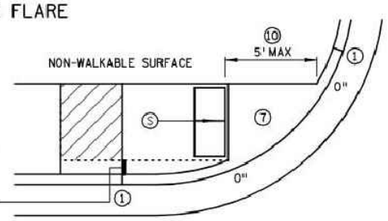


COMBINED DIRECTIONAL

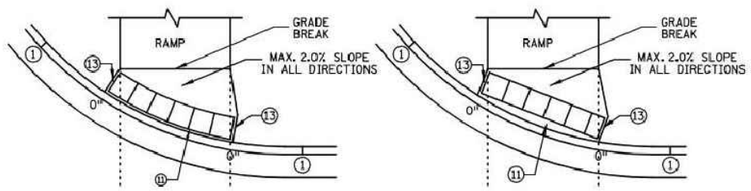


DIRECTIONAL RAMP WALKABLE FLARE

IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.

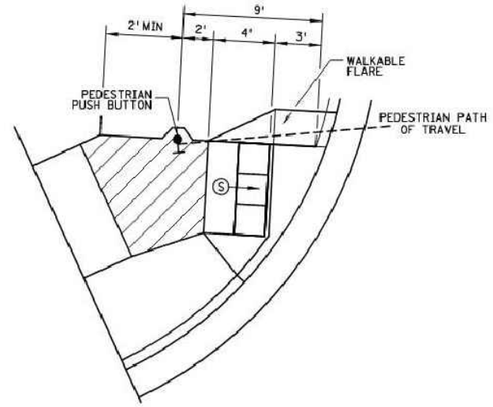


STANDARD ONE-WAY DIRECTIONAL ⑨



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED ⑫

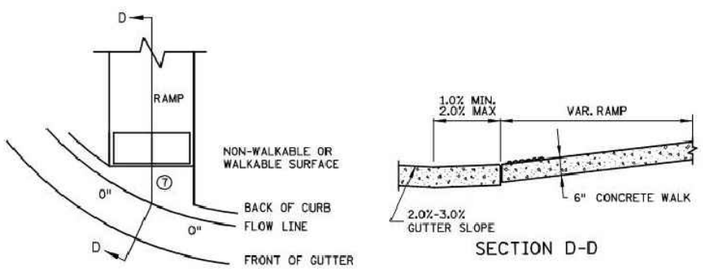
ONE-WAY DIRECTIONAL WITH DETECTABLE WARNING AT BACK OF CURB



SEMI-DIRECTIONAL RAMP ③④⑨

3' DOME SETBACK, 4' LONG RAMP AND PUSH BUTTON 9' FROM THE BACK OF CURB

PRIMARILY USED FOR APS APPLICATIONS WHERE THE PAR DOES NOT CONTINUE PAST THE PUSH BUTTON (DEAD-END SIDEWALK)



SECTION D-D

CURB FOR DIRECTIONAL RAMPS ⑭

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE. ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR, 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

① MATCH FULL CURB HEIGHT.

② 3" HIGH CURB WHEN USING A 3' LONG RAMP.
4" HIGH CURB WHEN USING A 4' LONG RAMP.

③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).

④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.

⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.

⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.

⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.

⑧ 8% TO 10% WALKABLE FLARE.

⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.

⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.

⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.

⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.

⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

(S) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

(F) INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

X" CURB HEIGHT

REVISION:
APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 2 OF 6

APPROVED: 11-04-2021
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	A	B	C	0	1	2	3
CLIENT	03/28/2022	03/28/2022					
BID							
CONSTRUCTION							
RELEASED TO/FOR	DATE RELEASED						

BARR
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

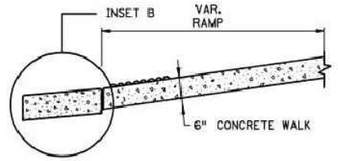
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

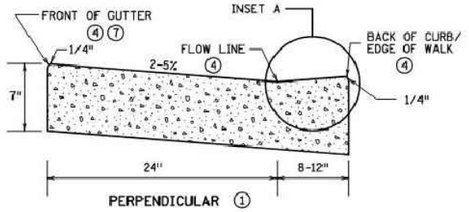
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

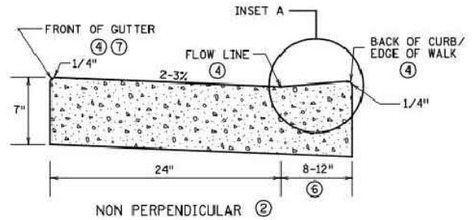
MOUNDS PARK ACADEMY
PLAN DETAILS

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-12
REV. No. B

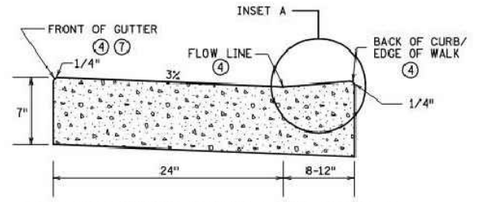




PERPENDICULAR ①

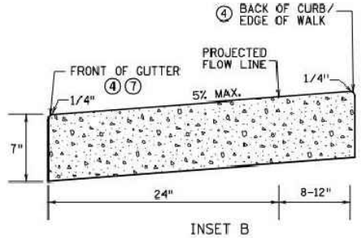


NON PERPENDICULAR ②

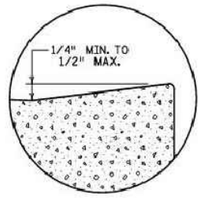


FOR CURB MACHINE PLACEMENT AROUND RADIUS ③
(REGARDLESS OF RAMP TYPE)

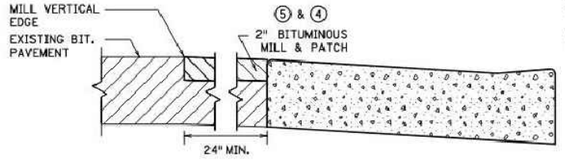
PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL

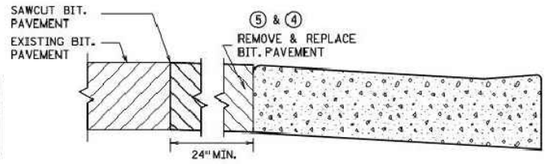


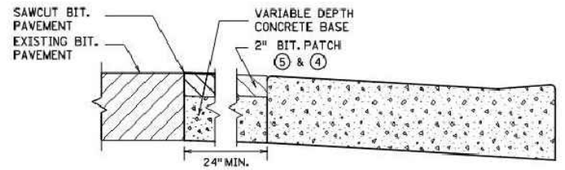
INSET B
OUTFLOW GUTTER ⑧



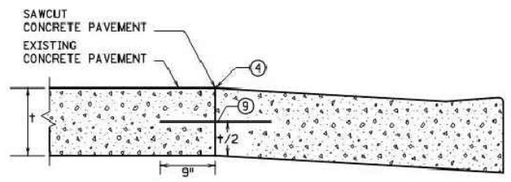
INSET A



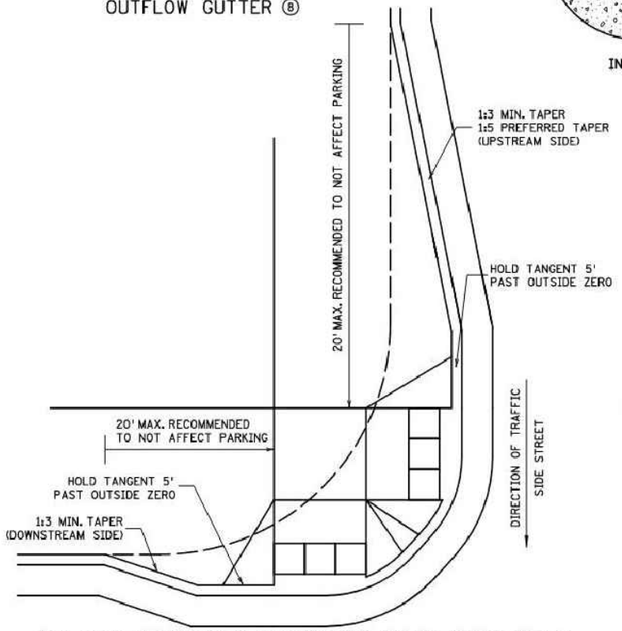




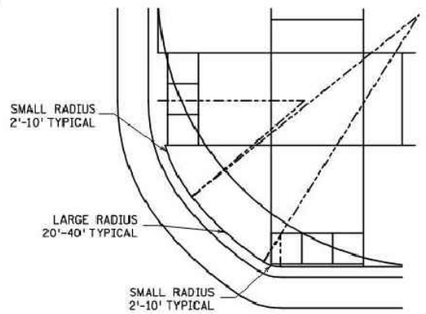
ONLY ALLOWED PER ENGINEER'S APPROVAL



PAVEMENT TREATMENT OPTIONS IN FRONT OF CURB & GUTTER
FOR USE ON CURB RAMP RETROFITS



ADA CURB EXTENSION WITH COMPOUND RADIUS (BUMP OUT) ⑪



COMBINED DIRECTIONAL ⑩
(COMPOUND RADIUS)

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.
NO PONDING SHALL BE PRESENT IN THE PAR.
ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED.
PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

REVISION:
APPROVED: 11-04-2021
JEFF C. PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 3 OF 6
APPROVED: 11-04-2021
REVISED:
THOMAS A. TYRRELL
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	CLIENT	BID	CONSTRUCTION		
RELEASED TO/FOR	03/28/2022	03/28/2022			
DATE RELEASED	A	B	C	0	1	2	3

BARR
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

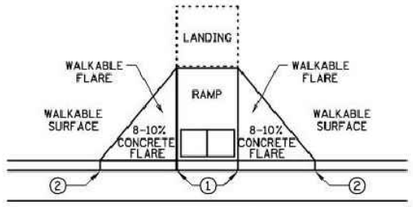
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

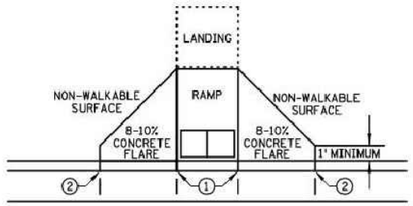
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

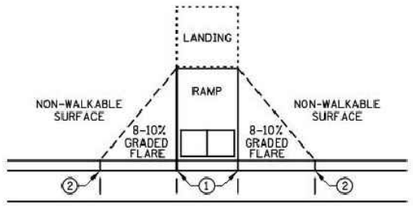
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-13
REV. No. B



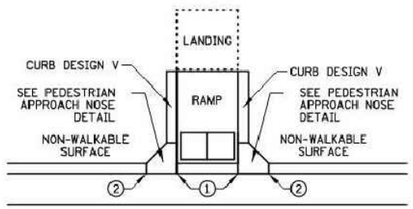
PAVED FLARES
ADJACENT TO WALKABLE SURFACE



PAVED FLARES
ADJACENT TO NON-WALKABLE SURFACE

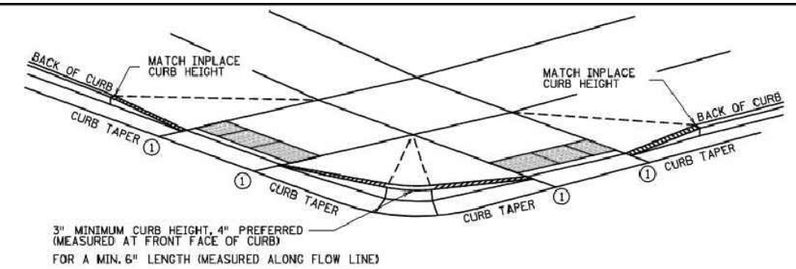


GRADED FLARES

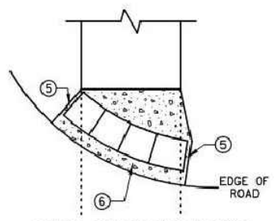


RETURNED CURB ④

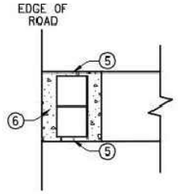
TYPICAL SIDE TREATMENT OPTIONS ③ ⑩



DETECTABLE EDGE WITH ⑦
CURB AND GUTTER

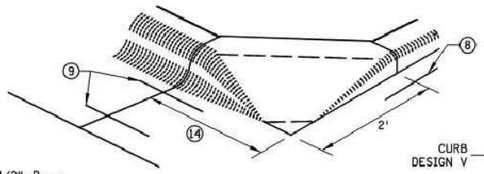


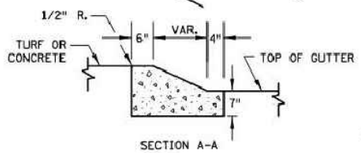
RADIAL DETECTABLE WARNING



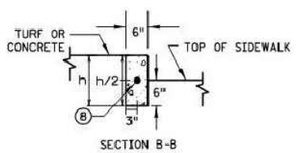
RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

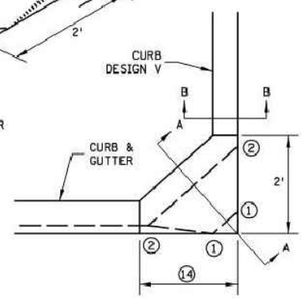




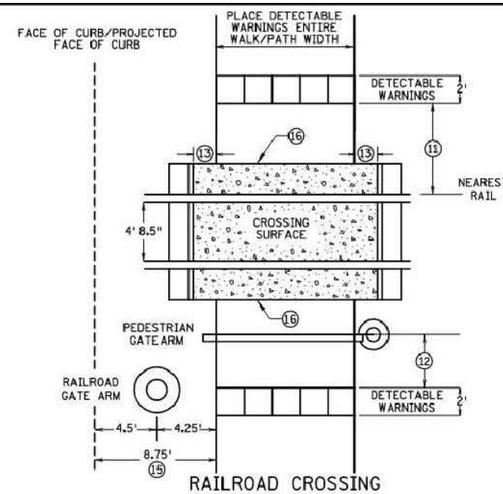
SECTION A-A



SECTION B-B



PEDESTRIAN APPROACH
NOSE DETAIL
(FOR RETURNED CURB
SIDE TREATMENT)



RAILROAD CROSSING
PLAN VIEW

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.

② FULL CURB HEIGHT.

③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.

④ TYPICALLY USED FOR MEDIANS AND ISLANDS.

⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.

⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.

⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS, AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.

⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.

⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.

⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.

⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.

⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.

⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.

⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.

⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 4 OF 6

APPROVED: 11-04-2021
REVISED:

THOMAS TYRBUCKI
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	A	B	C	0	1	2	3
CLIENT	03/28/2022	03/28/2022					
BID							
CONSTRUCTION							
RELEASED TO/FOR	DATE RELEASED						

BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

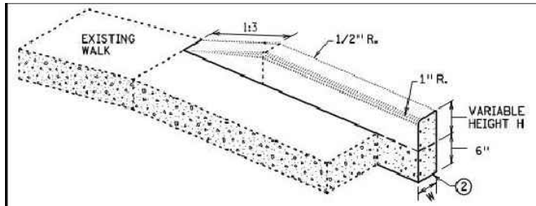
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO
WATERSHED DISTRICT
LITTLE CANADA, MN

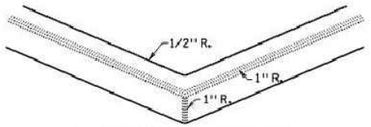
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-14
REV. No. B

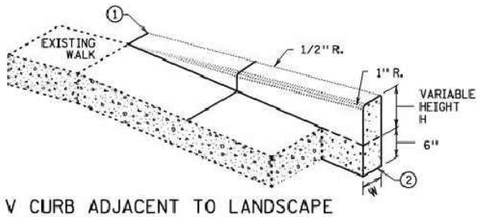


V CURB ADJACENT TO LANDSCAPE
CURB WITHIN SIDEWALK LIMITS

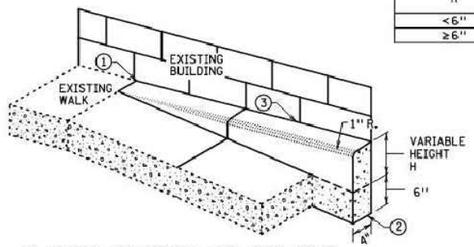


V CURB INTERSECTION

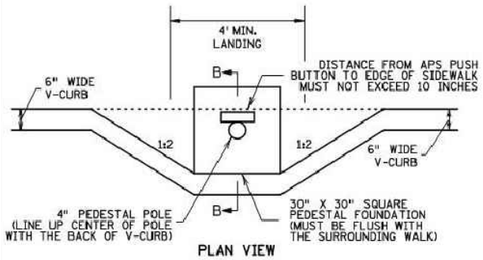
CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
<6"	4"
≥6"	6"



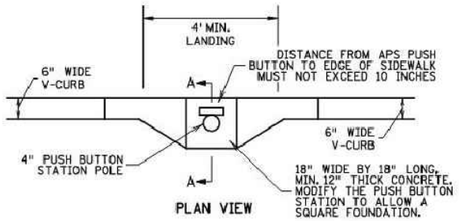
V CURB ADJACENT TO LANDSCAPE
CURB OUTSIDE SIDEWALK LIMITS



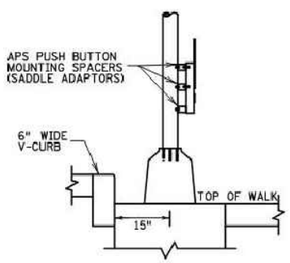
V CURB ADJACENT TO BUILDING OR BARRIER



PLAN VIEW

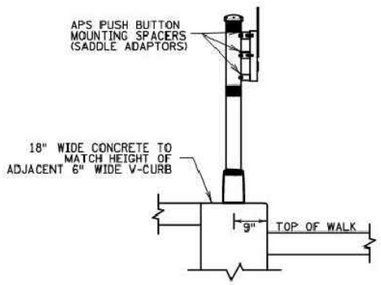


PLAN VIEW



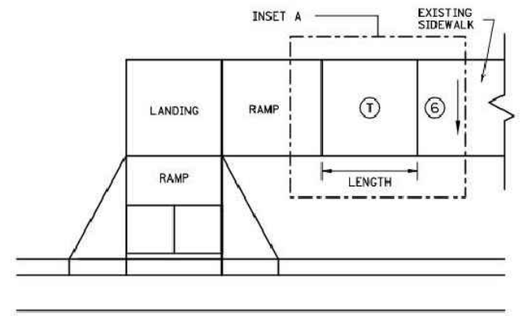
SECTION B-B

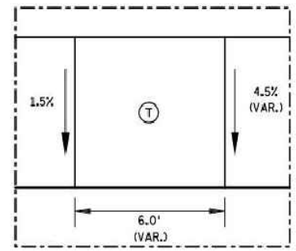
SIGNAL PEDESTAL & PUSH BUTTON (V-CURB)



SECTION A-A

PUSH BUTTON STATION (V-CURB)





TRANSITION PANEL ④⑤

INSET A

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.

② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.

③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.

④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.

⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).

⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

S — INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.

LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.

T — TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

REVISION:
APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 — 5 OF 6
APPROVED: 11-04-2021
REVISED:
THOMAS TYRRELL
STATE DESIGN ENGINEER

PEDESTRIAN CURB RAMP DETAILS

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
	A	B	C	0	1	2	3
RELEASED TO/FOR	DATE RELEASED						

BARR
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

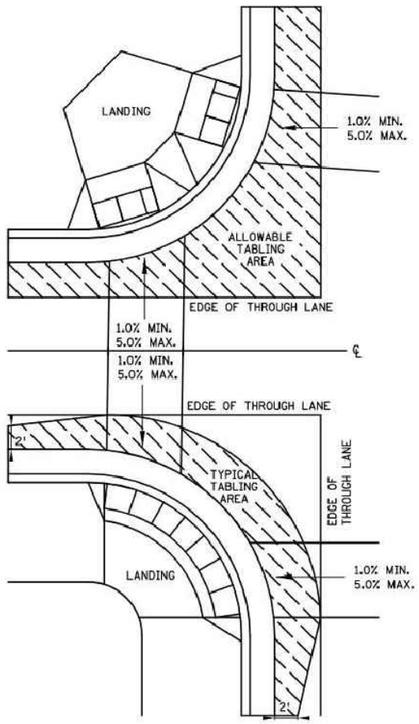
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

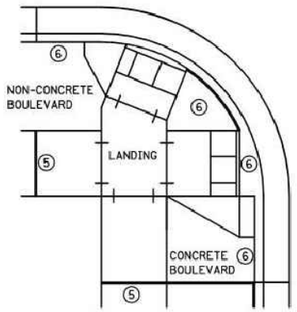
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

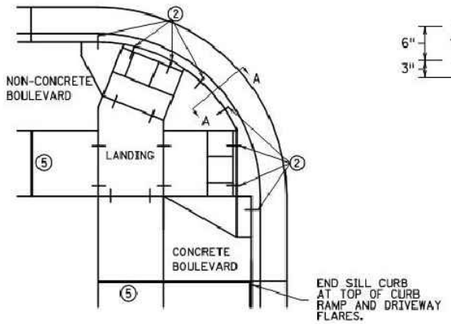
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. C-15
REV. No. B



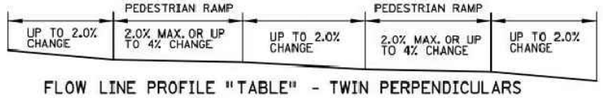
CURB LINE AND ROAD CROSSING ADJUSTMENTS



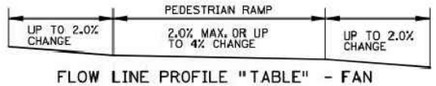
EXPANSION MATERIAL PLACEMENT FOR CONCRETE ROADWAYS



CURB LINE REINFORCEMENT ④ PLACEMENT ON BITUMINOUS ROADWAYS

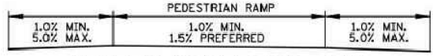


FLOW LINE PROFILE "TABLE" - TWIN PERPENDICULARS

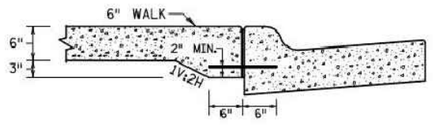


FLOW LINE PROFILE "TABLE" - FAN

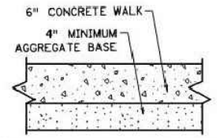
FLOW LINE PROFILE RAISE - TWIN PERPENDICULARS



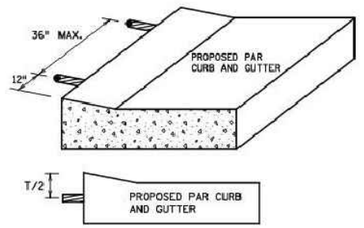
FLOW LINE PROFILE RAISE - FAN



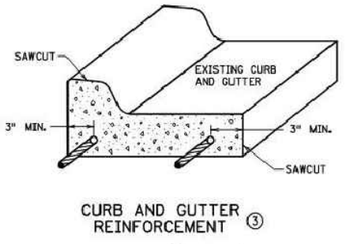
SECTION VIEW A-A
THICKENED SECTION
THROUGH CURB RAMP FLARES



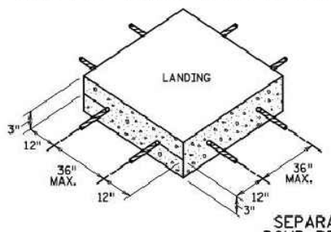
TYPICAL SIDEWALK SECTION
WITHIN INTERSECTION CORNER

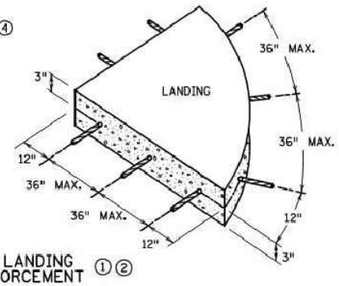


CURB RAMP REINFORCEMENT DETAILS ②④



CURB AND GUTTER REINFORCEMENT ③





SEPARATE LANDING POUR REINFORCEMENT ①②

GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.

② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.

③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED). REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.

④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.

⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

REVISION:

APPROVED: 11-04-2021
JEFFREY PERKINS
OPERATIONS DIVISION

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.250 | 6 OF 6

APPROVED: 11-04-2021
REVISED:
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

PEDESTRIAN CURB RAMP DETAILS

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022
CLIENT		
BID		
CONSTRUCTION		
RELEASED TO/FOR		
DATE RELEASED	A	B	C	0	1	2	3

BARR
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277
Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

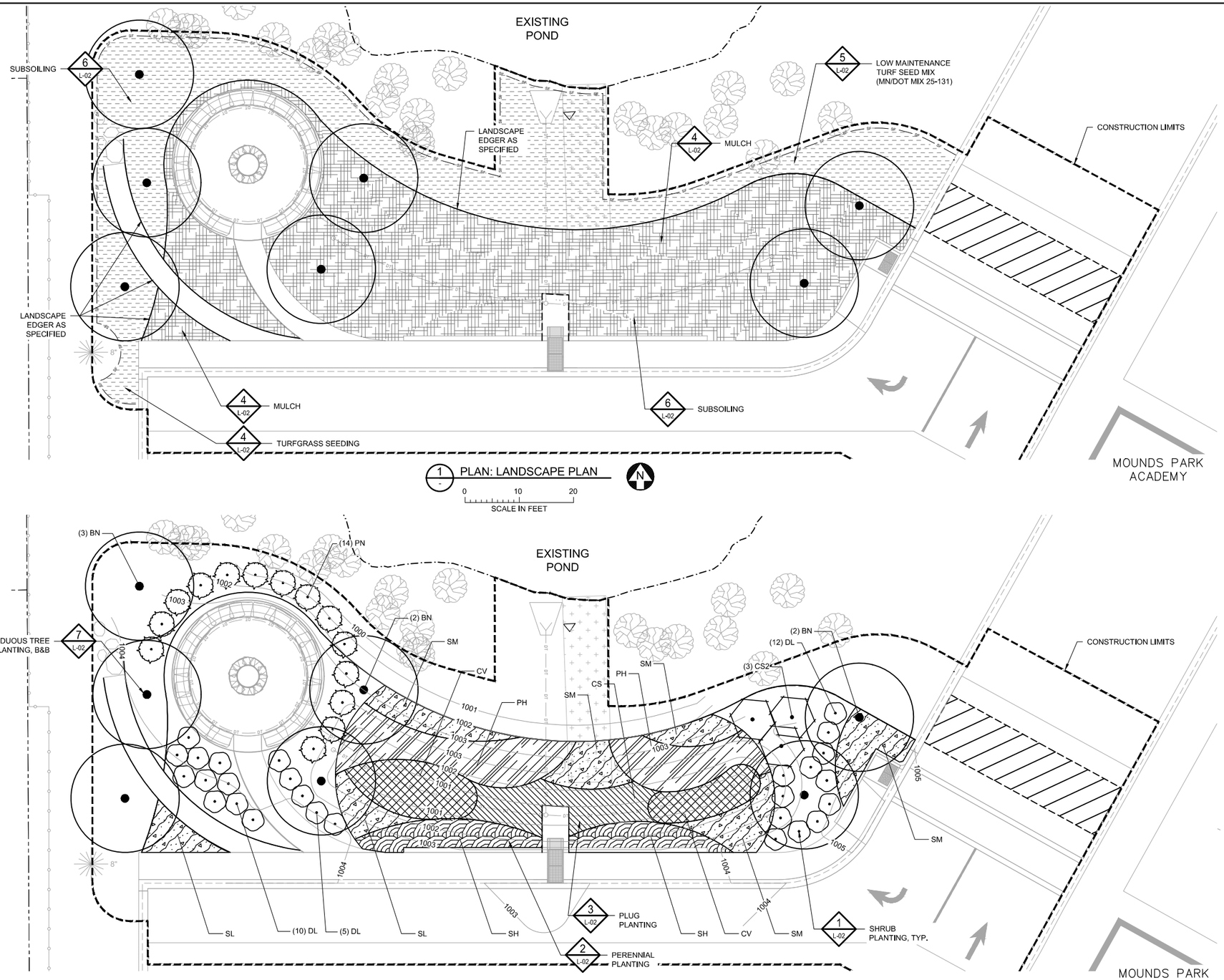
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
PLAN DETAILS

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
C-16	B



LEGEND

- CONSTRUCTION LIMITS
- PROPERTY LINE
- EXISTING FENCE
- TREE PROTECTION FENCING
- TURF REINFORCED MAT (TRM)
- EXISTING TREE TO PROTECT IN PLACE

LANDSCAPE PLAN SCHEDULE

SYMBOL	DESCRIPTION	QTY
	LOW MAINTENANCE TURF SEED MIX (MN/DOT MIX 25-131)	2,053 SF
	WOOD MULCH	2,999 SF

SEE SHEET L-03 FOR LOW MAINTENANCE TURF SEED MIX (MN/DOT MIX 25-131)

LANDSCAPE PLANTING PLAN SCHEDULE

TREES	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY
	BN	BETULA NIGRA / RIVER BIRCH CLUMP	20 GAL.	CONT.	7
SHRUBS	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**	**CONTAINER**	**QTY**
	CS2	CORNUS SERICEA 'CARDINAL' / CARDINAL RED TWIG DOGWOOD	5 GAL.	CONT.	3
	DL	DIERVILLA LONICERA / DWARF BUSH HONEYSUCKLE	5 GAL.	CONT.	27
	PN	PHYSOCARPUS OPULIFOLIUS 'NANUS' / DWARF NINEBARK	5 GAL.	CONT.	14
SHRUB AREAS	**CODE**	**BOTANICAL / COMMON NAME**	**SIZE**	**SPACING**	
	CS	CAREX STRICTA / TUSSOCK SEDGE	4" PLUG	18" o.c.	105
	CV	CAREX VULPINOIDEA / \ FOX SEDGE	4" PLUG	18" o.c.	150
	PH	PANICUM VIRGATUM 'HEAVY METAL' / HEAVY METAL SWITCH GRASS	1 GAL.	36" o.c.	60
	SM	SCHIZACHYRIUM SCOPARIUM 'MINNBLUEA' / BLUE HEAVEN LITTLE BLUESTEM	1 GAL.	30" o.c.	107
	SH	SPOROBOLUS HETEROLEPSIS / PRAIRIE DROPSEED	1 GAL.	30" o.c.	43

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINTED NAME
SIGNATURE
DATE 03/28/2022 LICENSE # 48430

	03/28/2022	03/28/2022
CLIENT		
BID		
CONSTRUCTION		

RELEASED TO/FOR

A	B	C	0	1	2	3

DATE RELEASED

BARR
Corporate Headquarters: Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

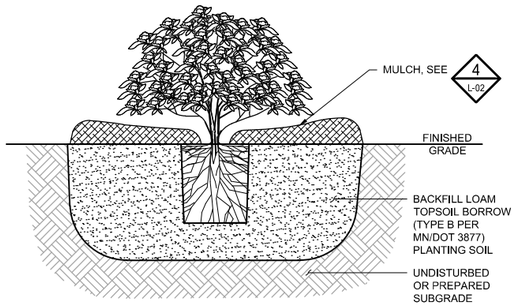
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
LANDSCAPE PLAN

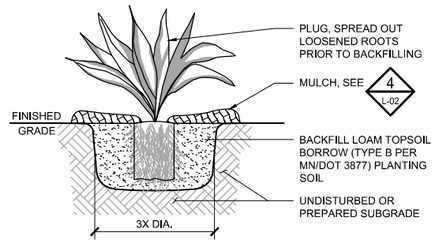
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. L-01
REV. No. B

NOTES:
1. PREPARE PLANTING SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER PLANTING SCHEDULE.
3. DIG PLANT HOLES 18" MIN. LARGER THAN ROOT MASS, ALL SIDES.
4. SET SHRUB ON LIGHTLY FIRMED BACKFILL SOIL AT THE SAME DEPTH GROWN IN THE NURSERY.
5. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AND ENSURE NO AIR GAPS IN SOIL REMAIN.
6. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF PLANTING.
7. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
8. NO MULCH SHALL BE ALLOWED TO BE IN CONTACT WITH PLANT.
9. NOTIFY OWNER FOR ALL INSPECTIONS FOR PLANTING AND REPLACEMENTS, AS SPECIFIED.

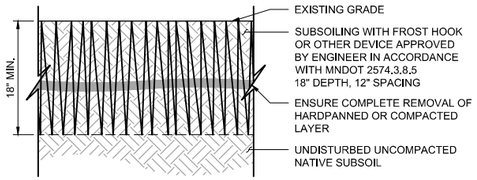


1 DETAIL: SHRUB PLANTING

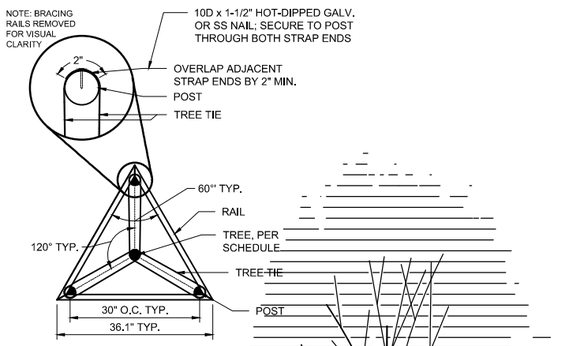
NOTES:
1. PULL BACK MULCH AND CUT AWAY EROSION CONTROL BLANKET. EXCAVATE HOLE 3 TIMES WIDTH OF ROOTBALL, MIN..
2. SCARIFY BOTTOM AND OUTER PERIMETER OF ROOTBALL TO LOOSEN ROOTS. PLANT IN EXCAVATION, ENSURING TOP OF ROOT BALL IS EVEN WITH OR SLIGHTLY ABOVE SOIL FINISHED GRADE.
3. FIRM PLANTING SOIL AROUND ROOTBALL TO ENSURE GOOD SOIL-ROOT CONTACT AND REMOVE ANY AIR POCKETS. DO NOT OVERCOMPACT PLANTING SOIL.
4. WATER THOROUGHLY AFTER PLANTING.
5. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS AND REQUIREMENTS FOR PLANTING LAYOUT, INSTALLATION, AND REVIEW.



3 DETAIL: PLUG PLANTING
NOT TO SCALE



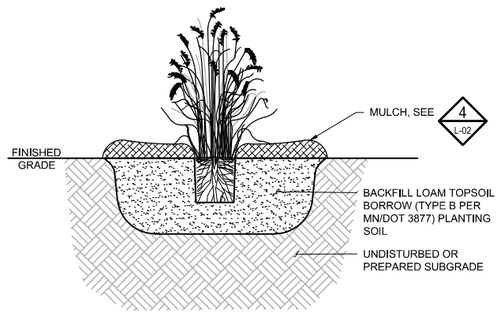
6 DETAIL: SUBSOILING



STAKING PLAN VIEW

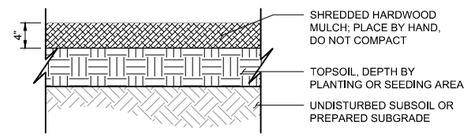
NOTES:
1. PREPARE SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER SCHEDULE.
3. REMOVE DEAD OR DAMAGED BRANCHES. RETAIN THE NATURAL FORM OF PLANT. DO NOT CUT THE LEADER.
4. DIG PLANT HOLES 18" MIN. LARGER THAN ROOT MASS, ALL SIDES.
5. SCARIFY BOTTOM AND SIDES OF HOLE PRIOR TO PLANTING.
6. REMOVE SOIL FROM TOP OF ROOT BALL TO EXPOSE PRIMARY ROOT FLARE.
7. SET TREE ON LIGHTLY FIRMED PLANTING SOIL. PRIMARY ROOT FLARE MUST BE AT OR SLIGHTLY ABOVE THE ADJACENT FINISHED GRADE AFTER BACKFILLING AND SETTLING SOIL.
8. CUT AND REMOVE UPPER 2/3 OF WIRE BASKET TO EXPOSE BURLAP.
9. CUT ROPES AT BASE OF TRUNK, PULL BURLAP DOWN EXPOSING TOP 2/3 OF ROOT BALL. DISPOSE OF ROPES AND BURLAP OFF SITE.
10. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AT TRUNK/CENTRAL LEADER. WATER TO ENSURE NO AIR GAPS AROUND ROOT MASS.
11. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF INSTALLATION.
12. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
13. NO MULCH SHALL BE IN CONTACT WITH BASE OF TREE AT FINISHED GRADE.
14. ALL B&B TREES SHALL BE STAKED AND TIED TO MAINTAIN VERTICALITY FOLLOWING PLANTING.
15. ENSURE THE STAKING SYSTEM DOES NOT DIRECTLY ANCHOR TO OR PENETRATE THE ROOT BALL..
16. REMOVE THE TREE STAKING SYSTEM AFTER ESTABLISHMENT PERIOD, AS SPECIFIED.
17. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TREES IN A PLUMB POSITION THROUGHOUT THE SPECIFIED WARRANTY PERIOD.

NOTES:
1. PREPARE PLANTING SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER PLANTING SCHEDULE.
3. DIG PLANTING HOLES 12" MIN. LARGER THAN ROOT MASS, ALL SIDES.
4. SET PERENNIAL OR GRASS ON LIGHTLY FIRMED BACKFILL SOIL AT THE SAME DEPTH GROWN IN THE NURSERY.
5. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AND ENSURE NO AIR GAPS IN SOIL REMAIN.
6. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF PLANTING.
7. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
8. NO MULCH SHALL BE ALLOWED TO BE IN CONTACT WITH PLANT.
9. NOTIFY OWNER FOR ALL INSPECTIONS FOR PLANTING AND REPLACEMENTS, AS SPECIFIED.



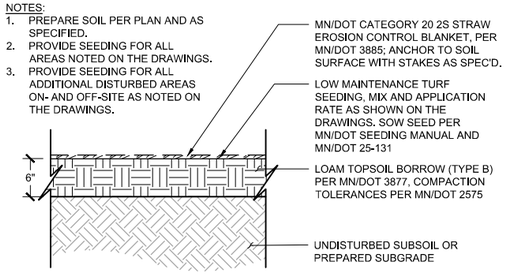
2 DETAIL: PERENNIAL PLANTING

NOTES:
1. PREPARE SUBGRADE PER PLAN AND AS SPECIFIED.
2. INSTALL GEOTEXTILE OVER ENTIRE SURFACE PRIOR TO INSTALLING AGGREGATE.

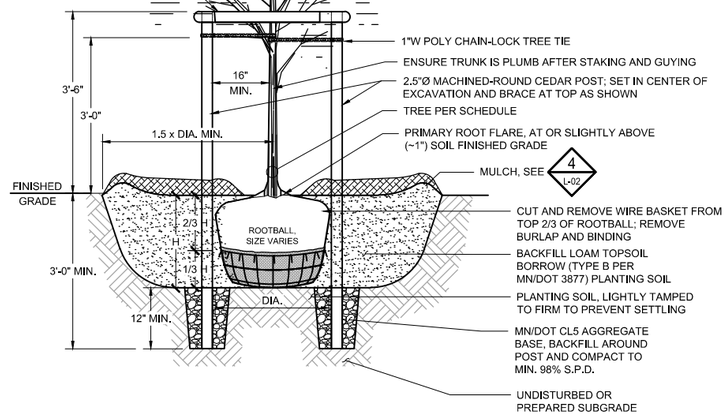


4 DETAIL: HARDWOOD MULCH

NOTES:
1. PREPARE SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE SEEDING FOR ALL AREAS NOTED ON THE DRAWINGS.
3. PROVIDE SEEDING FOR ALL ADDITIONAL DISTURBED AREAS ON- AND OFF-SITE AS NOTED ON THE DRAWINGS.



5 DETAIL: TURFGRASS SEEDING



2"Ø CEDAR HALF-ROUND BRACE: ATTACH TO POST AND ADJACENT BRACES W/ #10 SS WOOD SCREWS

7 DETAIL: DECIDUOUS TREE PLANTING, B&B
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME

SIGNATURE

DATE 03/28/2022 LICENSE # 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
	DATE RELEASED						

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
LANDSCAPE DETAILS

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	L-02
REV. No.	B

GENERAL LANDSCAPE NOTES:

1. PLANTING SHALL CONFORM TO MNDOT SPEC 2571, PLANT INSTALLATION AND ESTABLISHMENT, EXCEPT AS INDICATED OTHERWISE IN THE PLANTING SHEETS.
2. INFORM THE LANDSCAPE ARCHITECT OF PLANTING TWO DAYS PRIOR TO PLANT DELIVERY.
3. CONTRACTOR SHALL COORDINATE LAYOUT OF ALL PLANTS WITH DIRECTION OF LANDSCAPE ARCHITECT IN THE FIELD.
4. CONFIRM ALL QUANTITIES, SHAPES AND LOCATIONS OF ALL SEEDING AND PLANTING AREAS; ADJUST QUANTITIES AS REQUIRED TO CONFORM TO THE SITE CONDITIONS. CONFIRM ANY ADJUSTMENTS WITH THE LANDSCAPE ARCHITECT.
5. LOCATE ALL UTILITIES. NOTIFY THE LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH PLANT INSTALLATION.
6. LONG-TERM STORAGE OF MATERIALS OR SUPPLIES ON-SITE WILL NOT BE ALLOWED. ANY PLANT STOCK NOT PLANTED ON DAY OF DELIVERY SHALL BE HEELED IN AND WATERED UNTIL INSTALLATION. PLANTS NOT MAINTAINED IN THIS MANNER WILL BE REJECTED.
7. THE PLAN TAKES PRECEDENCE OVER THE PLANT SCHEDULE IF DISCREPANCIES EXIST. ADVISE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.

EXISTING CONDITIONS PROTECTIONS:

1. THE CONTRACTOR SHALL AVOID DAMAGING EXISTING TREES. DO NOT STORE OR DRIVE HEAVY MATERIALS OVER TREE ROOTS. DO NOT DAMAGE TREE BARK OR BRANCHES.
2. THE CONTRACTOR SHALL KEEP PAVEMENTS, FIXTURES AND BUILDINGS CLEAN AND UNSTAINED. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE PROJECT SITE SHALL BE KEPT CLEAR OF CONSTRUCTION WASTES AND DEBRIS.

SOIL LOOSENING & AMENDMENT REQUIREMENTS:

1. SOIL LOOSENING APPLIES TO ALL DISTURBED SOILS TO BE RE-VEGETATED, INCLUDING SEEDING/SODDING/LANDSCAPE AREAS (NOT INCLUDING AREAS UNDER EXISTING TREE DRIP-LINES OR WITHIN 5-FEET OF BUILDING/PAVEMENT FOUNDATIONS), TO RESTORE SOIL PERMEABILITY.
2. SOIL REMEDIATION MUST BE IMPLEMENTED PRIOR TO ANY INSTALLATION OF IRRIGATION SYSTEM COMPONENTS, TREES, SHRUBS, SOD AND/OR SEED. NO WHEELED EQUIPMENT SHALL BE USED ON LOOSENED SOIL - WIDE TRACK EQUIPMENT ONLY.
3. SOIL LOOSENING MUST PRESERVE EXISTING TREES. NO LOOSENING SHALL OCCUR WITHIN DRIP LINE OF ANY EXISTING TREE.
4. ALL DISTURBED AREAS TO BE RE-VEGETATED SHALL HAVE 12-INCH MINIMUM DEPTH OF SOIL LOOSENING (E.G. SOIL RIPPING,6-INCH MAX. TOOTH SPACING).
5. LOOSENED SOILS SHALL HAVE A MAXIMUM OF 200 PSI IN TOP 12 INCHES.
6. CONTRACTOR TO TEST EXISTING TOPSOIL PRIOR TO PLANTING (MINIMUM 3 TESTS AT LEAST 500 FEET APART). IF EXISTING TOP 6" OF SOIL DOES NOT HAVE AT LEAST 5% SOIL ORGANIC CONTENT CONTRACTOR IS TO AMEND WITH MNDOT 3890 GRADE 2 COMPOST TO MEET REQUIREMENT. IMPLEMENTATION DOCUMENTATION SHALL BE PROVIDED TO ENGINEER TO VERIFY EXISTING ORGANIC CONTENT IN SOIL AND PROPOSED AMENDMENTS.

SEEDING:

1. ANY EXOTIC INVASIVE PLANTS AND WEEDS WITHIN THE SEEDING AREAS SHALL BE SPRAYED WITH HERBICIDE 14 DAYS PRIOR TO SEEDING OR AS PER MANUFACTURE'S RECOMMENDATION. SIGNAGE INDICATING THE USE OF HERBICIDES MUST BE POSTED ON SITE
2. ALL HERBICIDE APPLICATION SHALL BE APPLIED BY A LICENSED APPLICATOR WITHIN THE STATE OF MINNESOTA.
3. SEED IN ACCORDANCE WITH THE SPECIFICATIONS. SEEDING IS TO TAKE PLACE IMMEDIATELY FOLLOWING FINAL GRADING AND SOIL PLACEMENT TO PREVENT EROSION AND COMPACTION.
4. COVER CROP IS TO BE SEEDED WITHIN ALL AREAS.
5. AFTER SEEDING, TYPE 8 MULCH MATERIAL SHALL BE DISC-ANCHORED OVER ENTIRE SEEDING AREA IN ACCORDANCE WITH MN/DOT STANDARD SPECIFICATION 3882 EXCEPT WHERE EROSION CONTROL BLANKET IS SHOWN ON PLANS.
6. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. IN THE CASE OF ANY DISCREPANCIES BETWEEN THIS DETAIL, PLANS, OR SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

MAINTENANCE AND CARE:

1. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER EACH PORTION OF THE WORK IS IN PLACE. PLANT MATERIAL SHALL BE PROTECTED AND MAINTAINED UNTIL THE INSTALLATION OF PLANTINGS IS COMPLETE. INSPECTION HAS BEEN MADE AND PLANTING IS ACCEPTED EXCLUSIVE OF THE GUARANTEE.
2. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, MULCHING, REMOVAL OF DEAD MATERIAL PRIOR TO GROWING SEASON, RE-SETTING PLANTS AND PROPER GRADE, AND KEEPING PLANTS IN A PLUMB POSITION.
3. WATERING: MAINTAIN A WATERING SCHEDULE WHICH WILL THOROUGHLY WATER ALL PLANTS ONCE A WEEK. IN EXTREMELY HOT, DRY WEATHER, WATER MORE OFTEN AS REQUIRED BY INDICATIONS OF HEAT STRESS SUCH AS WILTING LEAVES. CHECK MOISTURE UNDER MULCH PRIOR TO WATERING TO DETERMINE NEED. CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS FOR WATER.
4. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. IN THE CASE OF ANY DISCREPANCIES BETWEEN THIS DETAIL, PLANS, OR SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

LOW MAINTENANCE TURF SEED MIX (MN/DOT MIX 25-131)

Common Name	Scientific Name	Rate (lb/ac)	Rate (kg/ha)	% of Mix (by weight	Seeds/ sq ft
Red fescue	Festuca rubra	64.00	71.73	29.09%	667.00
Chewings Fescue	Festuca rubra ssp. commutata	44.00	49.32	20.00%	458.60
Low Maintenance Kentucky bluegrass	Poa pratensis 'Low Maintenance'	36.00	40.35	16.36%	1148.70
Hard fescue	Festuca trachyphylla	30.00	33.63	13.64%	389.10
Sheep Fescue	Festuca ovina	25.00	28.02	11.37%	304.22
Perennial Ryegrass	Lolium perenne	21.00	23.54	9.54%	104.60
Total		220.00	246.59	100.00%	3072.22

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME _____

SIGNATURE _____

DATE 03/28/2022 LICENSE # 48430

CLIENT	03/28/2022	03/28/2022							
BID									
CONSTRUCTION									
RELEASED TO/FOR	A	B	C	0	1	2	3		
DATE RELEASED									

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

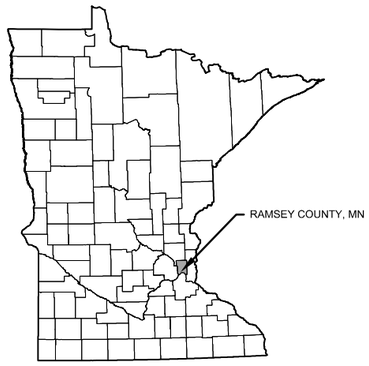
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

MOUNDS PARK ACADEMY
LANDSCAPE DETAILS

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	L-03
REV. No.	B

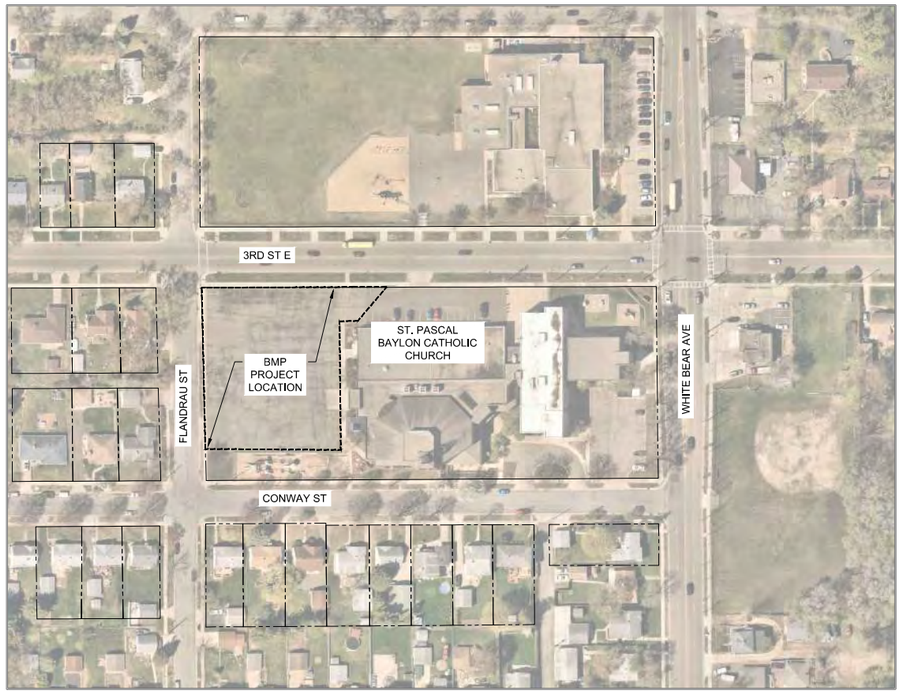
ST. PASCAL BAYLON CATHOLIC CHURCH STORMWATER BMPS

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
2022 BMP RETROFIT PROJECT
SAINT PAUL, MINNESOTA



PROJECT LOCATION MAP

1 VICINITY MAP



2 SITE MAP

INDEX OF SHEETS

CONTACTS:

WATERSHED PROJECT MANAGER:
PAIGE AHLBORG
RAMSEY WASHINGTON METRO WATERSHED DISTRICT
PHONE: 651-792-7964
EMAIL: PAIGE.AHLBORG@RWMWD.ORG

LANDSCAPE ARCHITECT/CONSTRUCTION OBSERVER:
Marcy Bean
BARR ENGINEERING CO.
PHONE: 952-842-3511
EMAIL: mbean@BARR.COM

GOPHER STATE ONE CALL
CALL BEFORE YOU DIG.
1-800-252-1166

PROJECT COORDINATE SYSTEM:

HORIZONTAL: RAMSEY COUNTY COORDINATES, NAD83
VERTICAL: NAVD88

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE _____

PRINTED NAME _____

DATE 03/28/2022 REG. NO. 48430

	A	B	C	0	1	2	3
CLIENT	03/28/2022	03/28/2022					
BID							
CONSTRUCTION							
RELEASED TO/FOR							
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

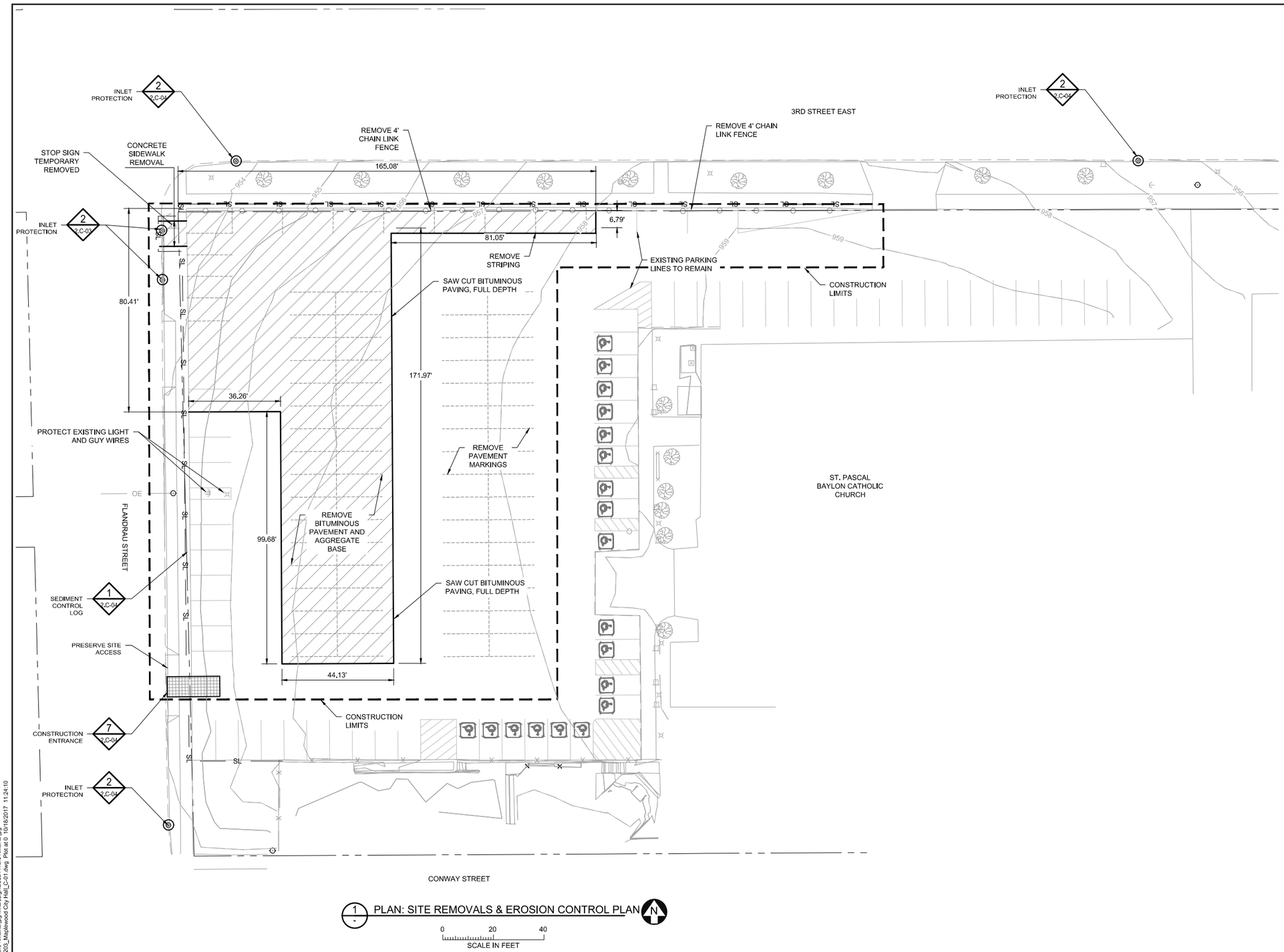
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
SITE LOCATION & SHEET INDEX

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.G-01
REV. No. B



1 - PLAN: SITE REMOVALS & EROSION CONTROL PLAN

0 20 40
SCALE IN FEET

LEGEND

- CONSTRUCTION LIMITS
- SL — SEDIMENT CONTROL LOG
- EXISTING CONTOUR
- ST — EXISTING STORMWATER UTILITY
- OE — EXISTING ELECTRIC UTILITY
- GAS — EXISTING GAS UTILITY
- EXISTING FENCE
- x — EXISTING FENCE TO REMAIN
- EXISTING PARKING MARKINGS TO BE REMOVED
- EXISTING PARKING MARKINGS TO REMAIN
- TREE PROTECTION FENCING
- EXISTING TREE TO PROTECT IN PLACE

GENERAL NOTES

1. POTHOLE ALL EXISTING UTILITIES LOCATED WITHIN THE PROJECT LIMITS BEFORE EARTHWORK BEGINS.

2. RELOCATE EXISTING SPRINKLER VALVES AND SYSTEMS LOCATED WITHIN THE PROJECT LIMITS BEFORE EARTHWORK BEGINS.

3. SAWCUT FULL DEPTH AT JOINT BETWEEN BITUMINOUS PAVEMENT AND CURB. PROTECT EXISTING BITUMINOUS PAVEMENT. IF DAMAGED DURING WORK, PATCH BITUMINOUS PAVEMENT. ASPHALT PATCHING IS INCIDENTAL TO THE BID ITEM PRICE.

4. THE CONTRACTOR SHALL HAVE ACCESS TO STREET SWEEPING EQUIPMENT AT ALL TIMES. THE CONTRACTOR SHOULD BE AWARE OF WEATHER CONDITIONS AND SWEEP ANY STREETS WITH DEBRIS PRIOR TO ANY RAINFALL EVENT. STOCKPILING ON THE STREET DURING ANY RAINFALL EVENT SHALL NOT BE ALLOWED.

5. COORDINATE WITH OWNER TO ENSURE ACCEPTABLE TRAFFIC CONTROL REQUIREMENTS.

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME _____

SIGNATURE _____

DATE 03/28/2022 LICENSE # 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
	DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

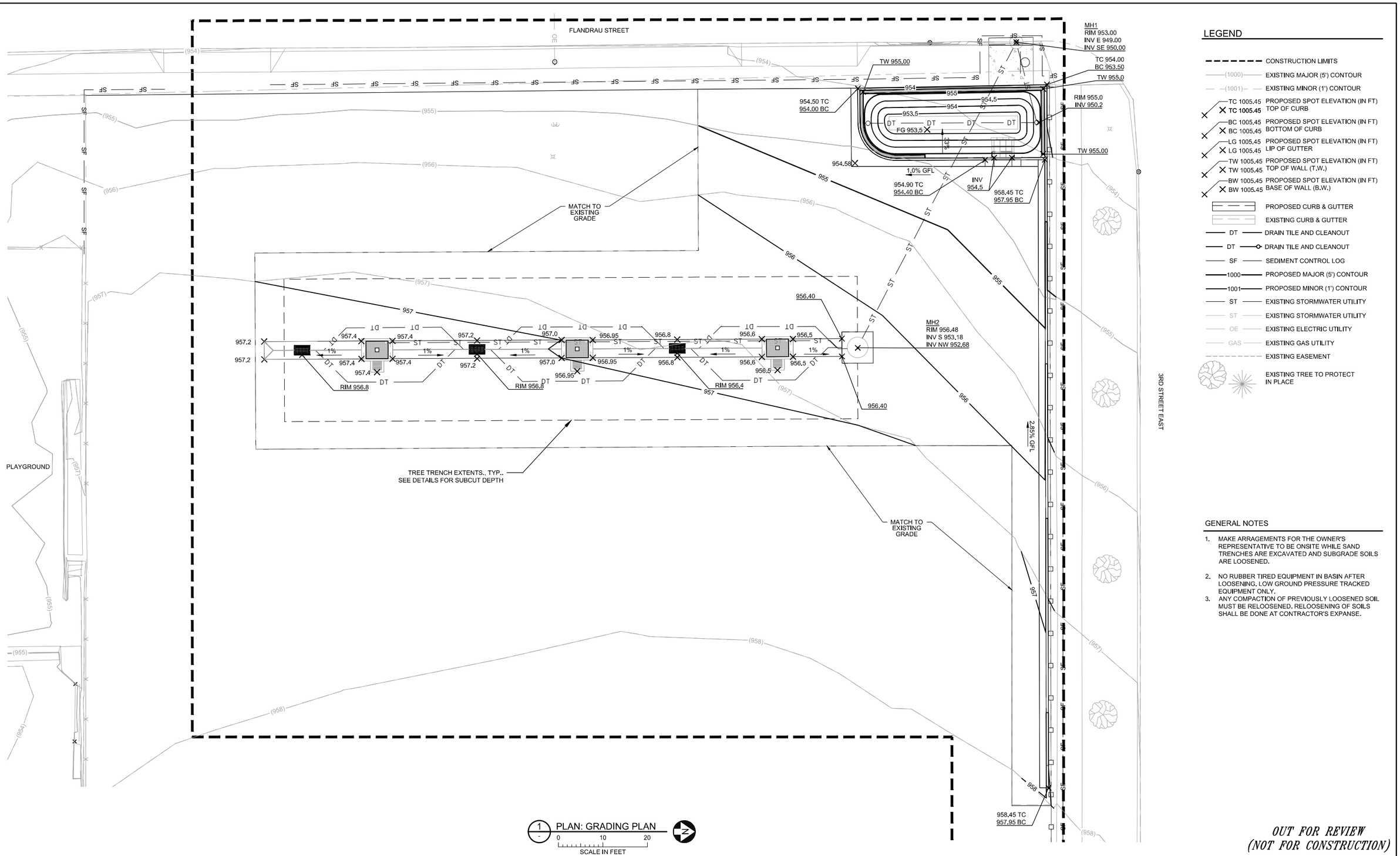
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
SITE REMOVALS & EROSION CONTROL PLAN

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.C-01
REV. No. B



LEGEND

- CONSTRUCTION LIMITS
- (1000) EXISTING MAJOR (5') CONTOUR
- (1001) EXISTING MINOR (1') CONTOUR
- TC 1005.45 / TC 1005.45 — PROPOSED SPOT ELEVATION (IN FT) TOP OF CURB
- BC 1005.45 / BC 1005.45 — PROPOSED SPOT ELEVATION (IN FT) BOTTOM OF CURB
- LG 1005.45 / LG 1005.45 — PROPOSED SPOT ELEVATION (IN FT) LIP OF GUTTER
- TW 1005.45 / TW 1005.45 — PROPOSED SPOT ELEVATION (IN FT) TOP OF WALL (T.W.)
- BW 1005.45 / BW 1005.45 — PROPOSED SPOT ELEVATION (IN FT) BASE OF WALL (B.W.)
- PROPOSED CURB & GUTTER
- EXISTING CURB & GUTTER
- DT — DRAIN TILE AND CLEANOUT
- DT — DRAIN TILE AND CLEANOUT
- SF — SEDIMENT CONTROL LOG
- 1000 — PROPOSED MAJOR (5') CONTOUR
- 1001 — PROPOSED MINOR (1') CONTOUR
- ST — EXISTING STORMWATER UTILITY
- ST — EXISTING STORMWATER UTILITY
- OE — EXISTING ELECTRIC UTILITY
- GAS — EXISTING GAS UTILITY
- EXISTING EASEMENT
- EXISTING TREE TO PROTECT IN PLACE

GENERAL NOTES

1. MAKE ARRAGEMENTS FOR THE OWNER'S REPRESENTATIVE TO BE ONSITE WHILE SAND TRENCHES ARE EXCAVATED AND SUBGRADE SOILS ARE LOOSENED.
2. NO RUBBER TIRED EQUIPMENT IN BASIN AFTER LOOSENING. LOW GROUND PRESSURE TRACKED EQUIPMENT ONLY.
3. ANY COMPACTION OF PREVIOUSLY LOOSENED SOIL MUST BE RELOOSENED. RELOOSENING OF SOILS SHALL BE DONE AT CONTRACTOR'S EXPANSE.

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME MARCY D. BEAN

SIGNATURE

DATE 08/28/2022 LICENSE # 48430

	A	B	C	0	1	2	3
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR							
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

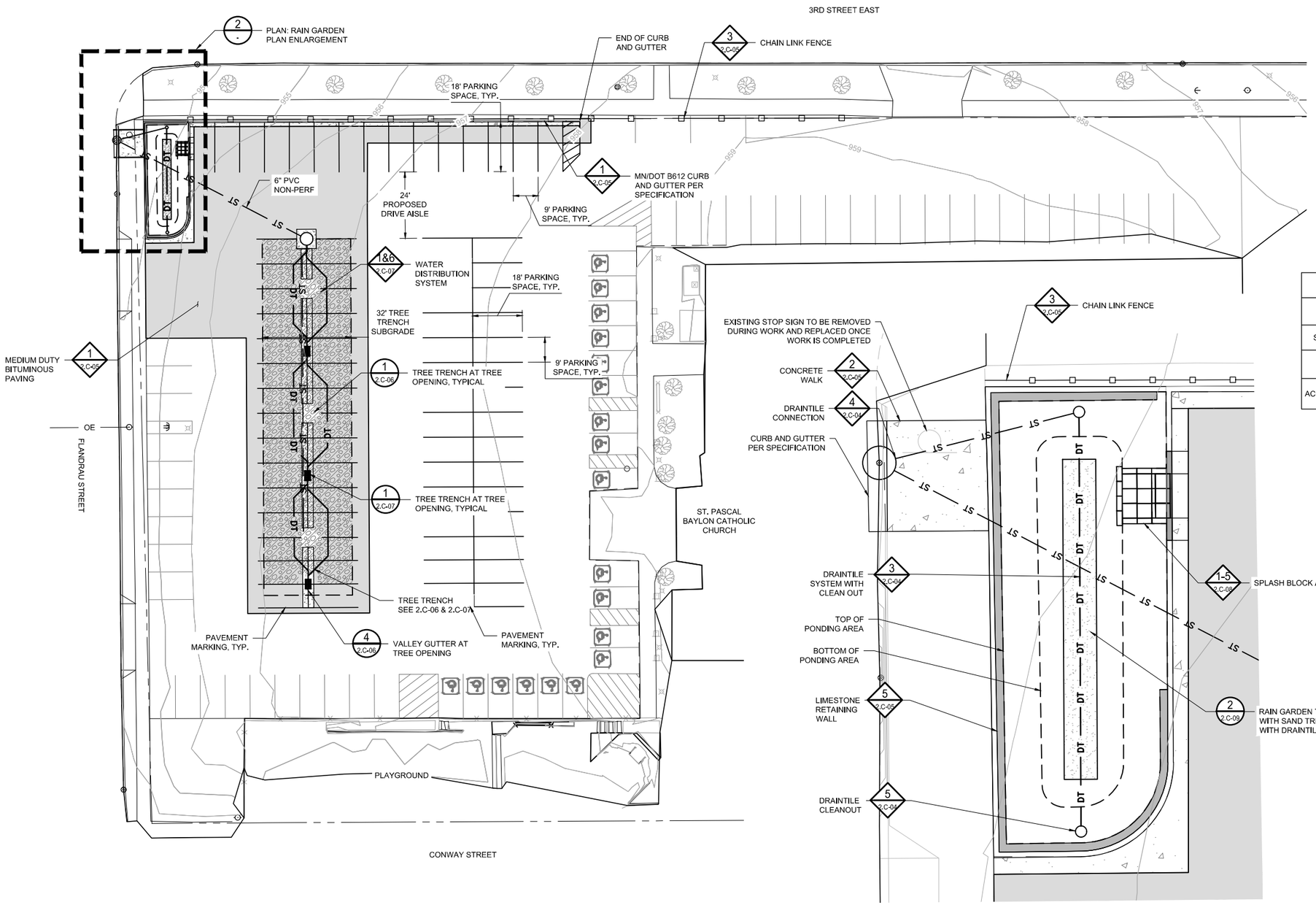
Scale	AS SHOWN
Date	02/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
GRADING PLAN

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.C-02
REV. No. 0



1 - PLAN: SITE PLAN

0 20 40
SCALE IN FEET

2 - PLAN: RAIN GARDEN PLAN ENLARGEMENT

0 5 10
SCALE IN FEET

LEGEND

- SAND TRENCH
- CONCRETE CURB CUT
- TREE TRENCH SUBGRADE
- CONCRETE
- ROCK MULCH
- CONSTRUCTION LIMITS
- SF — SEDIMENT CONTROL LOG
- EXISTING CONTOUR
- PROPOSED CONTOUR
- ST — EXISTING STORMWATER UTILITY
- E — EXISTING ELECTRIC UTILITY
- GAS — EXISTING GAS UTILITY
- EXISTING EASEMENT
- EXISTING TREE TO PROTECT IN PLACE

PARKING COUNT TABLE		
	EXISTING PARKING LAYOUT	FINAL PARKING LAYOUT
STANDARD PARKING SPACE	120	120
ACCESSIBLE SPACE	19	19
ACCESSIBLE SPACES REQUIRED	5 ACCESSIBLE SPACES & 1 VAN ACCESSIBLE SPACE	5 ACCESSIBLE SPACES & 1 VAN ACCESSIBLE SPACE

GENERAL NOTES

1. POTHOLE ALL EXISTING UTILITIES LOCATED WITHIN THE PROJECT LIMITS BEFORE EARTHWORK BEGINS.

2. RELOCATE EXISTING SPRINKLER VALVES AND SYSTEMS LOCATED WITHIN THE PROJECT LIMITS BEFORE EARTHWORK BEGINS.

3. SAWCUT FULL DEPTH AT JOINT BETWEEN BITUMINOUS PAVEMENT AND CURB. PROTECT EXISTING BITUMINOUS PAVEMENT. IF DAMAGED DURING WORK, PATCH BITUMINOUS PAVEMENT. INSTALL CURB CUT. ASPHALT PATCHING IS INCIDENTAL TO THE BID ITEM PRICE.

4. MAKE ARRANGEMENTS FOR THE OWNER'S REPRESENTATIVE TO BE ONSITE WHILE SAND TRENCHES ARE EXCAVATED AND SUBGRADE SOILS ARE LOOSENED.

5. NO RUBBER TIRED EQUIPMENT IN BASIN AFTER LOOSENING. LOW GROUND PRESSURE TRACKED EQUIPMENT ONLY.

6. ANY COMPACTION OF PREVIOUSLY LOOSENED SOIL MUST BE RELOOSENED.

7. THE CONTRACTOR SHALL HAVE ACCESS TO STREET SWEEPING EQUIPMENT AT ALL TIMES. THE CONTRACTOR SHOULD BE AWARE OF WEATHER CONDITIONS AND SWEEP ANY STREETS WITH DEBRIS PRIOR TO ANY RAINFALL EVENT. STOCKPILING ON THE STREET DURING ANY RAINFALL EVENT SHALL NOT BE ALLOWED.

8. COORDINATE WITH OWNER TO ENSURE ACCEPTABLE TRAFFIC CONTROL REQUIREMENTS.

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME _____

SIGNATURE _____

DATE 03/28/2022 LICENSE # 48430

CLIENT	03/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
DATE RELEASED								

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

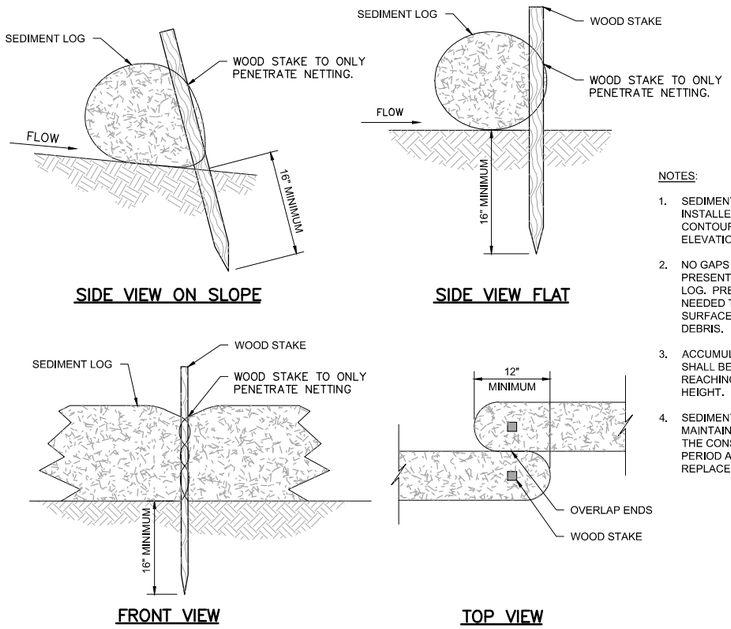
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Aproved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
SITE PLAN

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
2.C-03	B



SIDE VIEW ON SLOPE

SIDE VIEW FLAT

FRONT VIEW

TOP VIEW

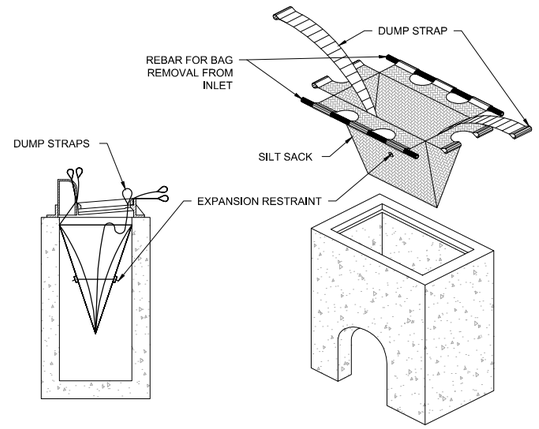
NOTES:

1. SEDIMENT LOG SHOULD BE INSTALLED ALONG CONTOURS (CONSTANT ELEVATION).
2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
3. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN REACHING 1/2 OF LOG HEIGHT.
4. SEDIMENT LOG SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIRED OR REPLACED AS REQUIRED.

1 – DETAIL: SEDIMENT CONTROL LOG – STAKING
NOT TO SCALE

NOTES:

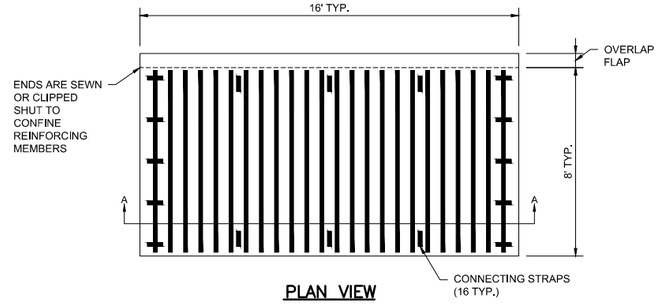
1. CONTRACTOR SHALL SUBMIT PRODUCT INFORMATION FOR APPROVAL.
2. INLET PROTECTION SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED OR IMMEDIATELY FOLLOWING CATCHBASIN INSTALLATION, AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. MATERIALS SHALL BE SUFFICIENT TO ALLOW FLOW WHILE BLOCKING SEDIMENT. NO HOLES OR GAPS SHALL BE PRESENT IN/AROUND FILTER SACK.
4. FILTER SACK SHOULD BE CLEANED AS REQUIRED TO ALLOW FLOW INTO CATCHBASIN.
5. MATERIALS AND ANY ACCUMULATED SEDIMENT SHALL BE REMOVED IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.



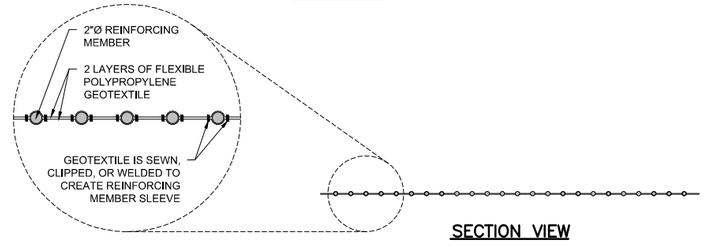
2 – DETAIL: INLET PROTECTION – FILTER SACK
NOT TO SCALE

PROPERTY	TEST PROCEDURE	VALUE
Grab Tensile Strength	ASTM D4632	802.6 lbs.
Apparent Breaking Elongation	ASTM D4632	25% / 18%
Trapezoid Tearing Strength	ASTM D4533	607 lbs.
Puncture Resistance	ASTM D4833	374.3 lbs.
Mullen Burst	ASTM D3786	456.89 psi
Apparent Opening Size	ASTM D4751	70 US Sieve / 0.212mm
Constant Head Permittivity	ASTM D4491	26.18 sec^{-1}
Wide Width Tensile	ASTM D4595	685.7 lbs./in
Material	Woven Geotextile	100% Polypropylene

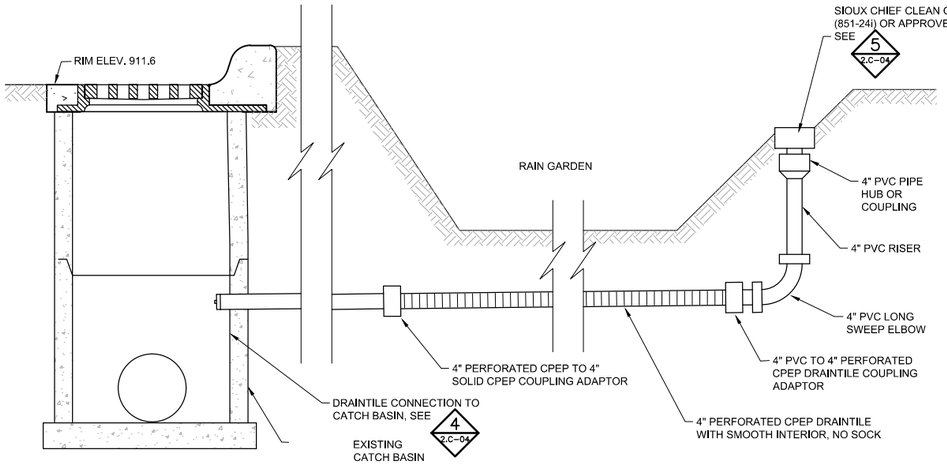
NOTE: MATS SHIP IN 1.5' OR 450MM DAIMETER ROLLS WITH AN APPROXIMATE WEIGHT OF 90 LBS OR 40 KG PER MAT.



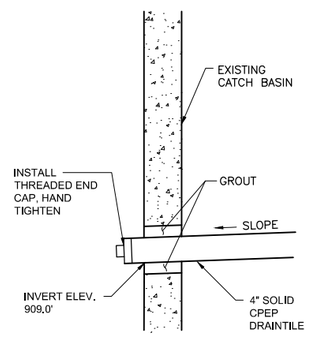
PLAN VIEW



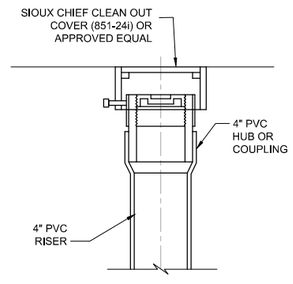
SECTION VIEW



3 – DETAIL: DRAINTILE SYSTEM WITH CLEAN OUT
NOT TO SCALE



4 – DETAIL: DRAINTILE CONNECTION
NOT TO SCALE



5 – DETAIL: DRAINTILE CLEAN OUT
NOT TO SCALE

NOTES:

1. ENTRANCE SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIRED OR REPLACED TO PREVENT TRACKING OFFSITE.
2. ENTRANCE SHALL BE REMOVED IN CONJUNCTION WITH FINAL GRADING AND SITE STABILIZATION.

6 – DETAIL: CONSTRUCTION ENTRANCE – RUMBLE STRIP MAT
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR

Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

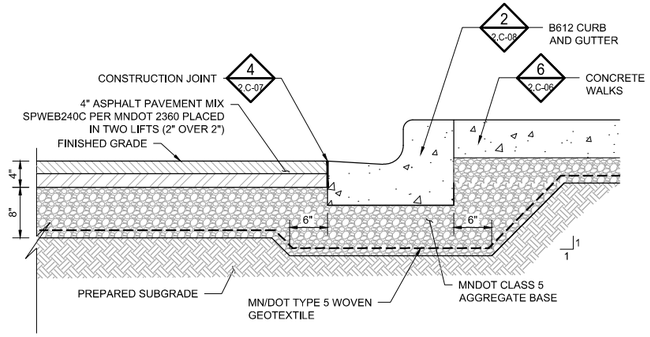
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
DETAILS

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.C-04
REV. No. B

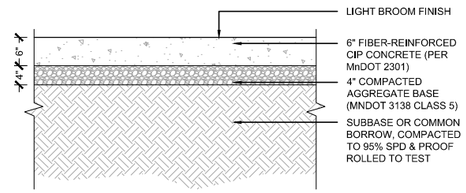


1 - DETAIL: MEDIUM DUTY BITUMINOUS

1"=1'-0"

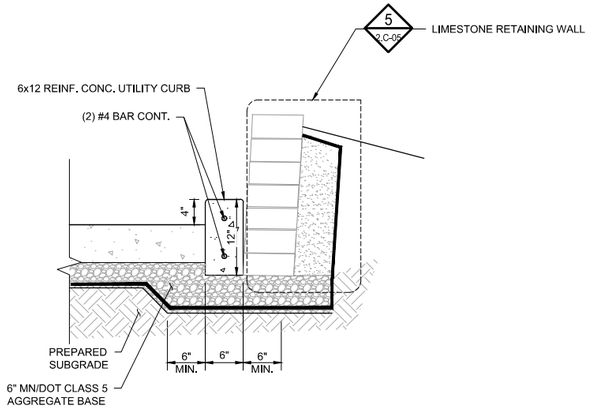
0 1 2

NOTES:
1. COMPLY WITH ALL MnDOT STANDARDS IN INSTALLATION.
2. ENSURE BASE IS PROPERLY COMPACTED AND TO CORRECT MOISTURE CONTENT PER PROJECT STANDARDS BEFORE INSTALLING CONCRETE.
3. INSTALL EXPANSION AND CONTROL JOINTS PER PROJECT DETAILS, TYP.



2 - DETAIL: CONCRETE WALKS

NOT TO SCALE

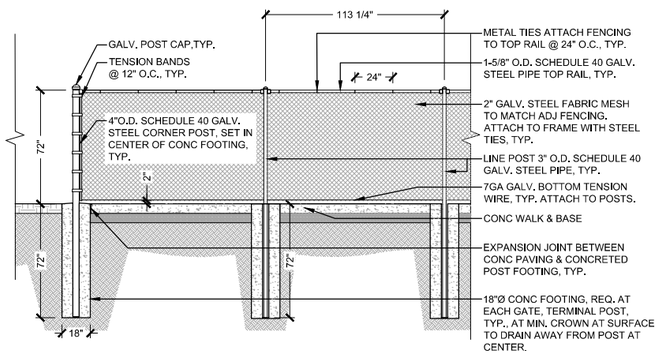


6 - DETAIL: CONCRETE UTILTY CURB

1"=1'-0"

0 1 2

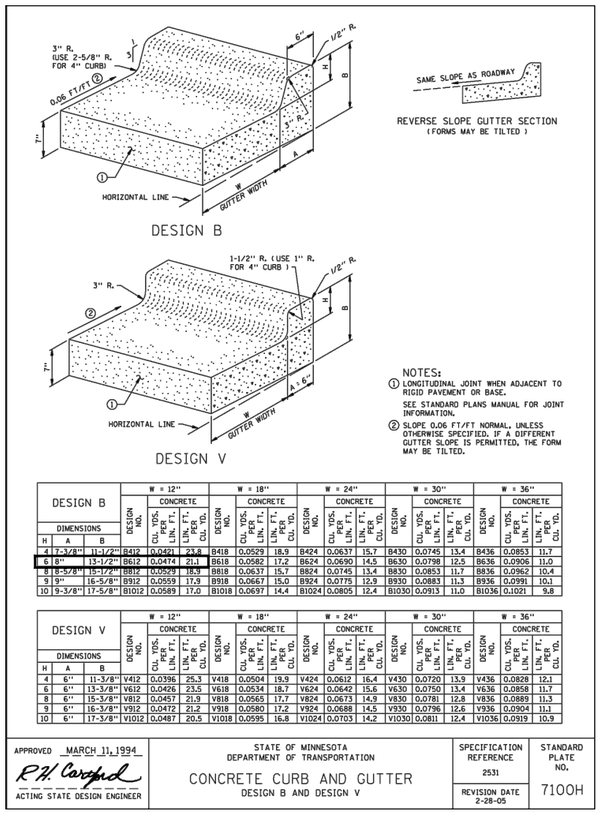
NOTES:
1. ALL LINE POSTS TO BE MECHANICALLY DRIVEN TO A MIN. DEPTH OF 6'=0" OR PER CURRENT OBSERVED FROST DEPTH, WHICHEVER IS GREATER, BELOW FINISHED GRADE



3 - DETAIL: CHAIN LINK FENCE

0 1 5 10

SCALE IN FEET



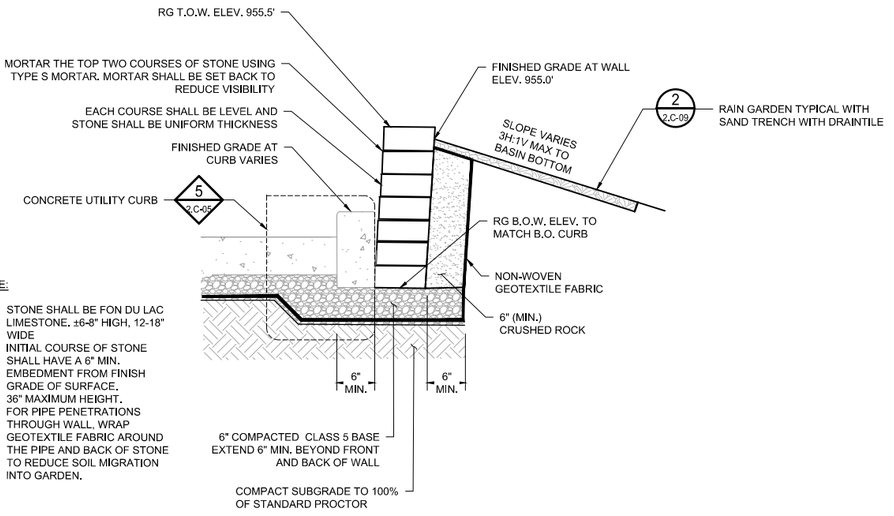
DESIGN B			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			CONCRETE			CONCRETE			CONCRETE			CONCRETE			CONCRETE		
H	A	B	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	7-3/8"	11-1/2"	B412	0.0421	23.8	B418	0.0529	18.9	B424	0.0637	15.7	B430	0.0745	13.4	B436	0.0853	11.7
6	8"	13-1/2"	B612	0.0474	21.1	B618	0.0582	17.2	B624	0.0690	14.5	B630	0.0798	12.5	B636	0.0906	11.0
8	8-5/8"	15-1/2"	B812	0.0527	18.9	B818	0.0637	15.7	B824	0.0745	13.4	B830	0.0853	11.7	B836	0.0962	10.4
9	9"	16-5/8"	B912	0.0559	17.9	B918	0.0667	15.0	B924	0.0775	12.9	B930	0.0883	11.3	B936	0.0991	10.1
10	9-3/8"	17-5/8"	B1012	0.0589	17.0	B1018	0.0697	14.4	B1024	0.0805	12.4	B1030	0.0913	11.0	B1036	0.1021	9.8

DESIGN V			W = 12"			W = 18"			W = 24"			W = 30"			W = 36"		
DIMENSIONS			CONCRETE			CONCRETE			CONCRETE			CONCRETE			CONCRETE		
H	A	B	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.	DESIGN NO.	CU. YDS. PER LIN. FT.	LIN. FT. PER CU. YD.
4	6"	11-3/8"	V412	0.0396	25.3	V418	0.0504	19.9	V424	0.0612	16.4	V430	0.0720	13.9	V436	0.0828	12.1
6	6"	13-3/8"	V612	0.0426	23.5	V618	0.0534	18.7	V624	0.0642	15.6	V630	0.0750	13.4	V636	0.0858	11.7
8	6"	15-3/8"	V812	0.0457	21.9	V818	0.0565	17.7	V824	0.0673	14.9	V830	0.0781	12.8	V836	0.0889	11.3
9	6"	16-3/8"	V912	0.0472	21.2	V918	0.0580	17.2	V924	0.0688	14.5	V930	0.0796	12.6	V936	0.0904	11.1
10	6"	17-3/8"	V1012	0.0487	20.5	V1018	0.0595	16.8	V1024	0.0703	14.2	V1030	0.0811	12.4	V1036	0.0919	10.9

APPROVED MARCH 11, 1994 R.H. Copeland ACTING STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION CONCRETE CURB AND GUTTER DESIGN B AND DESIGN V	SPECIFICATION REFERENCE 2531 REVISION DATE 2-28-05	STANDARD PLATE NO. 7100H

4 - DETAIL: CURB AND GUTTER

NOT TO SCALE



NOTE:
1) STONE SHALL BE FON DU LAC LIMESTONE, ±6-8" HIGH, 12-18" WIDE
2) INITIAL COURSE OF STONE SHALL HAVE A 6" MIN. EMBEDMENT FROM FINISH GRADE OF SURFACE.
3) 36" MAXIMUM HEIGHT.
4) FOR PIPE PENETRATIONS THROUGH WALL, WRAP GEOTEXTILE FABRIC AROUND THE PIPE AND BACK OF STONE TO REDUCE SOIL MIGRATION INTO GARDEN.

5 - DETAIL: LIMESTONE RETAINING WALL

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

CLIENT	03/28/2022	03/28/2022							
BID									
CONSTRUCTION									
RELEASED TO/FOR	A	B	C	0	1	2	3		
	DATE RELEASED								

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

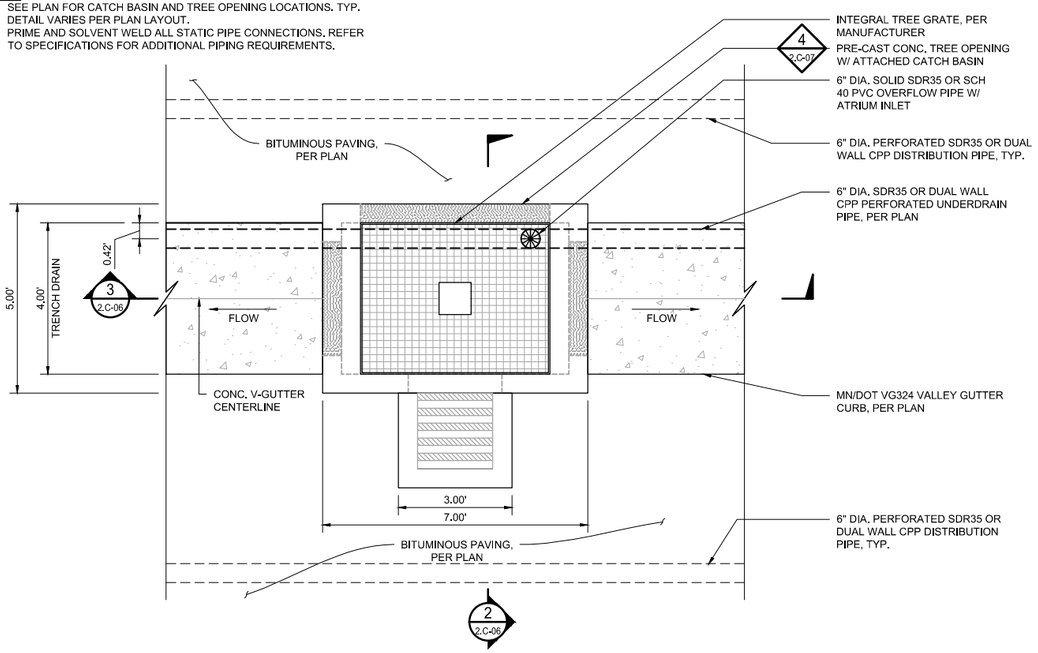
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

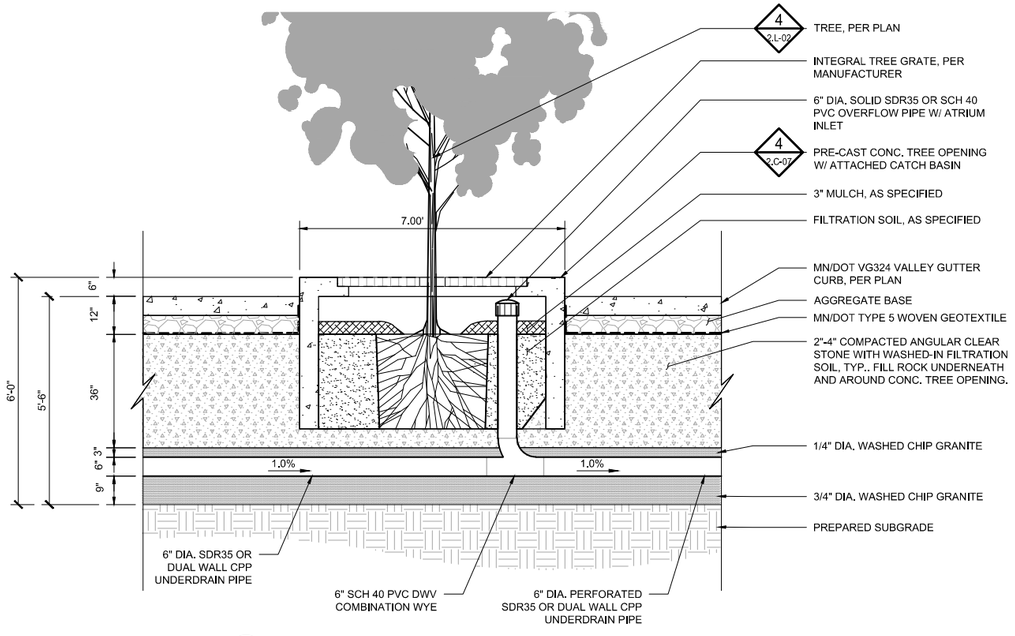
ST. PASCAL BAYLON CATHOLIC CHURCH
DETAILS

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
2.C-05	B

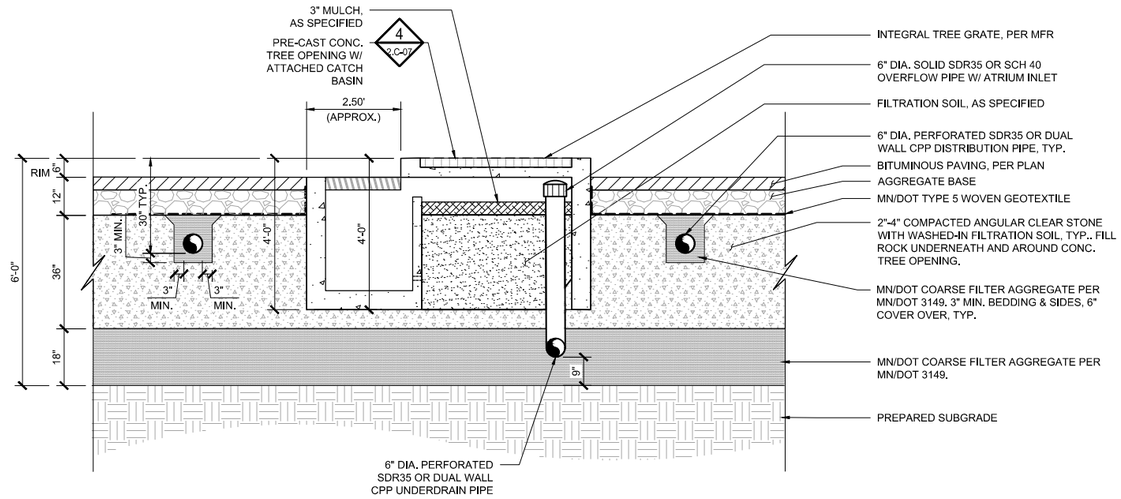
NOTES:
1. SEE PLAN FOR CATCH BASIN AND TREE OPENING LOCATIONS. TYP. DETAIL VARIES PER PLAN LAYOUT.
2. PRIME AND SOLVENT WELD ALL STATIC PIPE CONNECTIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL PIPING REQUIREMENTS.



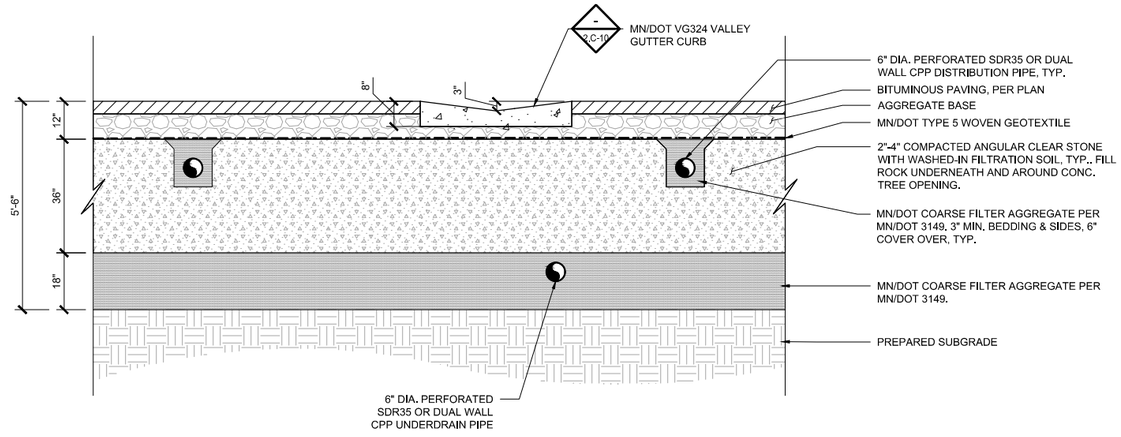
1 PLAN: TREE TRENCH AT TREE OPENING, TYPICAL
NOT TO SCALE



3 SECTION: TREE TRENCH AT TREE OPENING
NOT TO SCALE



2 SECTION: TREE TRENCH AT TREE OPENING
NOT TO SCALE



4 SECTION: VALLEY GUTTER AT TREE OPENING
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 03/28/2022 LICENSE # 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

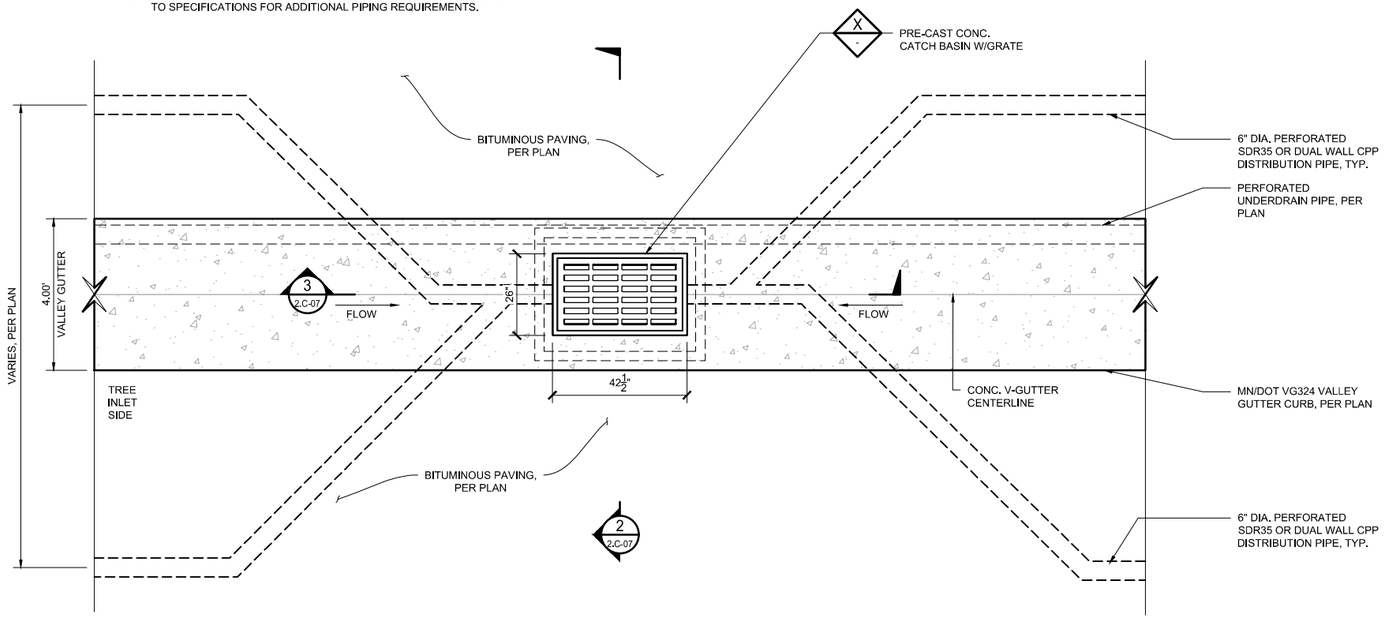
RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

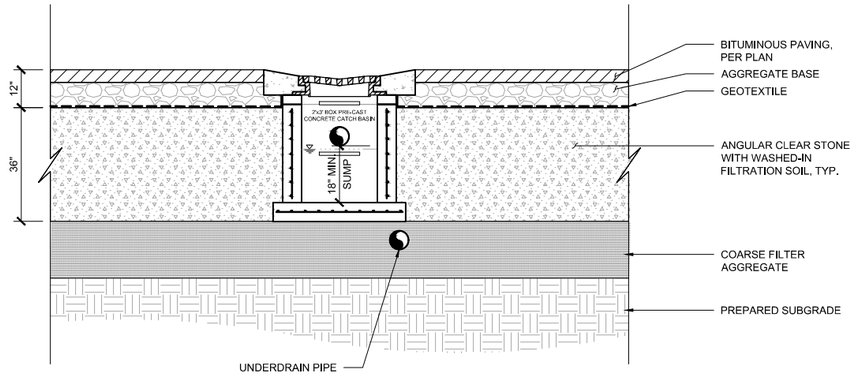
ST. PASCAL BAYLON CATHOLIC CHURCH
TREE TRENCH DETAIL

BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	2.C-06
REV. No.	B

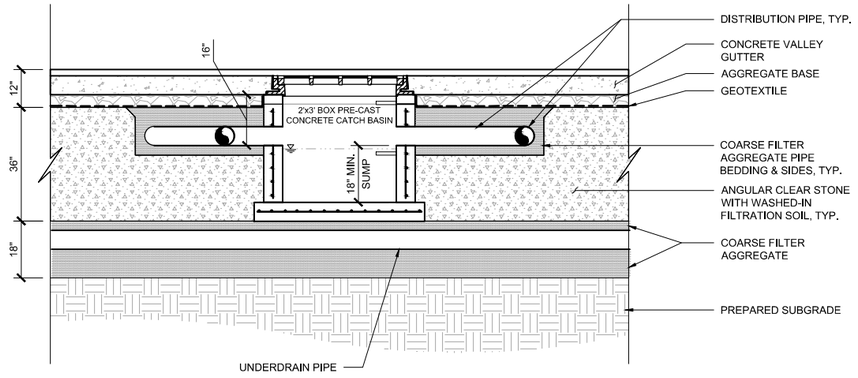
NOTES:
1. SEE PLAN FOR CATCH BASIN AND TREE OPENING LOCATIONS. TYP. DETAIL VARIES PER PLAN LAYOUT.
2. PRIME AND SOLVENT WELD ALL STATIC PIPE CONNECTIONS. REFER TO SPECIFICATIONS FOR ADDITIONAL PIPING REQUIREMENTS.



1 - PLAN: TREE TRENCH AT TREE OPENING, TYPICAL
NOT TO SCALE

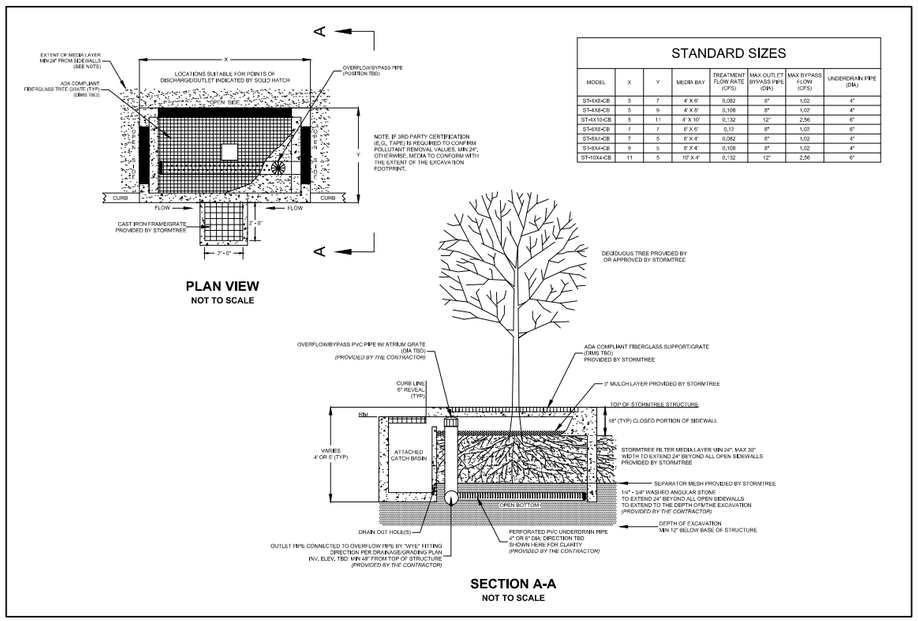


2 - SECTION: TREE TRENCH AT CATCH BASIN
NOT TO SCALE

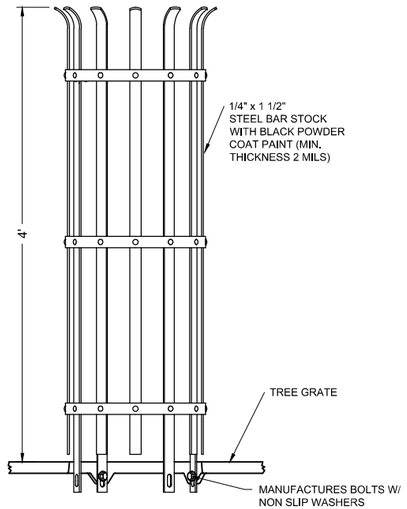


3 - SECTION: TREE TRENCH AT CATCH BASIN
NOT TO SCALE

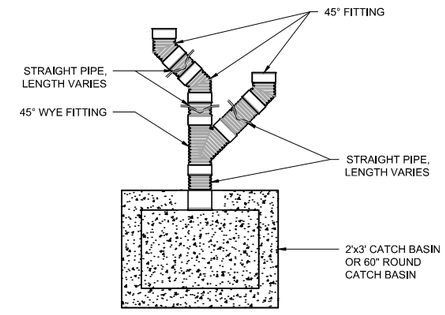
STANDARD SIZES							
MODEL	X	Y	MEDIA BAY	TREATMENT FLOW RATE (CFS)	MAX OUTLET BYPASS PIPE (DIA)	MAX BYPASS FLOW (CFS)	UNDERDRAIN PIPE (DIA)
ST-4X6-CB	5	7	4' X 6'	0,082	8"	1,02	4"
ST-4X8-CB	5	9	4' X 8'	0,108	8"	1,02	4"
ST-4X10-CB	5	11	4' X 10'	0,132	12"	2,56	6"
ST-6X6-CB	7	7	6' X 6'	0,13	8"	1,02	6"
ST-6X8-CB	7	9	6' X 8'	0,082	8"	1,02	4"
ST-8X4-CB	9	5	8' X 4'	0,108	8"	1,02	4"
ST-10X4-CB	11	5	10' X 4'	0,132	12"	2,56	6"



4 - PLAN: PRE-CAST CONCRETE TREE OPENING
NOT TO SCALE



5 - DETAIL: TREE GUARD
NOT TO SCALE



6 - DETAIL: 6" FITTINGS FOR TREE TRENCH DISTRIBUTION
NOT TO SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 03/28/2022 LICENSE # 48430

CLIENT	02/28/2022	03/28/2022						
BID								
CONSTRUCTION								
RELEASED TO/FOR	A	B	C	0	1	2	3	
	DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277
Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

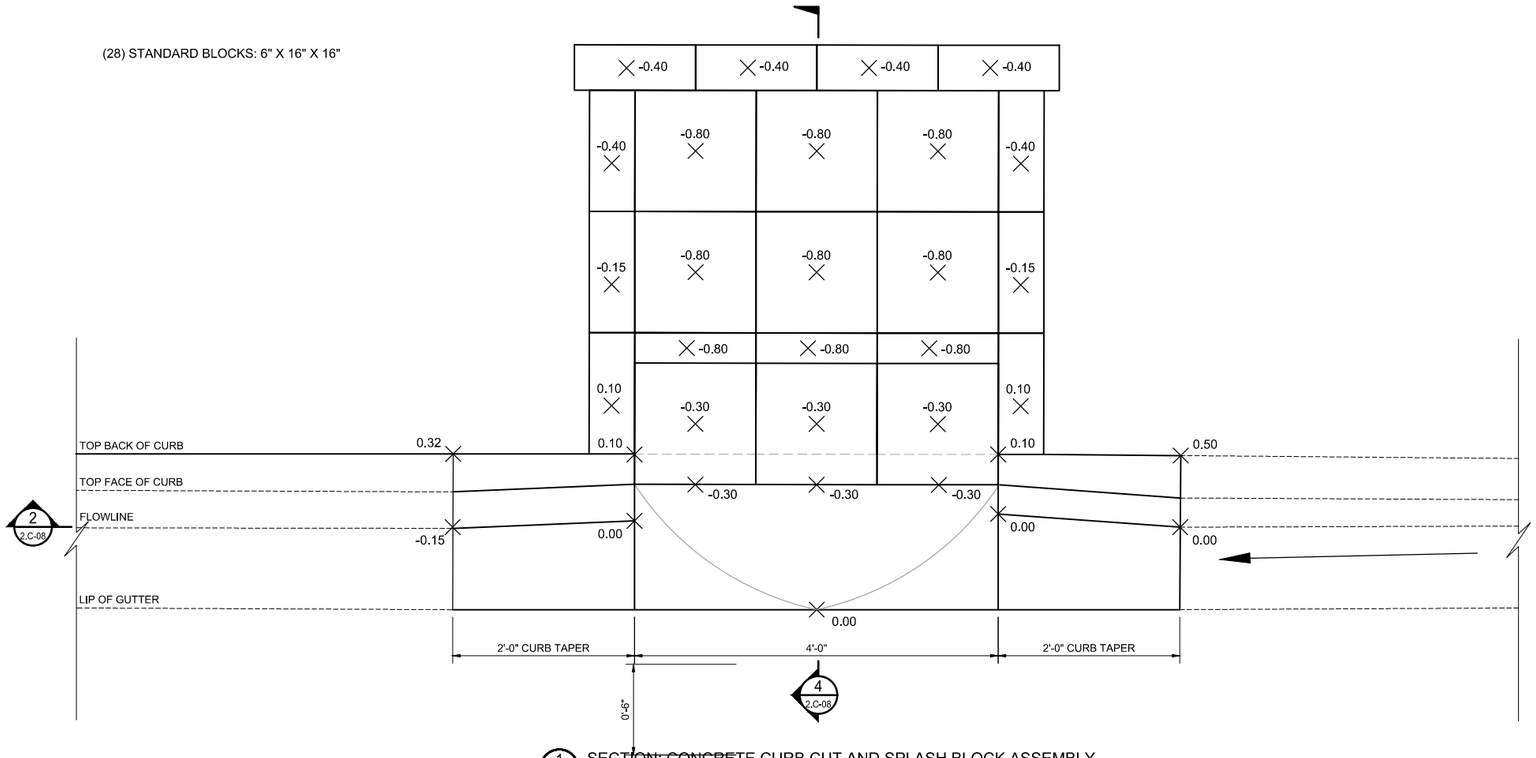
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

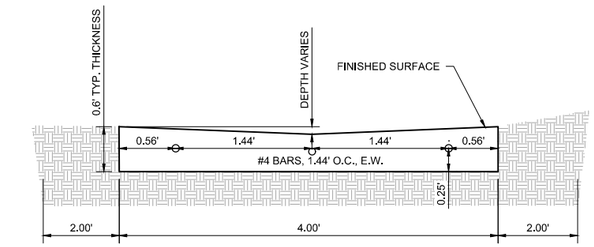
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
TREE TRENCH DETAIL

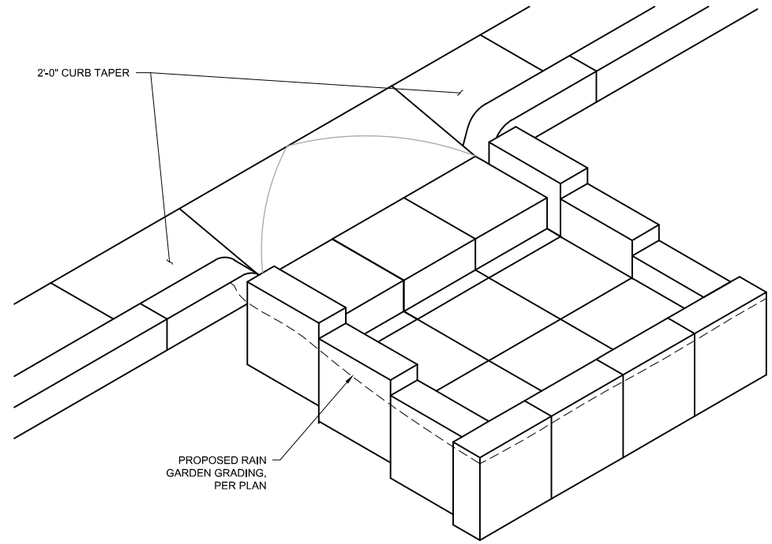
BARR PROJECT No.	23621172.05
CLIENT PROJECT No.	-
DWG. No.	2.C-07
REV. No.	B



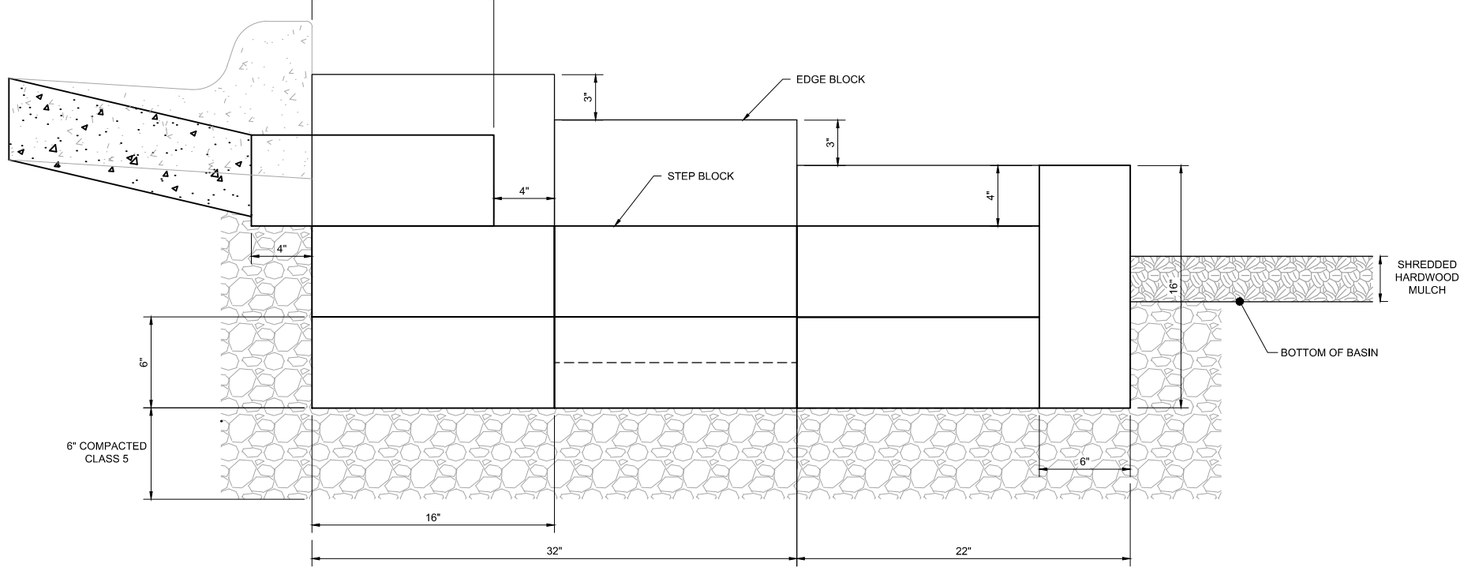
1 SECTION: CONCRETE CURB CUT AND SPLASH BLOCK ASSEMBLY
NOT TO SCALE



2 SECTION: CONCRETE CURB CUT
NOT TO SCALE



3 AXONOMETRIC: SPLASH BLOCK ASSEMBLY
NOT TO SCALE



4 SECTION: SPLASH BLOCK ASSEMBLY
NOT TO SCALE

5 EXAMPLE IMAGE: SPLASH BLOCK ASSEMBLY

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME _____

SIGNATURE _____

DATE 03/28/2022 LICENSE # 48430

CLIENT	03/28/2022	03/28/2022							
BID									
CONSTRUCTION									
RELEASED TO/FOR	A	B	C	0	1	2	3		
	DATE RELEASED								

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

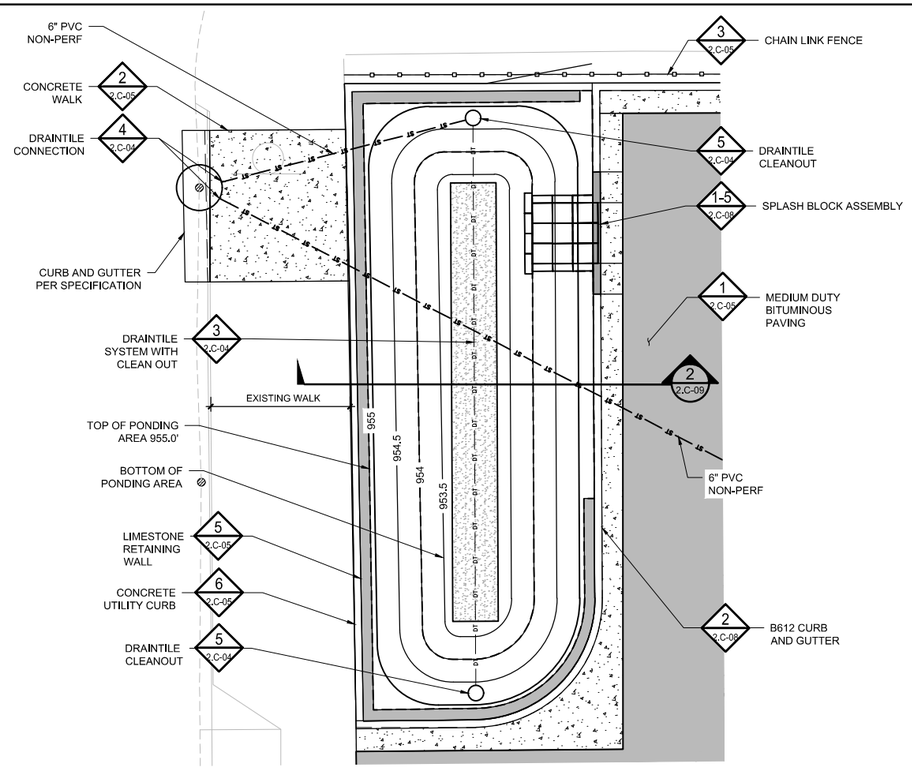
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO
WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
SPLASH BLOCK ASSEMBLY

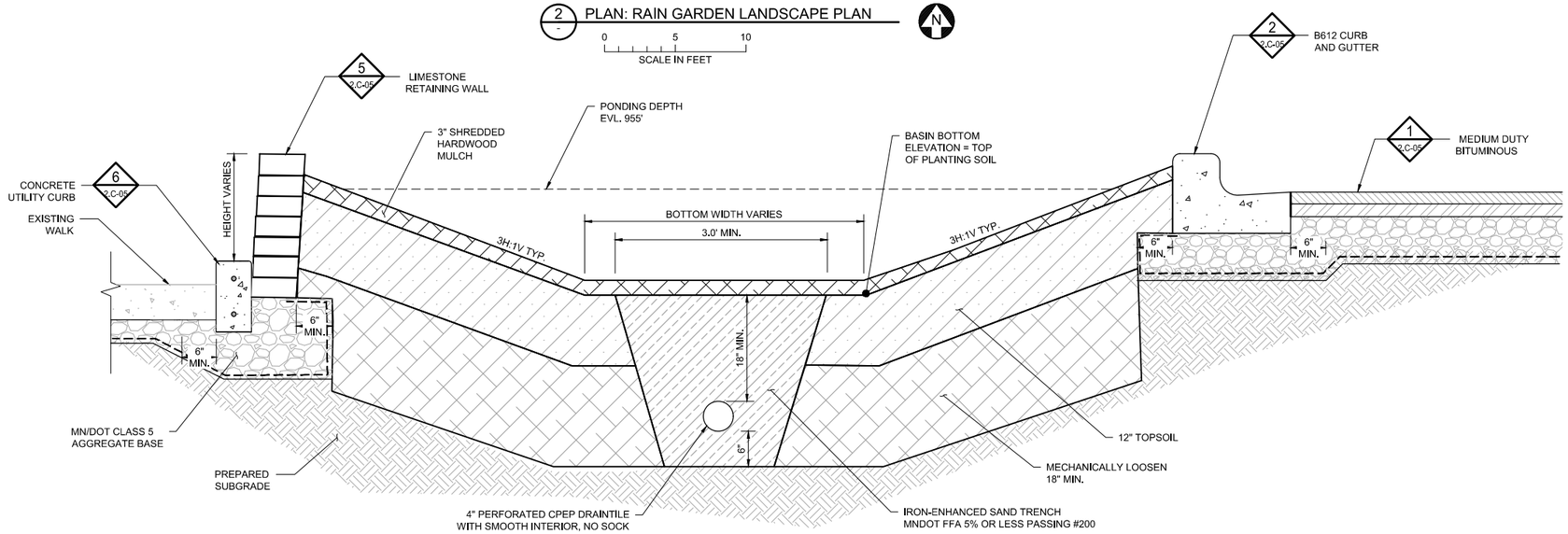
BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.C-08
REV. No. B



2 PLAN: RAIN GARDEN LANDSCAPE PLAN

0 5 10

SCALE IN FEET



2 DETAIL: RAIN GARDEN TYPICAL WITH SAND TRENCH WITH DRAINTILE

1"=1'-0"

0 1 2 3

SCALE

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR

Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

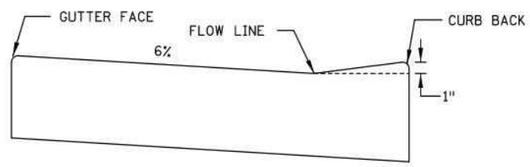
Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

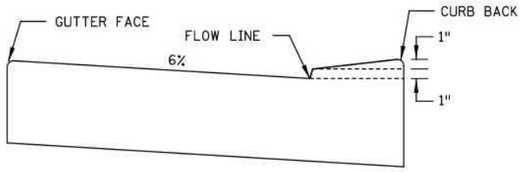
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
DETAILS

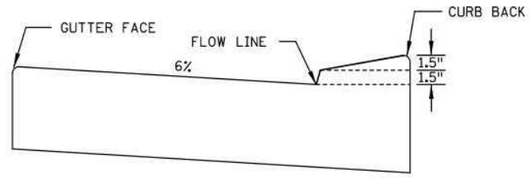
BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
2.C-09	B



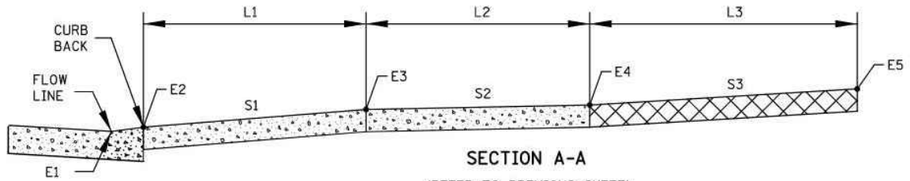
DW CURB STANDARD
STANDARD CURB AT DRIVEWAY



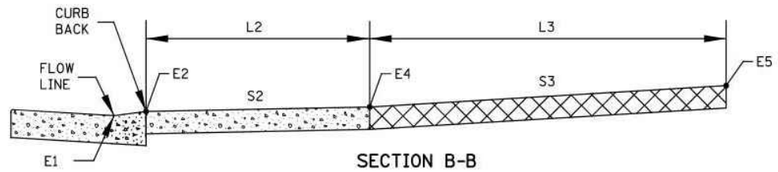
DW CURB TYPE 2
VERTICALLY CONSTRAINED



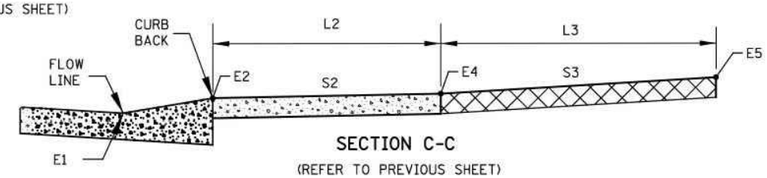
DW CURB TYPE 3
VERTICALLY CONSTRAINED



SECTION A-A
(REFER TO PREVIOUS SHEET)



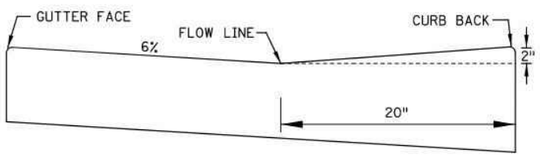
SECTION B-B
(REFER TO PREVIOUS SHEET)



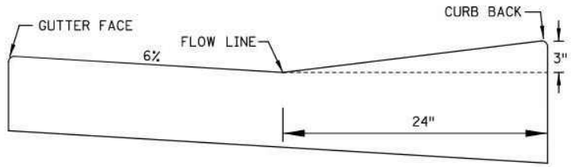
SECTION C-C
(REFER TO PREVIOUS SHEET)

DRIVEWAY TABULATION ①

STATION	SIDE	DRIVEWAY TYPE	CURB TYPE ③	E1	E2	L1 FT	S1 %	E3	L2 FT	S2 ② %	E4	L3 FT	S3 %	EXISTING %	E5	COMMENTS



VG 220



VG 324

VALLEY GUTTER CURB
OTHER CURB HEIGHTS & CURB APRON LENGTHS CAN BE USED

NOTES:

DW CURB STANDARD SHALL BE USED WHEN THE DRIVEWAY ACTS AS A PEDESTRIAN RAMP. THE MAX. APRON SLOPE MUST ADHERE TO ADA CRITERIA AS WELL. DW CURB STANDARD SHOULD BE USED IF THERE IS ON STREET PARKING.

WHERE ROADWAY DRAINAGE IS A CONCERN (NEGATIVE SLOPED APRON) DW CURB TYPE 2 CAN BE USED TO HELP KEEP THE WATER ON PUBLIC RIGHT OF WAY.

S1 8% MAX PREFERRED, 10% MAX. COMMERCIAL AND 12% MAX. RESIDENTIAL. IF EXISTING GRADES ARE STEEPER DO NOT MAKE GRADES APPRECIABLY WORSE BY USING BEST PRACTICES SUCH AS DRIVEWAY CURB HEIGHTS, EXTENDING L3 AND/ OR STEEPEN S3.

DW CURB TYPE 3 SHALL ONLY BE USED IN EXTREME TIE-IN CASES.

S3 8% MAX PREFERRED, IF THIS SLOPE IS EXCEEDED OR IS CONTINUED FOR MORE THAN 5' ANALYZE THE NEED FOR VERTICAL CURVE(S). SEE ROAD DESIGN MANUAL, CHAPTER 5, FOR GEOMETRIC DESIGNS OF DRIVEWAYS.

① EXAMPLE SHOWN TO BE INCLUDED IN PLAN FOR EACH DRIVEWAY.

② SHOULD BE DESIGNED AT 1.5%.

③ DW CURB STANDARD SHALL BE THE STARTING POINT FOR ALL PERPENDICULAR AND TIERED DRIVEWAYS. DW CURB TYPES 2 AND 3 SHALL ONLY BE USED AFTER UTILIZING BEST PRACTICES SUCH AS MAXIMIZING S1, S3, AND L3.

REVISION:
APPROVED: JANUARY 23, 2017
OPERATIONS ENGINEER

REVISED:
APPROVED:
STATE DESIGN ENGINEER
1-23-2017

DRIVEWAY AND SIDEWALK DETAILS

STANDARD PLAN 5-297.254 | 2 OF 4

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE
PRINTED NAME
DATE 03/28/2022 REG. NO. 48430

	CLIENT	BID	CONSTRUCTION
	03/28/2022	03/28/2022	

RELEASED TO/FOR

A	B	C	0	1	2	3
DATE RELEASED						

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

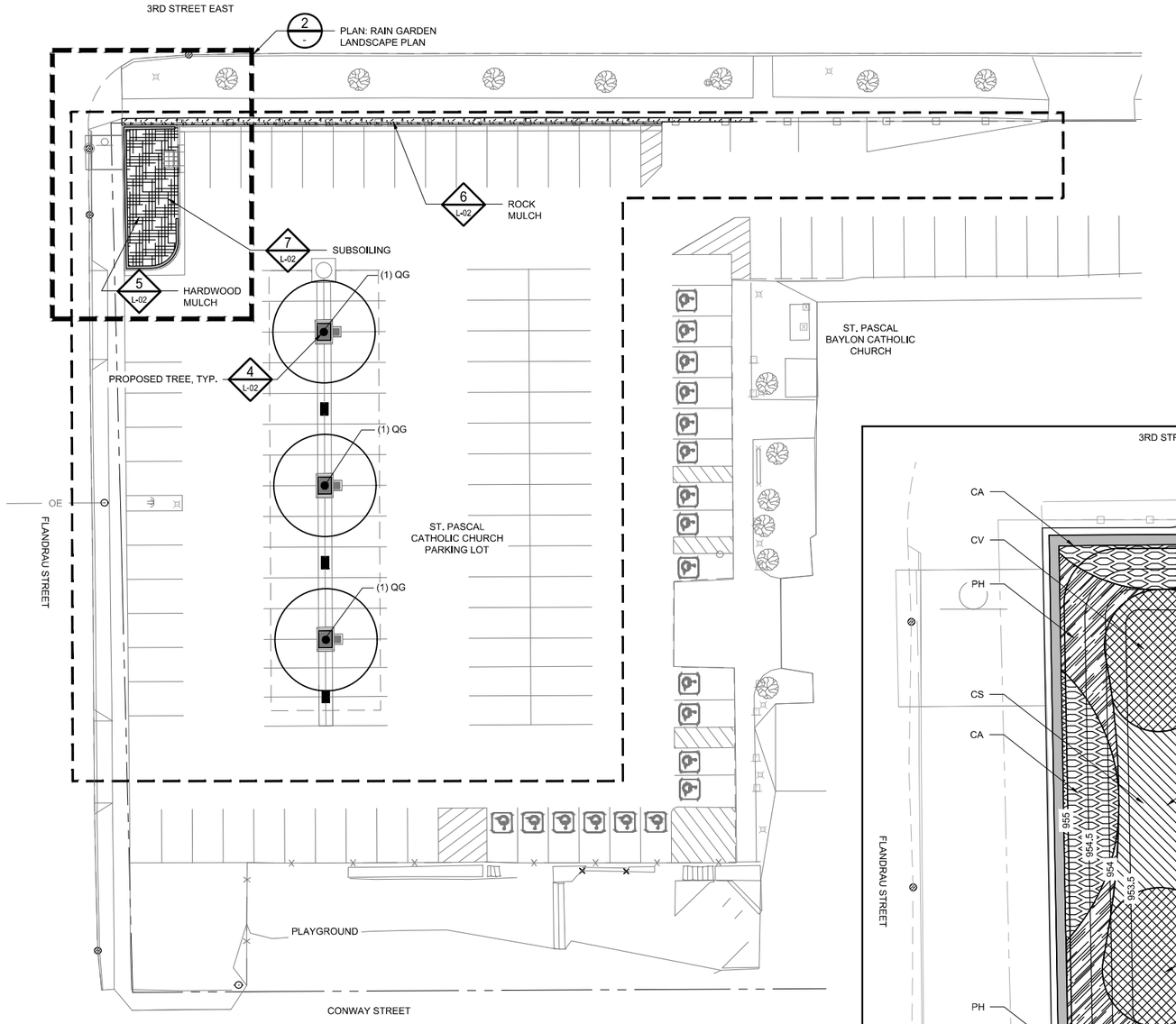
2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
DETAILS

BARR PROJECT No. 23621172.05
CLIENT PROJECT No. -
DWG. No. 2.C-10
REV. No. B

DISTRICT *: DISTRICT *
USER NAME: $$@USER$%NAME@$$
PATH & FILENAME: Documents/Operations/ADA_Review/ADA_Design/Roadway/Curb&spaceRamp&spaceStd&sp
PLOTTED/REVISED:
FILE NAME: @FILENAME@

CADD USER: Andrew M. Pagels-Larson FILE: M:\DESIGN\23621172.05\ST PASCAL BAYLON CATHOLIC CHURCH - 2022\23621172_ST_PASCAL_C-10_DETAILS.DWG PLOT SCALE: 1:2 PLOT DATE: 3/25/2022 3:24 PM
lnxh M:\Design\23621172.03\23621172\03__ROSEVILLE_C-04_DETAILS2.dwg Plot.st 1 08/13/2014 11:37:59



1 - PLAN:LANDSCAPE PLAN

0 20 40

SCALE IN FEET

LANDSCAPE PLAN PLANTING SCHEDULE

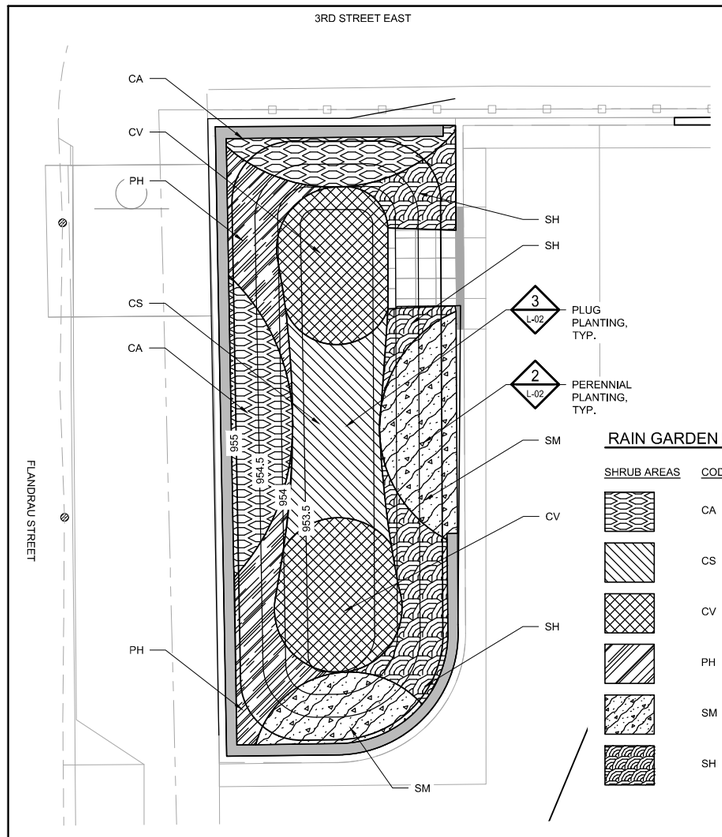
TREES	CODE	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
•	QG	QUERCUS X MACDANIELII 'CLEMONS' TM	HERITAGE OAK	20 GAL.	CONT.

LANDSCAPE PLAN GROUND COVER SCHEDULE

SYMBOL	DESCRIPTION	QTY	DETAIL
	ROCK MULCH	336 SF	
	WOOD MULCH	554 SF	

LEGEND

- CONSTRUCTION LIMITS
- SF — SEDIMENT CONTROL LOG
- EXISTING CONTOUR
- PROPOSED CONTOUR
- ST — EXISTING STORMWATER UTILITY
- E — EXISTING ELECTRIC UTILITY
- GAS — EXISTING GAS UTILITY
- EXISTING EASEMENT
- EXISTING TREE TO PROTECT IN PLACE



RAIN GARDEN LANDSCAPE PLAN PLANTING SCHEDULE

SHRUB AREAS	CODE	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
	CA	CALAMAGROSTIS X ACUTIFLORA	FEATHER REED GRASS	1 GAL.	24" o.c.	25
	CS	CAREX STRICTA	TUSSOCK SEDGE	4" PLUG	18" o.c.	36
	CV	CAREX VULPINOIDEA	FOX SEDGE	4" PLUG	18" o.c.	62
	PH	PANICUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	1 GAL.	36" o.c.	10
	SM	SCHIZACHYRIUM SCOPARIUM 'MINNBLUEA'	BLUE HEAVEN LITTLE BLUESTEM	1 GAL.	30" o.c.	17
	SH	SPOROBOLUS HETEROLEPSIS	PRAIRIE DROPSEED	1 GAL.	30" o.c.	14

2 - PLAN: RAIN GARDEN LANDSCAPE PLAN

0 5 10

SCALE IN FEET

OUT FOR REVIEW
(NOT FOR CONSTRUCTION)

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNATURE

PRINTED NAME

DATE 03/28/2022 REG. NO. 48430

	03/28/2022	03/28/2022					
CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

BARR
Corporate Headquarters:
Minneapolis, Minnesota
Ph: 1-800-632-2277

Project Office:
BARR ENGINEERING CO.
4300 MARKETPOINTE DRIVE
SUITE 200
MINNEAPOLIS, MN 55435
Ph: 1-800-632-2277
Fax: (952) 832-2601
www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
LANDSCAPE PLAN

BARR PROJECT No.	
23621172.05	
CLIENT PROJECT No.	
-	
DWG. No.	REV. No.
2.L-01	B

GENERAL LANDSCAPE NOTES:

1. PLANTING SHALL CONFORM TO MNDOT SPEC 2571, PLANT INSTALLATION AND ESTABLISHMENT, EXCEPT AS INDICATED OTHERWISE IN THE PLANTING SHEETS.
2. INFORM THE LANDSCAPE ARCHITECT OF PLANTING TWO DAYS PRIOR TO PLANT DELIVERY.
3. CONTRACTOR SHALL COORDINATE LAYOUT OF ALL PLANTS WITH DIRECTION OF LANDSCAPE ARCHITECT IN THE FIELD.
4. CONFIRM ALL QUANTITIES, SHAPES AND LOCATIONS OF ALL SEEDING AND PLANTING AREAS; ADJUST QUANTITIES AS REQUIRED TO CONFORM TO THE SITE CONDITIONS. CONFIRM ANY ADJUSTMENTS WITH THE LANDSCAPE ARCHITECT.
5. LOCATE ALL UTILITIES. NOTIFY THE LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH PLANT INSTALLATION.
6. LONG-TERM STORAGE OF MATERIALS OR SUPPLIES ON-SITE WILL NOT BE ALLOWED. ANY PLANT STOCK NOT PLANTED ON DAY OF DELIVERY SHALL BE HEELED IN AND WATERED UNTIL INSTALLATION. PLANTS NOT MAINTAINED IN THIS MANNER WILL BE REJECTED.
7. THE PLAN TAKES PRECEDENCE OVER THE PLANT SCHEDULE IF DISCREPANCIES EXIST. ADVISE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.

PROTECTIONS:

8. THE CONTRACTOR SHALL AVOID DAMAGING EXISTING TREES. DO NOT STORE OR DRIVE HEAVY MATERIALS OVER TREE ROOTS. DO NOT DAMAGE TREE BARK OR BRANCHES.
9. THE CONTRACTOR SHALL KEEP PAVEMENTS, FIXTURES AND BUILDINGS CLEAN AND UNSTAINED. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE PROJECT SITE SHALL BE KEPT CLEAR OF CONSTRUCTION WASTES AND DEBRIS.

SOIL LOOSENING & AMENDMENT REQUIREMENTS:

10. SOIL LOOSENING APPLIES TO ALL DISTURBED SOILS TO BE RE-VEGETATED, INCLUDING SEEDING/SODDING/LANDSCAPE AREAS (NOT INCLUDING AREAS UNDER EXISTING TREE DRIP-LINES OR WITHIN 5-FEET OF BUILDING/PAVEMENT FOUNDATIONS), TO RESTORE SOIL PERMEABILITY.
11. SOIL REMEDIATION MUST BE IMPLEMENTED PRIOR TO ANY INSTALLATION OF IRRIGATION SYSTEM COMPONENTS, TREES, SHRUBS, SOD AND/OR SEED. NO WHEELED EQUIPMENT SHALL BE USED ON LOOSENED SOIL - WIDE TRACK EQUIPMENT ONLY.
12. SOIL LOOSENING MUST PRESERVE EXISTING TREES. NO LOOSENING SHALL OCCUR WITHIN DRIP LINE OF ANY EXISTING TREE.
13. ALL DISTURBED AREAS TO BE RE-VEGETATED SHALL HAVE 12-INCH MINIMUM DEPTH OF SOIL LOOSENING (E.G. SOIL RIPPING,6-INCH MAX. TOOTH SPACING).
14. LOOSENED SOILS SHALL HAVE A MAXIMUM OF 200 PSI IN TOP 12 INCHES.
15. CONTRACTOR TO TEST EXISTING TOPSOIL PRIOR TO PLANTING (MINIMUM 3 TESTS AT LEAST 500 FEET APART). IF EXISTING TOP 6" OF SOIL DOES NOT HAVE AT LEAST 5% SOIL ORGANIC CONTENT CONTRACTOR IS TO AMEND WITH MNDOT 3890 GRADE 2 COMPOST TO MEET REQUIREMENT. IMPLEMENTATION DOCUMENTATION SHALL BE PROVIDED TO ENGINEER TO VERIFY EXISTING ORGANIC CONTENT IN SOIL AND PROPOSED AMENDMENTS.

SEEDING:

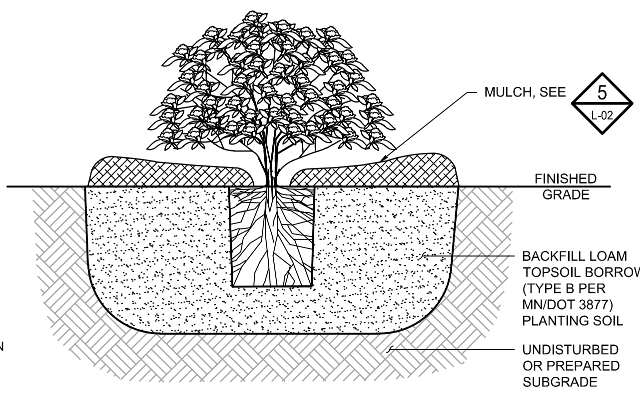
16. ANY EXOTIC INVASIVE PLANTS AND WEEDS WITHIN THE SEEDING AREAS SHALL BE SPRAYED WITH HERBICIDE 14 DAYS PRIOR TO SEEDING OR AS PER MANUFACTURE'S RECOMMENDATION. SIGNAGE INDICATING THE USE OF HERBICIDES MUST BE POSTED ON SITE
17. ALL HERBICIDE APPLICATION SHALL BE APPLIED BY A LICENSED APPLICATOR WITHIN THE STATE OF MINNESOTA.
18. SEED IN ACCORDANCE WITH THE SPECIFICATIONS. SEEDING IS TO TAKE PLACE IMMEDIATELY FOLLOWING FINAL GRADING AND SOIL PLACEMENT TO PREVENT EROSION AND COMPACTION.
19. COVER CROP IS TO BE SEEDED WITHIN ALL AREAS.
20. AFTER SEEDING, TYPE 8 MULCH MATERIAL SHALL BE DISC-ANCHORED OVER ENTIRE SEEDING AREA IN ACCORDANCE WITH MN/DOT STANDARD SPECIFICATION 3882 EXCEPT WHERE EROSION CONTROL BLANKET IS SHOWN ON PLANS.
21. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. IN THE CASE OF ANY DISCREPANCIES BETWEEN THIS DETAIL, PLANS, OR SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

MAINTENANCE AND CARE:

22. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER EACH PORTION OF THE WORK IS IN PLACE. PLANT MATERIAL SHALL BE PROTECTED AND MAINTAINED UNTIL THE INSTALLATION OF PLANTINGS IS COMPLETE, INSPECTION HAS BEEN MADE AND PLANTING IS ACCEPTED EXCLUSIVE OF THE GUARANTEE.
23. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, MULCHING, REMOVAL OF DEAD MATERIAL PRIOR TO GROWING SEASON, RE-SETTING PLANTS AND PROPER GRADE, AND KEEPING PLANTS IN A PLUMB POSITION.
24. WATERING: MAINTAIN A WATERING SCHEDULE WHICH WILL THOROUGHLY WATER ALL PLANTS ONCE A WEEK. IN EXTREMELY HOT, DRY WEATHER, WATER MORE OFTEN AS REQUIRED BY INDICATIONS OF HEAT STRESS SUCH AS WILTING LEAVES. CHECK MOISTURE UNDER MULCH PRIOR TO WATERING TO DETERMINE NEED. CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS FOR WATER.
25. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. IN THE CASE OF ANY DISCREPANCIES BETWEEN THIS DETAIL, PLANS, OR SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.

NOTES:

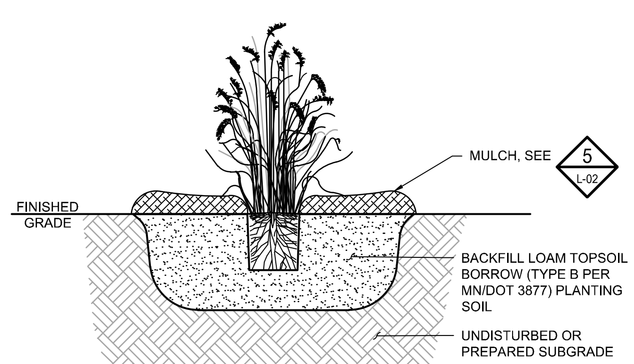
1. PREPARE PLANTING SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER PLANTING SCHEDULE.
3. DIG PLANT HOLES 18" MIN. LARGER THAN ROOT MASS, ALL SIDES.
4. SET SHRUB ON LIGHTLY FIRMED BACKFILL SOIL AT THE SAME DEPTH GROWN IN THE NURSERY.
5. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AND ENSURE NO AIR GAPS IN SOIL REMAIN.
6. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF PLANTING.
7. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
8. NO MULCH SHALL BE ALLOWED TO BE IN CONTACT WITH PLANT.
9. NOTIFY OWNER FOR ALL INSPECTIONS FOR PLANTING AND REPLACEMENTS, AS SPECIFIED.



1 - DETAIL: SHRUB PLANTING

NOTES:

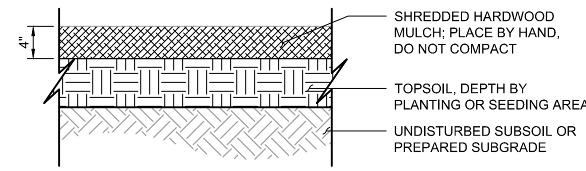
1. PREPARE PLANTING SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER PLANTING SCHEDULE.
3. DIG PLANTING HOLES 12" MIN. LARGER THAN ROOT MASS, ALL SIDES.
4. SET PERENNIAL OR GRASS ON LIGHTLY FIRMED BACKFILL SOIL AT THE SAME DEPTH GROWN IN THE NURSERY.
5. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AND ENSURE NO AIR GAPS IN SOIL REMAIN.
6. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF PLANTING.
7. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
8. NO MULCH SHALL BE ALLOWED TO BE IN CONTACT WITH PLANT.
9. NOTIFY OWNER FOR ALL INSPECTIONS FOR PLANTING AND REPLACEMENTS, AS SPECIFIED.



2 - DETAIL: PERENNIAL PLANTING

NOTES:

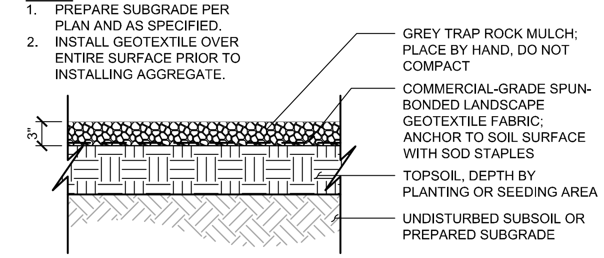
1. PREPARE SUBGRADE PER PLAN AND AS SPECIFIED.
2. INSTALL GEOTEXTILE OVER ENTIRE SURFACE PRIOR TO INSTALLING AGGREGATE.



5 - DETAIL: HARDWOOD MULCH

NOTES:

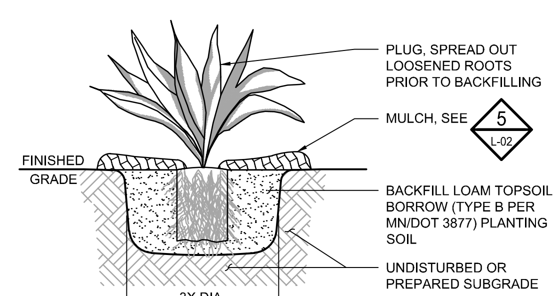
1. PREPARE SUBGRADE PER PLAN AND AS SPECIFIED.
2. INSTALL GEOTEXTILE OVER ENTIRE SURFACE PRIOR TO INSTALLING AGGREGATE.



6 - DETAIL: ROCK MULCH

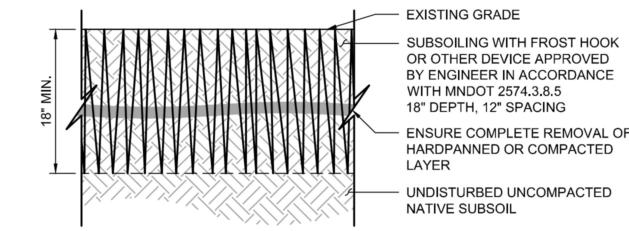
NOTES:

1. PULL BACK MULCH AND CUT AWAY EROSION CONTROL BLANKET. EXCAVATE HOLE 3 TIMES WIDTH OF ROOTBALL, MIN..
2. SCARIFY BOTTOM AND OUTER PERIMETER OF ROOTBALL TO LOOSEN ROOTS. PLANT IN EXCAVATION, ENSURING TOP OF ROOT BALL IS EVEN WITH OR SLIGHTLY ABOVE SOIL FINISHED GRADE.
3. FIRM PLANTING SOIL AROUND ROOTBALL TO ENSURE GOOD SOIL-ROOT CONTACT AND REMOVE ANY AIR POCKETS. DO NOT OVERCOMPACT PLANTING SOIL.
4. WATER THOROUGHLY AFTER PLANTING.
5. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS AND REQUIREMENTS FOR PLANTING LAYOUT, INSTALLATION, AND REVIEW.

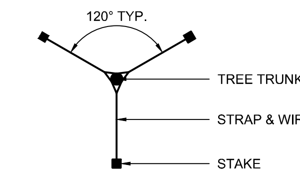


3 - DETAIL: PLUG PLANTING

NOT TO SCALE



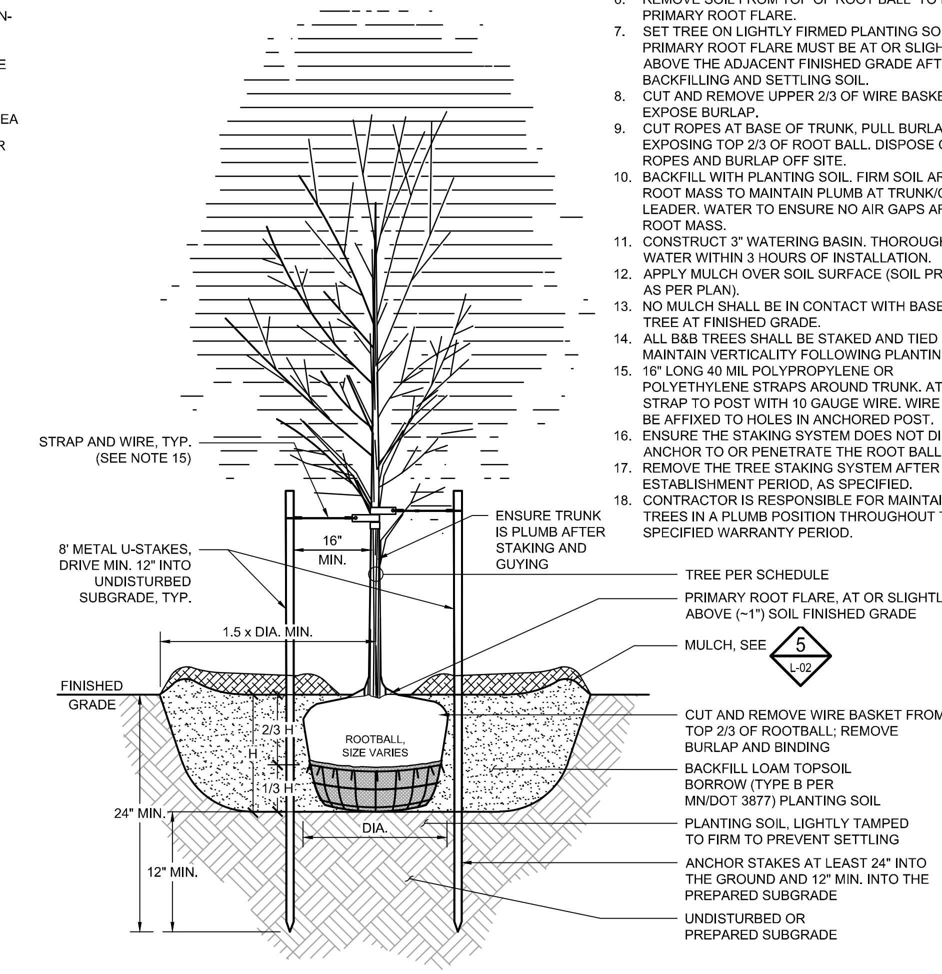
7 - DETAIL: SUBSOILING



STAKING PLAN VIEW

NOTES:

1. PREPARE SOIL PER PLAN AND AS SPECIFIED.
2. PROVIDE AND INSTALL PLANTS PER SCHEDULE.
3. REMOVE DEAD OR DAMAGED BRANCHES. RETAIN THE NATURAL FORM OF PLANT. DO NOT CUT THE LEADER.
4. DIG PLANT HOLES 18" MIN. LARGER THAN ROOT MASS, ALL SIDES.
5. SCARIFY BOTTOM AND SIDES OF HOLE PRIOR TO PLANTING.
6. REMOVE SOIL FROM TOP OF ROOT BALL TO EXPOSE PRIMARY ROOT FLARE.
7. SET TREE ON LIGHTLY FIRMED PLANTING SOIL. PRIMARY ROOT FLARE MUST BE AT OR SLIGHTLY ABOVE THE ADJACENT FINISHED GRADE AFTER BACKFILLING AND SETTLING SOIL.
8. CUT AND REMOVE UPPER 2/3 OF WIRE BASKET TO EXPOSE BURLAP.
9. CUT ROPES AT BASE OF TRUNK, PULL BURLAP DOWN EXPOSING TOP 2/3 OF ROOT BALL. DISPOSE OF ROPES AND BURLAP OFF SITE.
10. BACKFILL WITH PLANTING SOIL. FIRM SOIL AROUND ROOT MASS TO MAINTAIN PLUMB AT TRUNK/CENTRAL LEADER. WATER TO ENSURE NO AIR GAPS AROUND ROOT MASS.
11. CONSTRUCT 3" WATERING BASIN. THOROUGHLY WATER WITHIN 3 HOURS OF INSTALLATION.
12. APPLY MULCH OVER SOIL SURFACE (SOIL PREPARED AS PER PLAN).
13. NO MULCH SHALL BE IN CONTACT WITH BASE OF TREE AT FINISHED GRADE.
14. ALL B&B TREES SHALL BE STAKED AND TIED TO MAINTAIN VERTICALITY FOLLOWING PLANTING.
15. 16" LONG 40 MIL POLYPROPYLENE OR POLYETHYLENE STRAPS AROUND TRUNK. ATTACH STRAP TO POST WITH 10 GAUGE WIRE. WIRE SHALL BE AFFIXED TO HOLES IN ANCHORED POST.
16. ENSURE THE STAKING SYSTEM DOES NOT DIRECTLY ANCHOR TO OR PENETRATE THE ROOT BALL..
17. REMOVE THE TREE STAKING SYSTEM AFTER ESTABLISHMENT PERIOD, AS SPECIFIED.
18. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TREES IN A PLUMB POSITION THROUGHOUT THE SPECIFIED WARRANTY PERIOD.



4 - DETAIL: DECIDUOUS TREE PLANTING, B&B

NOT TO SCALE

OUT FOR REVIEW (NOT FOR CONSTRUCTION)

CADD USER: Andrew M. Papke-Larson FILE: M:\DESIGN\23621172.05\ST PASCAL BAYLON CATHOLIC CHURCH - 2022\23621172_ST_PASCALS_L-02_DETAILS_LANDSCAPE.DWG PLOT SCALE: 1:2 PLOT DATE: 3/25/2022 3:24 PM
Xrefs in Drawing - M:\Design\23621172.03\2362117203_MAPLEWOOD CITY HALL_DESIGNBASEv2.dwg M:\Design\23621172.03\2362003116_BASE_C3D_SURVEY_INITIAL_MAPLEWOOD_CITY_HALL.dwg
Images in Drawing - M:\Design\23621172.04\MEK2.jpg M:\Design\23621172.04\MEK2.jpg
mek2 M:\Design\23621172.03\2362117203_Maplewood City Hall_C-01.dwg Plot at 0 10/18/2017 11:24:10

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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 LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME ____

SIGNATURE ____

DATE 03/28/2022 LICENSE # 48430

RELEASED TO/FOR	A	B	C	0	1	2	3
CLIENT	02/28/2022	03/28/2022	—	—	—	—	—
BID	—	—	—	—	—	—	—
CONSTRUCTION	—	—	—	—	—	—	—
	DATE RELEASED						

BARR

Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-632-2277

Project Office: BARR ENGINEERING CO. 4300 MARKETPOINTE DRIVE SUITE 200 MINNEAPOLIS, MN 55435 Ph: 1-800-632-2277 Fax: (952) 832-2601 www.barr.com

Scale	AS SHOWN
Date	03/28/2022
Drawn	AMP3
Checked	AMW
Designed	BARR
Approved	MDB3

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT
LITTLE CANADA, MN

2022 BMP RETROFITS PROJECT
SAINT PAUL, MN

ST. PASCAL BAYLON CATHOLIC CHURCH
LANDSCPE DETAILS

BARR PROJECT No. 23621172.05

CLIENT PROJECT No. -

DWG. No. 2.L-02

REV. No. B

RAMSEY-WASHINGTON
METRO WATERSHED DISTRICT

MEMO

TO: Board of Managers and Staff

FROM: Tina Carstens, Administrator

SUBJECT: West Vadnais Lake Management Next Steps

DATE: April 6, 2022

Background

Last month, you met with staff and a subcommittee of the Vadnais Lake Area Watershed Management Organization (VLAWMO) board at your regular meeting to discuss the management of West Vadnais Lake. After that discussion, I indicated that I would put together some information for you to review before sending it to the VLAWMO staff for their consideration. In this memo and attachments, I will discuss the work done around West Vadnais Lake and the current inspection and maintenance needs.

The attached map shows the West Vadnais Lake (WVL) area, including the boundary between the two watersheds and the drainage area of WVL, shaded in yellow. The numbers indicated areas of work done by us in the last several years. I have more information about those locations below.

West Vadnais Lake Management

Map ID 1 – In-Lake Vegetation Clean-Out

Why: To encourage positive drainage from Grass Lake to West Vadnais Lake and lessen the flood risk to Rice Street. It included excavating and removing cattails in front of the pipe under Rice Street and into WVL—needed to bring in an aquatic harvester due to unsafe ice conditions for an excavator.

When: Last completed in 2018

Cost: $18,000

Inspection and Maintenance: This area is inspected several times a year, but a subsequent cleanout has not been necessary to date. Cattail growth may become more prevalent with the lowering of the outlet and exposure of sediment and lake bed material, and future cleanouts may be recommended. It would be 3-5 years before we see the growth that could impede drainage. The cost to remove that material is expected to go up based on the need to hire specialized equipment to reach this difficult location. This project is entirely in the VLAWMO area.

Map ID 2 – Vadnais Blvd Twin Pipes

Why: Previously, one 12 inch pipe connected the main WVL to the triangle wetland to the south, which contains the lake's outlet. There was a water level difference between the two water bodies. The one pipe was replaced with two 22" x 13" pipes to encourage sufficient flow between the two water bodies.

When: Completed in 2018

Cost: $25,000

Inspection and Maintenance: These pipes are inspected several times a year to ensure no blockage in the pipe. To date, no blockages have been found, and no extra costs have been incurred. It should continue to be inspected. As long as it stays clear, maintenance costs are low for this project. This project is right on the border between VLAWMO and RWMWD.

Map ID 3 – West Vadnais Lake Overflow Bypass System

Why: A permanent sump area was placed between the triangle wetland and Five Star Estates to collect potential overflow water from West Vadnais Lake. A pump and pipe system would be in place to take that water from the sump to ponds along the I-694 right of way and into the Owasso Basin/Gervais Creek system. The overflow water would then bypass Twin Lake, where it ultimately reached before the bypass system was in place. Along with the sump system, the berm along the triangle wetland was re-established, and some trees were removed to keep the water in the wetland at the 884 elevation. A swale from the triangle wetland to the sump area was also established. After construction, water levels were low enough not to require pumping from this sump. A water level monitoring station was installed in this area to monitor the water levels remotely and put into action a pumping plan if needed.

When: Completed in 2020

Cost: Berm Re-establishment and Swale: $84,000
Bypass System Sump: $25,000

Inspection and Maintenance: The water level station is monitored frequently to determine if bypass pumping will become necessary. Alerts in the system will also alarm staff of a need. The berm and swale are inspected annually. This project is entirely in the RWMWD.

Map ID 4 – West Vadnais Lake Outlet

Why: This part of the system is the ultimate outlet of WVL and the Owasso Chain of Lakes system. Due to high flood levels in WVL and Grass Lake, the district performed many studies to look at the possibility of removing floodwaters from the lake through pumping or gravity flow between WVL and East Vadnais Lake. Those projects were deemed infeasible. But to provide future flood storage, it was determined that lowering the outlet of WVL would provide flood storage in the lake after water levels return to a more normal state (as it did in 2021). As part of this project, vegetation was removed from the flow path in the triangle wetland that leads to the outlet.

Vegetation removal and a new flared end structure on the outlet was installed in 2018, and the lowering of the outlet by 0.8 foot was completed in 2020. Before the outlet lowering, VLAWMO requested an Environmental Assessment Worksheet (EAW) to determine the impacts on the lake and adjacent wetland areas due to the lowering of the outlet. Since the outlet lowering, we have experienced average and below-average rain years, and the level of WVL reached the new lowered outlet elevation. Also, in this area, natural resources staff have partnered with VLAWMO to complete a fish survey and install a carp barrier to prevent carp migration through the system and remove fish from the system to improve water quality.

When: Completed in 2018 and 2020

Cost: 2018 Triangle Vegetation Removal: $18,000
2018 Flared End Size Increase + Engineering: $67,000
2019 EAW Engineering Process: $44,000
2020 Triangle Vegetation Removal and Outlet Lowering + Engineering: $160,000

Inspection and Maintenance: The outlet structure for WVL is on a rotation of inspections of trash racks throughout the district that is needed to ensure positive drainage of our systems. It is inspected for blockages, and blockages are removed if discovered. Typically, our field staff can remove any material found on the structures while in the field. The triangle wetland is also inspected for vegetation material, and a determination of whether or not it is impeding flow is made. This project is entirely in the RWMWD.

West Vadnais Lake Studies and EAW Process

As mentioned, various studies were pursued in 2017 and 2018 to determine if projects could be completed to remove water from West Vadnais Lake to lower water levels in the entire system. One particular study of importance to this continued conversation was the West Vadnais Lake to East Vadnais Lake gravity flow feasibility evaluation. I have sent this memo to VLAWMO staff for their information and to share with their board, and it is also attached here.

This study aimed to determine if enough subsurface flow was occurring between WVL and EVL that the purposeful lowering of EVL would encourage gravity flow from WVL. The evaluation showed not enough subsurface flow between the lakes to make that a feasible option to reduce flood levels. After this study, the RWMWD determined the most feasible project to pursue was the lowering of the West Vadnais Lake outlet. The following is an accounting of the EAW and outlet lowering process.

Early 2019: Partnered with VLAWMO to begin work on the EAW to evaluate the impact of outlet lowering on the lake and adjacent wetlands. VLAWMO is considered the Responsible Government Unit and would ultimately decide whether the further environmental review would be necessary.

June 2019: Bathymetry survey of the lake and adjacent wetland delineations completed.

July 2019: Draft EAW provided to RWMWD staff for review and approval.

August 2019: EAW completed and sent to VLAWMO to complete their RGU noticing and comment period requirements.

September/October 2019: EAW was noticed, and comments were accepted and responded to. VLAWMO completed the EAW process and decided on October 23, 2019, that no further environmental review was needed and the project would proceed as proposed.

November/December 2019: Barr/RWMWD proceeded with project design and the necessary permitting needs as the design progressed.

January 2020: Stakeholder meeting held and permits submitted to MnDOT, Little Canada, Army Corps of Engineers, Mn DNR, and St. Paul Regional Water Services.

February 2020: Plans and specs completed.

April 2020: Awaiting on permit from MnDOT. The project is under the formal bidding requirement and therefore was added as a change order on the CIP Maintenance and Repair Project contract. Once the MnDOT permit is received, work can begin.

May 2020: All permits received, and work to begin before June.

June 2020: Outlet lowering completed.

Next Steps

At this point in the process, I see the board has two paths to consider:

1. Direct staff to notify the VLAWMO staff that RWMWD would like to pursue an official boundary change of the West Vadnais Lake subwatershed into the RWMWD boundary.

    a. Under this direction, if VLAWMO agrees, the process of a boundary change could be completed around the end of the year. The RWMWD Board could then move as they wish through water quality and quantity projects without the agreement of the VLAWMO.

    b. The boundary change would allow RWMWD to pursue a more aggressive water quality improvement schedule if they determine that to be what they'd like to do. Keep in mind that TMDLs and water quality improvements in lakes are a process that often takes up to a decade to complete. The steps VLAWMO has taken from 2020 on is a similar process that we would have taken to address an impaired water. Upon a change that would leave us responsible for the TMDL for WVL, we would complete the TMDL report, address external load improvements, and ultimately look at internal load management options – as we continue to do with Wakefield Lake and Bennett Lake. This is an interesting situation as the external load is likely mostly coming from the Grass Lake system in our watershed. That's to say; whether or not WVL is in our district, we will be involved in the solutions for the water quality of WVL.

2. Direct staff to write a memorandum of agreement to be held with the VLAWMO that specifically lays out the actions and timeline for those actions that we would like the VLAWMO to complete

as it relates to the water quality and quantity needs of our district.

a. This agreement would lay out the inspection and maintenance needs that we feel should be the responsibility of VLAWMO for the assurance of positive drainage in our systems.

b. The agreement would also lay out the expectations of RWMWD for VLAWMO to complete further water quality studies and implementation of water quality improvement projects. The anticipated projects would likely include both VLAWMO and RWMWD involvement, and that division of responsibility could also be laid out in an agreement.

West Vadnais Lake Management Discussion

- Points of Interest
- Water Bodies
- Cities
- Major Flow Arrows
- RWMWD/VLAWMO Boundary
- West Vadnais Lake Drainage Area (DNR8)

0 500 1,000 2,000 Feet

Map ID	Location
1	In-Lake Vegetation Clean-Out
2	Vadnais Blvd Twin Pipes
3	West Vadnais Lake Overflow Bypass System
4	West Vadnais Lake Outlet

resourceful. naturally.
engineering and environmental consultants

BARR

Memorandum

To: Ramsey-Washington Metro Watershed District (RWMWD) board of managers and staff

From: Tyler Olsen, Evan Christianson, Matt Metzger, Bryan Oakley, Erin Anderson Wenz, and Brad Lindaman

Subject: West Vadnais Lake to East Vadnais Lake gravity flow—feasibility evaluation

Date: November 27, 2018

Project team

RWMWD:	Project manager:	Tina Carstens
Barr staff:	Principal in charge:	Brad Lindaman
	Project manager:	Erin Anderson Wenz
	Project team:	Evan Christianson, Tyler Olsen, Matt Metzger, and Bryan Oakley

Scope of work

The purpose of this study was to understand the feasibility of lowering East Vadnais Lake levels and encouraging subsurface flow by gravity from West Vadnais Lake into East Vadnais Lake. This study required the team to conduct geotechnical field investigations, obtain baseline West Vadnais Lake water-quality parameters, quantify seepage through the berm, and identify the study's future feasibility. In general, the RWMWD proposed that St. Paul Regional Water Services (SPRWS) could operate East Vadnais Lake at a lower level that would accommodate subsurface flows from West Vadnais Lake in order to reduce flooding concerns in the Grass Lake area.

East Vadnais Lake is part of the SPRWS's chain of lakes that delivers water from the Mississippi River to the McCarrons water treatment plant in Maplewood, just south of Little Canada and just north of St. Paul. If water is to be moved into East Vadnais Lake, it will need to meet certain water-quality standards so that it does not disrupt SPRWS's treatment process. The level of total phosphorus in unfiltered West Vadnais Lake is not currently acceptable for use as a SPRWS drinking-water source. Additional water-quality characterization of West Vadnais Lake was unknown prior to this study. This study was intended to better understand if this approach is viable and feasible.

Background information

West Vadnais Lake has an outlet elevation of 881.8 feet, although it typically fluctuates around a higher elevation of approximately 882.6 feet (its ordinary high water elevation as defined by the Minnesota Department of Natural Resources). At this elevation, the lake's surface area covers 221 acres, with an average depth of 7 feet and a maximum depth of 9 feet. Eurasian watermilfoil is present in West Vadnais Lake, which is within the Vadnais Lake Area Watershed Management Organization (VLAWMO) and the city of Vadnais Heights.

East Vadnais Lake covers 389 acres, with a maximum depth of 58 feet. Zebra mussels and Eurasian watermilfoil are present. East Vadnais Lake is within the VLAWMO in Vadnais Heights, and is part of the

SPRWS chain of lakes that delivers water from the Mississippi River to the McCarrons water treatment plant in Maplewood, just south of Little Canada and just north of St. Paul. West Vadnais Lake is separated from East Vadnais Lake by a narrow earthen berm and a paved bicycle path.

Grass Lake and West Vadnais Lake are connected via a culvert that effectively equilibrates the surface elevation of the two lakes. West Vadnais Lake drains to the south via a 15-inch culvert under Interstate 694. However, the size of this culvert and its invert elevation limit its capacity to prevent flooding from large storm events in the Grass Lake and West Vadnais Lake areas.

West Vadnais Lake is physically separated from East Vadnais Lake by an earthen berm; there is currently no surface flow between the two lakes. The connection of these two lakes via seepage through the berm is unknown. Historically, East Vadnais Lake has maintained a surface stage elevation of 1 to 2 feet above West Vadnais Lake, creating potential for seepage flow through the berm from East Vadnais Lake to West Vadnais Lake—an undesired condition, particularly during flood events. The stage of East Vadnais Lake is controlled as part of SPRWS's operations. Water enters East Vadnais Lake via a channel from Sucker Lake on the north and Lambert Creek on the east. In 2016, SPRWS pumped an average of 38.2 million gallons a day (59 cubic feet per second) from the lake for water supply. Previous studies have considered pumping water from upstream of Grass Lake (Snail Lake) to Sucker Lake, pumping water from West Vadnais Lake into East Vadnais Lake, and lowering the outlet of West Vadnais Lake. The first two of these studies have not proven to be cost effective or impactful enough to reduce flooding. The RWMWD is still considering lowering West Vadnais Lake's outlet as a flood mitigation strategy.

The next option considered in this study was lowering the operating level of East Vadnais Lake to allow for passive movement of water through the earthen berm separating West Vadnais Lake and East Vadnais Lake to reduce the water level in West Vadnais Lake. The two main components of this study were understanding the groundwater and seepage dynamics of the earthen berm, and characterizing the water quality of West Vadnais Lake to understand how it would affect drinking-water quality from East Vadnais Lake and SPRWS's treatment process.

Task 1: Geotechnical investigations

A geotechnical investigation was conducted on the earthen berm separating West Vadnais Lake and East Vadnais Lake to evaluate existing hydrogeologic properties of the materials that make up the berm, as well as the current groundwater conditions.

Soil borings were conducted at five locations along the berm, as shown in figure 1. Each boring was completed to a depth of 32 feet below ground surface using direct-push drilling methods. Continuous core was collected at each boring, and the soil stratigraphy was logged in the field. Boring logs for the five borings at presented in attachment A.

Soil stratigraphy of the earthen berm consisted primarily of 5 to 15 feet of silty sand with cohesive and non-plastic fines. Below the berm, sediments transitioned to finer-grained sandy silt with 2- to 5-foot lenses of clay. Prior to this investigation, Ramsey County indicated that portions of the berm may have been constructed with extremely course-grained material, including recycled concrete rubble. There was no indication of this material in any of the five borings conducted for this investigation.


PZ-12
PZ-11
East Vadnais Lake
SB-2
PZ-10
West Vadnais Lake
SB-1
Soil Boring
Piezometer/Boring
N
0
500
Feet
BORINGS AND PIEZOMETERS
Ramsey Washington Metro Watershed District
FIGURE 1
BARR

At three of the boring locations, piezometers were installed using hollow-stem-auger drilling methods. Each piezometers was installed to a depth of 8 feet, with a screened interval ranging from 3 to 8 feet below ground surface. The screened intervals intersect the water table, which varied from 3.1 feet to 3.6 feet below ground surface. Piezometer construction logs are presented in attachment A.

Slug tests were conducted at each of the piezometers to estimate hydraulic conductivity of the sediments within the berm. Each slug test was analyzed using the Bower and Rice straight-line method. Slug test plots and solutions are presented in attachment B. The hydraulic conductivity values ranged from 2.1 feet per day to 7.3 feet per day and are presented in table 1 below.

Table 1. Hydraulic conductivity of berm

Piezometer	Hydraulic conductivity (feet/day)
PZ-10	7.3
PZ-11	2.1
PZ-12	4.1

Task 2: Baseline water-quality characterization

A wide-ranging baseline set of water-quality data was obtained for West Vadnais Lake to identify the feasibility of using this water in the SPRWS drinking-water system. The water-quality parameters that were analyzed are comprised of parameters from drinking-water standards, unregulated contaminant monitoring rules, nutrients, and algae speciation.

Two rounds of water-quality sampling in West Vadnais Lake were conducted in October 2018. The second round was necessary because the laboratory did not preserve a sample, and SPRWS requested additional parameters to be tested. A composite sample was taken from three different locations on the surface (0 to 2 meters) of West Vadnais Lake and submitted for laboratory testing to Eurofins Laboratory. Analysis of the samples took place immediately after collection. SePRO conducted algae speciation on West Vadnais Lake.

The final list of parameters that were analyzed is in table 2.

Preliminary water-quality results have been received from the laboratories for algae speciation and bacteria presence. The algae speciation showed presence of blue-green algae *Dolichospermum* sp. at a density indicating moderate exposure risk (17,750 cells per milliliter). Other blue-green algae species were present in lower densities, and do not pose an exposure risk. *E. coli* is present above the maximum contaminant level in the West Vadnais Lake samples that were taken.

The remaining water-quality data has been received from the laboratory, and is being processed for distribution to the stakeholders. The majority of these tested constituents were below detection limits, and did not give any cause for concern. A final summary table will be forwarded as attachment C to this technical memorandum.

Task 3: Berm seepage analysis

Hydraulic conductivity estimates determined from the slug tests conducted at each piezometer (table 1) were used to estimate water flux across the berm for a range of stage differences between East Vadnais Lake and West Vadnais Lake. Darcy's Law was used to estimate the flux across the berm, where:

$$Q = KiA$$

Q = discharge across the berm
K = hydraulic conductivity of the berm; the low and high estimates from the slug test were used (2.1 feet per day and 7.3 feet per day)
i = hydraulic gradient across the berm; an approximate mean berm width of 150 feet and a range in stage differences between the two lakes were used
A = area of cross-sectional flow; an assumed effective depth of 15 feet and berm length of 4500 feet were used

Results of the seepage analysis are presented in figure 2 below. Due to the relatively low hydraulic conductivity of the berm sediments, the seepage across the berm is estimated to be low. With a stage difference of 2 feet between the two lakes, seepage across the berm is estimated to be between 0.02 and 0.04 cubic feet per second. With a stage difference of 7 feet across the berm, seepage is estimated to be between 0.07 and 0.26 cubic feet per second. These low seepage rates indicate that adjusting the difference in stage between the two lakes has little effect on the flow of water into or out of the lakes across the berm. To allow seepage of any significance through the berm from West Vadnais Lake to East Vadnais Lake, the berm would have to be reconstructed with more permeable material.

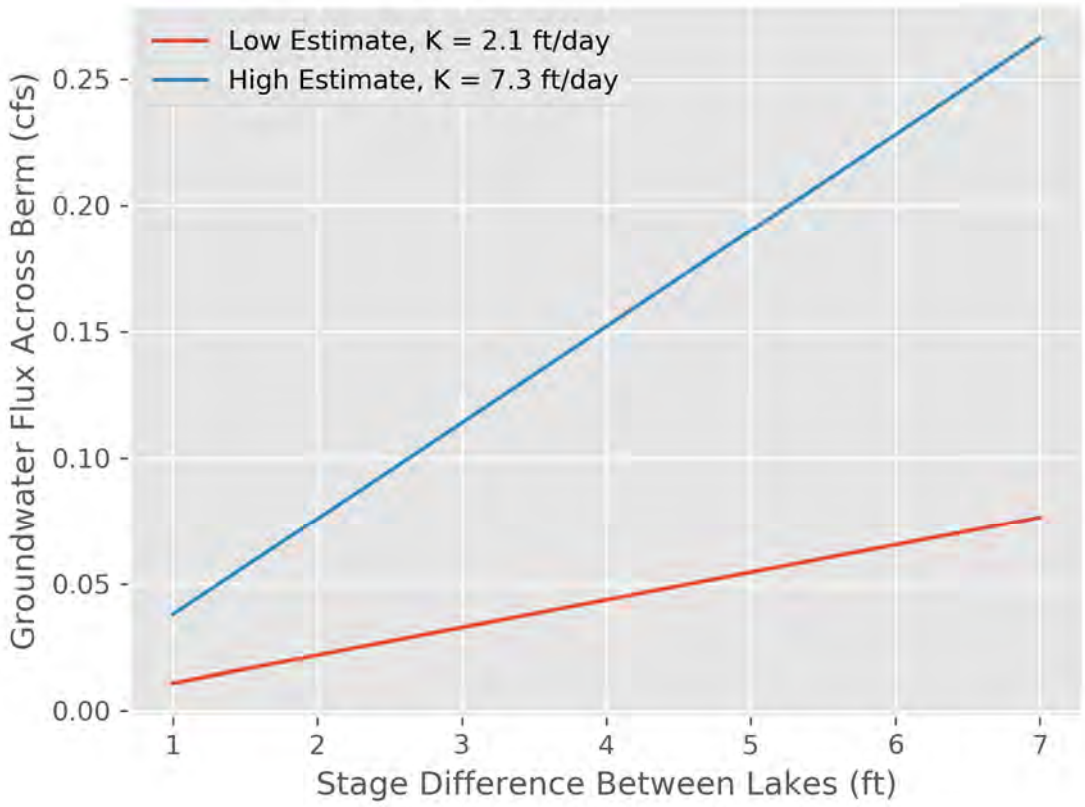


Figure 2. Seepage across berm at different lake stages

Summary of implementation strategies and next steps

Results of the analysis of seepage potential across the berm indicate that it is not possible to achieve sufficient seepage through the existing berm to help alleviate flooding concerns. To alleviate flooding concerns for the 100-year, 96-hour critical event, an additional 10 to 20 cubic feet per second leaving West Vadnais Lake are needed, based on modeling conducted by Barr in March 2018. Even with a difference in lake stage of 7 feet between the two lakes, seepage across the berm is estimated to be less than 1 cubic foot per second. To achieve sufficient seepage rates, the berm would have to be reconstructed. Due to the sensitivity of East Vadnais Lake water used for municipal water supply and the berm's current use as a popular park and recreation area, reconstruction of the berm is not considered a viable option.

Results of the seepage analysis also indicate that maintaining East Vadnais Lake at a slightly higher stage than West Vadnais Lake does not significantly affect flooding concerns for West Vadnais Lake. The seepage from East Vadnais Lake to West Vadnais Lake under these conditions is small.

Water-quality data will be provided once available from the laboratory and processed. However, this data does not change the results of the seepage modeling and next-steps recommendation.

After discussions with the RWMWD and VLAWMO, it was decided that using seepage through the berm to control flooding in the Grass Lake and West Vadnais Lake areas will not be pursued. However, lowering the outlet elevation of West Vadnais Lake will continue to be pursued as an option for flood mitigation.

Table 2. Water-quality parameters tested

1, 1, 1, 2-Tetrachloroethane	Betazon (bentazon assumed)	Methyl ethyl ketone
1, 1, 1-Trichloroethane	Bromobenzene	Methyl isobutyl ketone
1, 1, 2, 2-Tetrachloroethane	Bromochloromethane	Methyl tertiary butyl ether
1, 1, 2-Trichloroethane	Bromomethane	Methylene chloride
1, 1, 2-Trichlorotrifluoroethane	Butachlor	Metolachlor
1, 1-Dichloroethane	Carbaryl	Metribuzin
1, 1-Dichloroethene	Carbofuran	Microcystin-LA
1, 1-Dichloropropene	Carbon tetrachloride	Microcystin-LF
1, 2, 3-Trichlorobenzene	Chloramben	Microcystin-LR
1, 2, 3-Trichloropropane	Chlorobenzene	Microcystin-LY
1, 2, 4-Trichlorobenzene	Chlorodifluoromethane (Freon 22/HCFC-22)	Microcystin-RR
1, 2, 4-Trimethylbenzene	Chloroethane	Microcystin-YR
1, 2-Dibromo-3-chloropropane	Chloromethane	Molybdenum
1, 2-Dibromoethane	Chromium, total	Naphthalene
1, 2-Dichlorobenzene	Chromium-6	n-Butylbenzene
1, 2-Dichloroethane	cis-1, 2-Dichloroethene	Nickel
1, 2-Dichloropropane	cis-1, 3-Dichloropropene	Nitrate+Nitrite Nitrogen, Total (SDWA NO3 as N)
1, 3, 5-Trimethylbenzene	Cobalt	Nitrobenzene (Assessment and Screening)
1, 3-Dichlorobenzene	Cryptosporidium	N-nitrosodimethylamine
1, 3-Dichloropropane	Cyanazine	Nodularin
1, 4-Dichlorobenzene	Cyanide (free per SDWA, lab runs total cyanide)	n-Propylbenzene
1,3-Butadiene	Cylindrospermopsin	Oxamyl
1,4-Dioxane	Dalapon	o-Xylene
17a-Ethynylestradiol (ethinyl estradiol)	DCPA diacid metabolite	p&m-Xylene
17ß-Estradiol	Di (2-ethylhexyl) adipate	Pentachlorophenol (PCP)
2, 2-Dichloropropane	Di (2-ethylhexyl) phthalate	Perfluorobutanesulfonate (PFBS)
2, 4, 5-T	Diazinon	Perfluoroheptanoic acid (PFHpA)
2, 4, 5-TP (Silvex)	Dicamba	Perfluorohexanesulfonate (PFHxS)
2, 4-D	Dichlorodifluoromethane	Perfluorononanoic acid (PFNA)
2, 4-DB	Dichlorofluormethane	Perfluorooctanesulfonate (PFOS)
2,2',4,4',5,5'-hexabromobiphenyl (245-HBB)	Dichlorprop	Perfluorooctanoic acid (PFOA)
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)	Dieldrin	Picloram
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)	Dimethoate	p-Isopropyltoluene
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)	Dinoseb	Prometon
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)	Disulfoton	Propachlor
2,4,6-Trichlorophenol	Diuron	Radon-222
2,4-Dichlorophenol	Endrin	sec-Butylbenzene
2,4-Dinitrophenol	Escherichia coli (w/Total coliforms)	Simazine
2-Chlorotoluene	Estriol (16a-Hydroxy-17ß-estradiol)	Sodium
2-Methylphenol	Estrone	Strontium
3-Hydroxycarbofuran	Ethyl ether	Styrene
4-Chlorotoluene	Ethylbenzene	Terbufos
4-Nitrophenol	Fluoride	Terbufos sulfone
Acetochlor	Fonofon (Fonofos)	tert-Butylbenzene
Acetone	gamma-Chlordane	Testosterone (cis and trans)
Aciflurofen	g-BHC (lindane)	Tetrachloroethene
Alachlor	Giardia	Tetrahydrofuran
Aldicarb	Glyphosate	Thallium
Aldicarb sulfone	Heptachlor	Toluene
Aldicarb sulfoxide	Heptachlor epoxide	Toxaphene
Aldrin	Hexachlorobenzene	trans-1, 2-Dichloroethene
Allyl chloride	Hexachlorobutadiene	trans-1, 3-Dichloropropene
alpha-Chlordane	Hexachlorocyclopetadiene	trans-Nonachlor
Anatoxin-a	Iron	TCE
Antimony	Isopropylbenzene	Trichlorofluoromethane
Arsenic	Linuron	Turbidity
Atrazine	MCPA	Vanadium
Benzene	MCPP	Vinyl chloride
Benzo (a) pyrene	Methomyl	
Beryllium	Methoxychlor	

Attachment A: Soil Boring Logs

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-10

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
0.0						TOPSOIL (SM): moist.		
			PID:0.1 **D/O/S:**None/ None/ None **G/S/F:**0%/ 80%/ 20%	SM			PRO. CASING Diameter: **6 in** Type: **Black Steel** Interval: **0-2 ft bgs**	
2.5						SILTY SAND (SM): 10 YR 4/1 (brownish gray); moist to wet; f-m gr. sand; cohesive; non-plastic fines. From 3-4 ft, black mottling (10YR 2/1).	RISER CASING Diameter: **2 in** Type: **PVC** Interval: **0-3.1 ft bgs**	
5.0			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 80%/ 20%			At 5 ft, wet/saturated.	GROUT Type: **Neat Cement** Interval: **0-1 ft bgs**	
7.5							SEAL Type: **Bentonite** Interval: **1-2 ft bgs**	
10.0			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 70%/ 30%	SM			SANDPACK Type: **Red Flint #40** Interval: **2-8.5 ft bgs**	
12.5							SCREEN Diameter: **2 in** Type: **SPVC NO. 10** Interval: **3.1-8.1 ft bgs**	
15.0			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 40%/ 60%			SANDY SILT (ML): 10 YR 6/1 (brownish gray); wet; vf-f gr. sand; cohesive; low-plasticity.		
17.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 40%/ 60%	ML				
20.0								

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: EMC
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

\\EDI-CAD\CAD\GINT\PROJECTS\23621200 VADNAIS LAKE SOIL BORINGS\VADNAIS LAKE SOIL BORINGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-10

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
20.0						SANDY SILT (ML): 10 YR 6/1 (brownish gray); wet; vf-f gr. sand; cohesive; low-plasticity. *(continued)*	PRO. CASING Diameter: **6 in** Type: **Black Steel** Interval: **0-2 ft bgs** RISER CASING Diameter: **2 in** Type: **PVC** Interval: **0-3.1 ft bgs** GROUT Type: **Neat Cement** Interval: **0-1 ft bgs** SEAL Type: **Bentonite** Interval: **1-2 ft bgs** SANDPACK Type: **Red Flint #40** Interval: **2-8.5 ft bgs** SCREEN Diameter: **2 in** Type: **PVC, No. 10** Interval: **3.1-8.1 ft bgs**	
22.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 40%/ 60%	ML				
25.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 40%/ 60%					
27.5						PLASTIC SILT (MH): 10 YR 6/1 (brownish gray); wet; vf-f gr. sand; cohesive; med plastic; tr. veins of v. c. gr. sand.		
30.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 70%/ 30%	MH				
32.5						End of boring 32.0 feet		
35.0								
37.5								
40.0								

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: EMC
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

\\EDI-CAD\CAD\GINT\PROJECTS\23621200 VADNAIS LAKE SOIL BORINGS\VADNAIS LAKE SOIL BORINGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-11

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION
0.0				SM		TOPSOIL (SM): moist.
						SILTY SAND (SM): 10YR 4/4 (brown); moist to wet; f-c gr. sand; cohesive; non-plastic.
2.5			**PID:**0.1 **D/O/S:**None/ None/ None **G/S/F:**0%/ 70%/ 30%			
5.0				SM		From 4.5-6 ft, black (10 YR 2/1).
			PID:0.1 **D/O/S:**None/ None/ None **G/S/F:**0%/ 70%/ 30%			At 6 ft, wet/saturated, color change to gray (5Y 4/1).
7.5			**G/S/F:**0%/ 70%/ 30%			
10.0			**PID:**0.1 **D/O/S:**None/ None/ None			
			G/S/F:0%/ 10%/ 90%			SANDY SILT (ML): 5Y 4/1 (gray); wet; vf-f gr. sand; cohesive; low plastic.
12.5						
			PID:0.1 **D/O/S:**None/ None/ None **G/S/F:**0%/ 10%/ 90%			
15.0				ML		At 15 ft, 1/2 in sand lens c. gr. (0/70/30).
17.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 10%/ 90%			At 18 ft, 1 in red/brown (5YR 4/3) sand m. gr. (0/70/30).
20.0						

WELL OR PIEZOMETER CONSTRUCTION DETAIL

PRO. CASING
Diameter: **6 in**
Type: **Black Steel**
Interval: **0-2 ft bgs**

RISER CASING
Diameter: **2 in**
Type: **PVC**
Interval: **0-3 ft bgs**

GROUT
Type: **Neat Cement**
Interval: **0-1 ft bgs**

SEAL
Type: **Bentonite**
Interval: **1-2 ft bgs**

SANDPACK
Type: **Red Flint #40**
Interval: **2-8.5 ft bgs**

SCREEN
Diameter: **2 in**
Type: **PVC, No. 10**
Interval: **3-8 ft bgs**

Elevation, feet

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

\\EDI-CAD\CAD\GINT\PROJECTS\23621200 VADNAIS LAKE SOIL BORINGS\VADNAIS LAKE SOIL BORINGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-11

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
20.0						SANDY SILT (ML): 5Y 4/1 (gray); wet; vf-f gr. sand; cohesive; low plastic. *(continued)*		
22.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 10%/ 90%	ML				
25.0			**G/S/F:**0%/ 10%/ 90% **PID:**0 **D/O/S:**None/ None/ None					
27.5			**G/S/F:**0%/ 5%/ 95%	CL		LEAN CLAY (CL): 5Y 4/1 (gray); wet; med. plastic. At 27.5 ft, 1 in c. gr. sand lens (0/95/5).		
30.0			**G/S/F:**0%/ 5%/ 95% **PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 85%/ 15%	SM		SILTY SAND (SM): 5Y 4/1 (gray); wet; f-c gr. sand; cohesive; non-plastic.		
32.5						End of boring 32.0 feet		
35.0								
37.5								
40.0								

PRO. CASING
Diameter: **6 in**
Type: **Black Steel**
Interval: **0-2 ft bgs**

RISER CASING
Diameter: **2 in**
Type: **PVC**
Interval: **0-3 ft bgs**

GROUT
Type: **Neat Cement**
Interval: **0-1 ft bgs**

SEAL
Type: **Bentonite**
Interval: **1-2 ft bgs**

SANDPACK
Type: **Red Flint #40**
Interval: **2-8.5 ft bgs**

SCREEN
Diameter: **2 in**
Type: **Schedule 40**
Interval: **PVC, No. 10 Slot 3-8 ft bgs**

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-12

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION
0.0				SM		TOPSOIL (SM): moist.
						SILTY SAND (SM): 10YR 3/4 (dark brown); moist to wet; f-c gr. sand; cohesive; non-plastic.
2.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 80%/ 20%			
						At 3.5 ft, black lamination (10YR 2/1).
						At 4.5 ft, 6 in black (10 YR 2/1).
5.0				SM		
7.5			**PID:**0.2 **D/O/S:**None/ None/ None **G/S/F:**0%/ 80%/ 20%			
			G/S/F:0%/ 80%/ 20%			
10.0			**PID:**0 **D/O/S:**None/ None/ None			SANDY SILT (ML): 10YR 4/1 (brownish gray); wet; vf-f gr. sand; low plastic.
			G/S/F:0%/ 40%/ 60%	ML		
12.5			**G/S/F:**0%/ 40%/ 60%			LEAN CLAY WITH SAND (CL): 10YR 4/1 (brownish gray); wet; vf-f gr. sand; med plastic.
			PID:0 **D/O/S:**None/ None/ None			
15.0			**G/S/F:**0%/ 10%/ 90%	CL		
			G/S/F:0%/ 10%/ 90%			At 17 ft, red vf-f gr. sand lens (0/80/20).
17.5			**PID:**0 **D/O/S:**None/ None/ None			
			G/S/F:0%/ 70%/ 30%	SM		SILTY SAND (SM): 10YR 4/1 (brownish gray); wet; vf-f gr. sand.
20.0						

WELL OR PIEZOMETER CONSTRUCTION DETAIL

PRO. CASING
Diameter: **6 in**
Type: **Black Steel**
Interval: **0-2 ft bgs**

RISER CASING
Diameter: **2 in**
Type: **PVC**
Interval: **0-3.1 ft bgs**

GROUT
Type: **Neat Cement**
Interval: **0-1 ft bgs**

SEAL
Type: **Bentonite**
Interval: **1-2 ft bgs**

SANDPACK
Type: **Red Flint #40**
Interval: **2-8.5 ft bgs**

SCREEN
Diameter: **2 in**
Type: **Schedule 40**
Interval: **PVC, No. 10 Slot 3.1-8.1 ft bgs**

Elevation, feet

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: EMC
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

\\EDI-CAD\CAD\GINT\PROJECTS\23621200 VADNAIS LAKE SOIL BORINGS\VADNAIS LAKE SOIL BORINGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING PZ-12

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
20.0				SM		SILTY SAND (SM): 10YR 4/1 (brownish gray); wet; vf-f gr. sand. *(continued)*		
				CL		LEAN CLAY WITH SAND (CL): 10YR 4/1 (brownish gray); wet; med. plastic; vf-f gr. sand.	PRO. CASING Diameter: **6 in** Type: **Black Steel** Interval: **0-2 ft bgs**	
22.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 10%/ 90%				RISER CASING Diameter: **2 in** Type: **PVC** Interval: **0-3.1 ft bgs**	
25.0			**G/S/F**:0%/ 70%/ 30%	SM		SILTY SAND (SM): 10YR 4/1 (brownish gray); wet; vf-f gr. sand.		
			PID:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 10%/ 90%	CL		LEAN CLAY WITH SAND (CL): 10YR 4/1 (brownish gray); wet; med. plastic; vf-f gr. sand.	GROUT Type: **Neat Cement** Interval: **0-1 ft bgs** SEAL Type: **Bentonite** Interval: **1-2 ft bgs** SANDPACK Type: **Red Flint #40** Interval: **2-8.5 ft bgs**	
27.5								
30.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 10%/ 90%				SCREEN Diameter: **2 in** Type: **Schedule 40** Interval: **PVC, No. 10 Slot 3.1-8.1 ft bgs**	
32.5						End of boring 32.0 feet		
35.0								
37.5								
40.0								

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: EMC
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

\\EDI-CAD\CAD\GINT\PROJECTS\23621200 VADNAIS LAKE SOIL BORINGS\VADNAIS LAKE SOIL BORINGS.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING SB-1

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0				SM		TOPSOIL (SM): moist.	
2.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 70%/ 30%	SM		SILTY SAND (SM): 10YR 4/4 (brown); moist; f-c gr. sand; cohesive; non-plastic fines; organics (roots).	
5.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 65%/ 35%	SM		SILTY SAND (SM): 5Y 4/1 (gray); moist to wet; vf-f gr. sand; cohesive; non-plastic fines. At 5.5 ft, wet/saturated.	
7.5							
10.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 80%/ 20%	SM		SILTY SAND (SM): 5Y 4/1 (gray); wet; f-c gr. sand; cohesive; non-plastic fines.	
12.5							
15.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 80%/ 20%				
17.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 80%/ 20%				
20.0							

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING SB-1

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
20.0			**G/S/F:**0%/ 80%/ 20%	SM		SILTY SAND (SM): 5Y 4/1 (gray); wet; f-c gr. sand; cohesive; non-plastic fines. *(continued)*	
22.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 95%/ 5%	SP		POORLY GRADED SAND (SP): 5Y 4/1 (gray); wet; f-c gr. sand.	
25.0							
27.5			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 95%/ 5%			At 28.5 ft, 2 in gravel piece.	
30.0			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 95%/ 5%				
32.5						End of boring 32.0 feet	
35.0							
37.5							
40.0							

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks:

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING SB-2

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
0.0				SM		TOPSOIL (SM): moist.	
2.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 70%/ 30%	SM		SILTY SAND (SM): 10YR 4/4 (brown); moist; f-c gr. sand; cohesive; non-plastic; orange/brown laminations (7.5 YR 5/8); black mottling (10YR 2/1).	
5.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 70%/ 30%	SM		SILTY SAND (SM): 5Y 4/1 (gray); moist to wet; vf-f gr. sand; cohesive; non-plastic. At 5 ft, wet/saturated.	
7.5			**G/S/F**:0%/ 70%/ 30%				
10.0			**PID**:0 **D/O/S**:None/ None/ None				
12.5			**G/S/F**:0%/ 40%/ 60%	ML		SANDY SILT (ML): 5Y 4/1 (gray); wet; vf-m gr. sand; cohesive; low plastic.	
15.0			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 40%/ 60%				
17.5			**PID**:0 **D/O/S**:None/ None/ None **G/S/F**:0%/ 40%/ 60%				
20.0							

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks: Water level measured after drilling at 4.5' bgs

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

Barr Engineering Company
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Telephone: 952-832-2600

LOG OF BORING SB-2

DRAFT

Project: West Vadnais Lake to East Vadnais Lake
Project No.: 23621200
Location: Vadnais Heights, MN
Coordinates:
Datum:

Surface Elevation:
Drilling Method: Geoprobe
Sampling Method: Geoprobe
Completion Depth: 32.0 ft

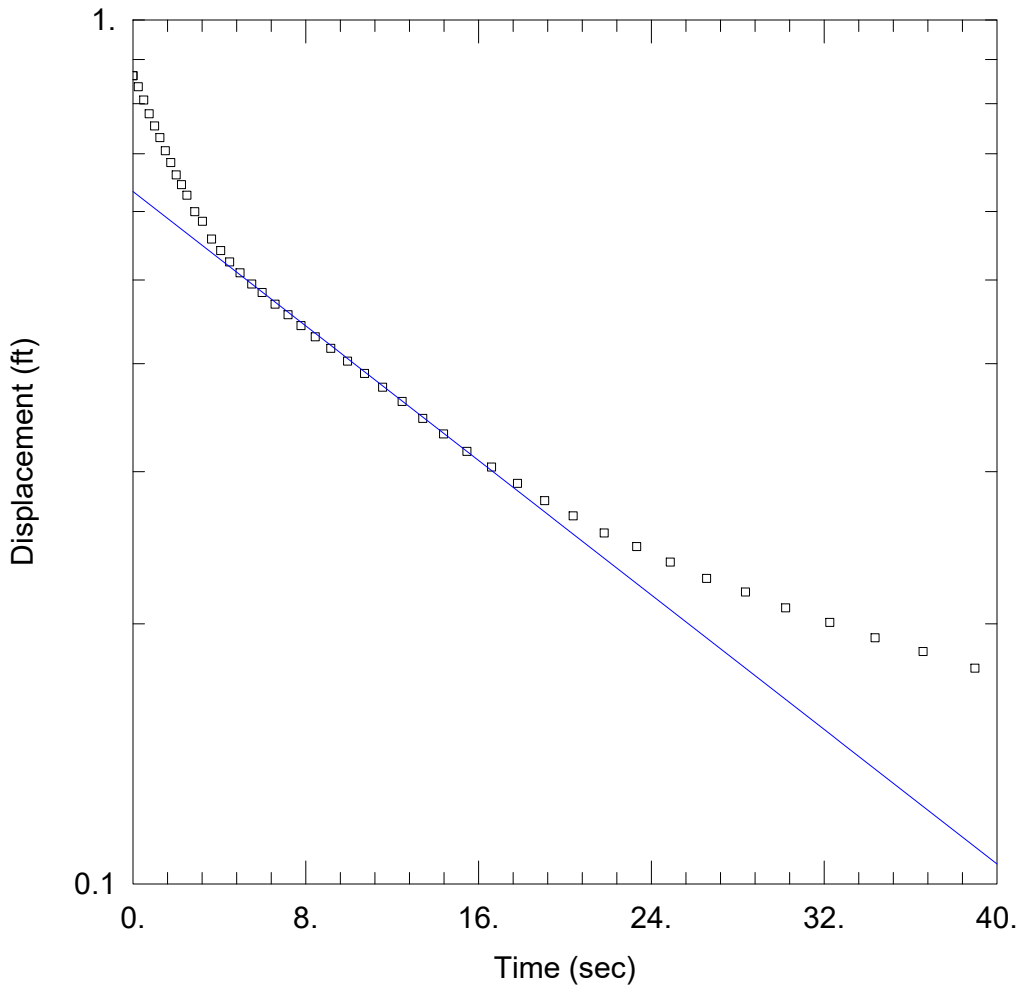
Depth, feet	Sample Type & Recovery	Sample No.	ENVIRONMENTAL DATA	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	Elevation, feet
20.0							
			G/S/F:0%/ 40%/ 60%	ML		SANDY SILT (ML): 5Y 4/1 (gray); wet; vf-m gr. sand; cohesive; low plastic. *(continued)*	
			PID:0 **D/O/S:**None/ None/ None			PLASTIC SILT (MH): 5Y 4/1 (gray); wet; vf-f gr. sand; med plastic.	
22.5			**G/S/F:**0%/ 20%/ 80%				
25.0							
			PID:0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 20%/ 80%	MH			
27.5						At 28.5 ft, 2 in seam v. c. gr. sand.	
						At 29.5 ft, 1 in seam v. c. gr. sand.	
30.0			**PID:**0 **D/O/S:**None/ None/ None **G/S/F:**0%/ 20%/ 80%				
						End of boring 32.0 feet	
32.5							
35.0							
37.5							
40.0							

Date Boring Started: 10/8/18
Date Boring Completed: 10/8/18
Logged By: KMJ2
Drilling Contractor: Stevens Drilling and Environmental
Drill Rig: Geoprobe

Remarks: Water level measured after drilling at 4.5' bgs

PID = Headspace; D/O/S = Discoloration/Odor/Sheen; FID/MC = FID/Methane Corrected; G/S/F = Gravel/Sand/Fines
Additional data may have been collected in the field which is not included on this log.

Attachment B: Slug Test Plots



WEST TO EAST VADNAIS SEEPAGE ANALYSIS

Data Set: P:\...\PZ-10_FULLOUT_1.aqt
Date: 11/18/18 Time: 10:52:16

PROJECT INFORMATION

Company: Barr Engineering
Client: RWMWD
Project: 23621200
Location: Vadnais Heights, MN
Test Well: PZ-10
Test Date: 10/19/2018

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

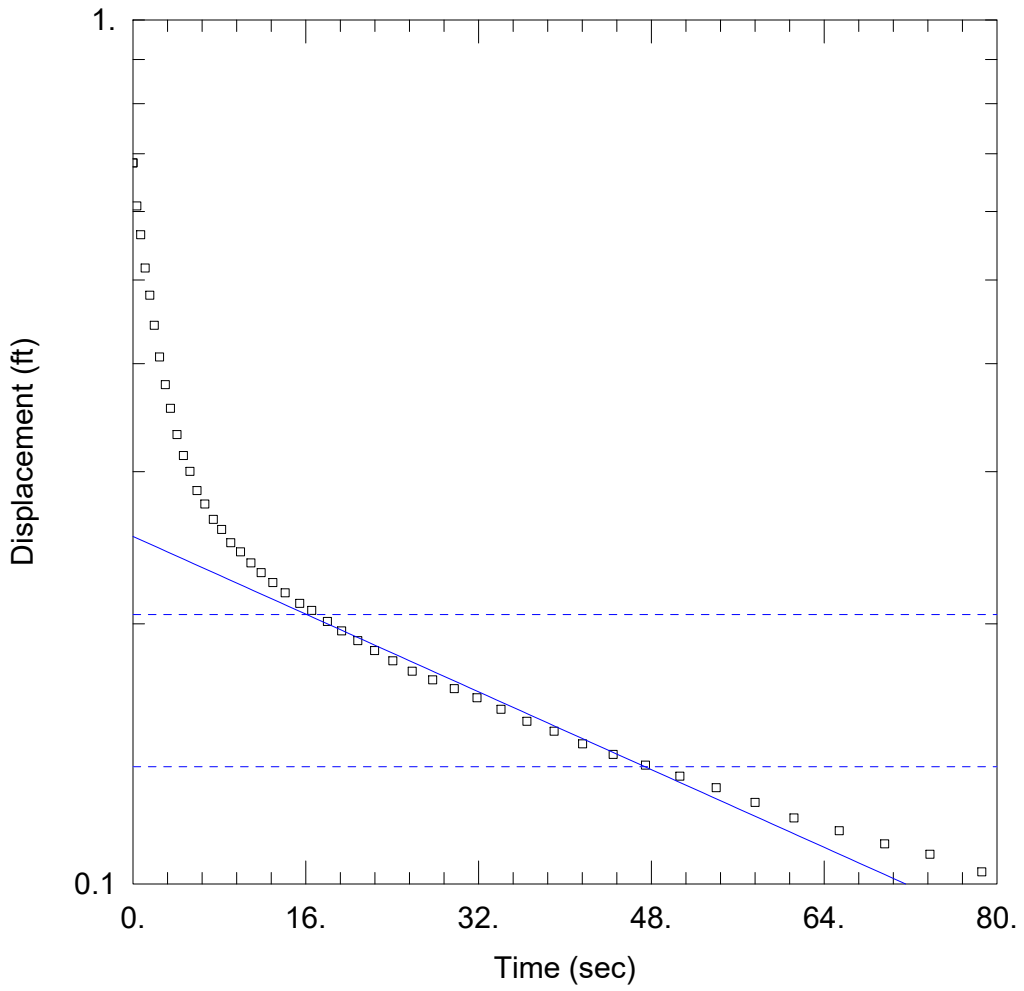
WELL DATA (PZ-10)

Initial Displacement: 0.8618 ft
Total Well Penetration Depth: 5.193 ft
Casing Radius: 0.08333 ft
Static Water Column Height: 5.61 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 7.301 ft/day y0 = 0.633 ft



WEST TO EAST VADNAIS SEEPAGE ANALYSIS

Data Set: P:\...\PZ-11_FULLOUT_1.aqt
Date: 11/18/18 Time: 10:55:26

PROJECT INFORMATION

Company: Barr Engineering
Client: RWMWD
Project: 23621200
Location: Vadnais Heights, MN
Test Well: PZ-11
Test Date: 10/19/2018

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

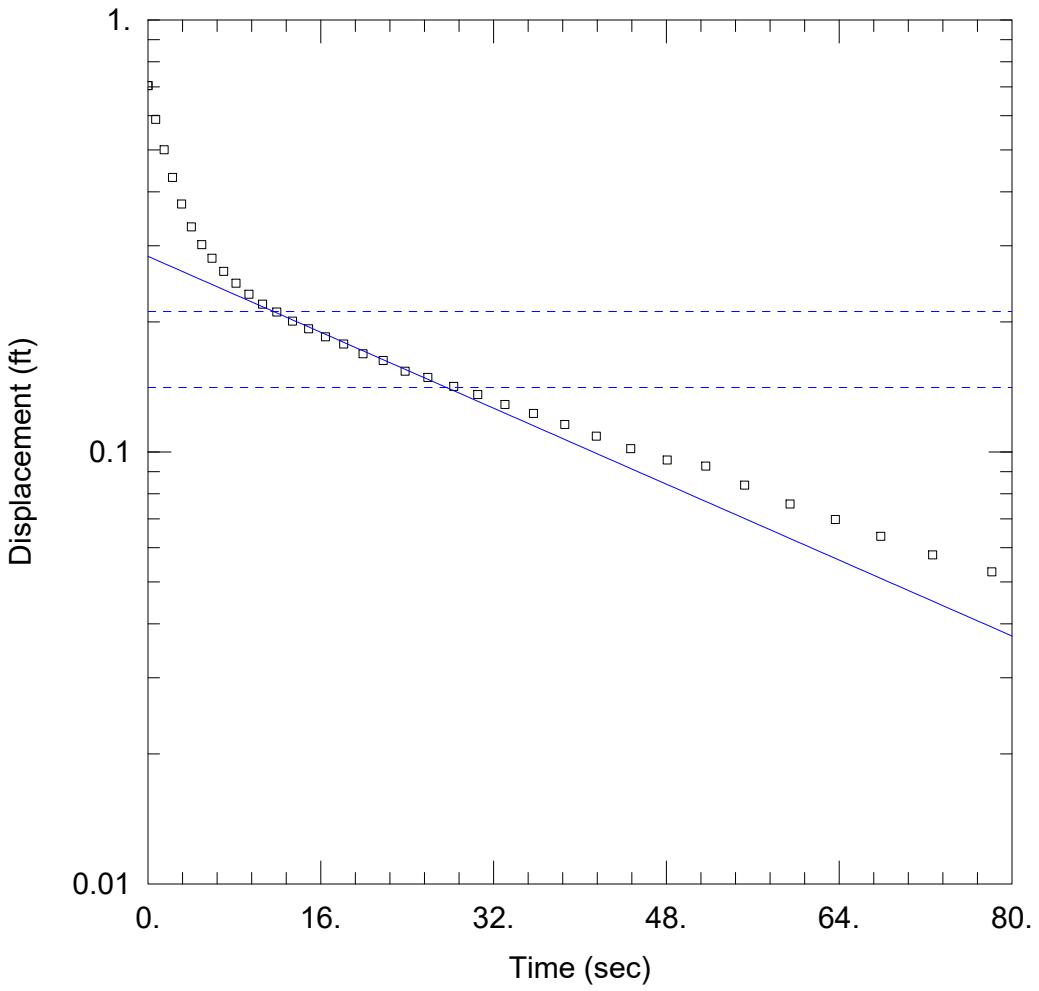
WELL DATA (PZ-11)

Initial Displacement: 0.6833 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 4.85 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.096 ft/day y0 = 0.2525 ft



WEST TO EAST VADNAIS SEEPAGE ANALYSIS

Data Set: P:\...\PZ-12_FULLOUT_2.aqt
Date: 11/18/18 Time: 10:54:58

PROJECT INFORMATION

Company: Barr Engineering
Client: RWMWD
Project: 23621200
Location: Vadnais Heights, MN
Test Well: PZ-12
Test Date: 10/19/2018

AQUIFER DATA

Saturated Thickness: 30. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PZ-12)

Initial Displacement: 0.7047 ft
Total Well Penetration Depth: 5. ft
Casing Radius: 0.08333 ft
Static Water Column Height: 5.09 ft
Screen Length: 5. ft
Well Radius: 0.25 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.095 ft/day y0 = 0.2836 ft

****

Administrator's Report

****

MEMO

TO: Board of Managers and Staff

FROM: Tina Carstens, Administrator

SUBJECT: March Administrator's Report

DATE: March 31, 2022

A. **Meetings Attended**

Tuesday, March 1	9:00 AM	MAWA Executive Committee
	10:30 AM	Casey Lake Meeting
Wednesday, March 2	6:30 PM	Board Meeting
Thursday, March 3	11:30 AM	WaterFest Planning
Monday, March 7	11:00 AM	Project Planning Meeting
Wednesday, March 9	1:00 PM	St. Paul New Water Resources Staff Meeting
Thursday, March 10	12:00 PM	WaterFest Kickoff Meeting
Wednesday, March 16	9:00 AM	MAWA Spring Meeting
	1:00 PM	MAWD Board Meeting
Thursday, March 17	10:00 AM	Audit Check-In Meeting
Monday, March 21	2:00 PM	St. Paul Flood Risk Meeting
Thursday, March 24	9:00 AM	Audit Check-In Meeting
	10:30 AM	Gold Line/I94 Meeting
	12:30 PM	Maplewood Flood Risk Meeting
Friday, March 25	1:00 PM	Ramsey Co Parks Planning Meeting
Wednesday, March 30	2:30 PM	Washington County Healthy Communities
Thursday, March 31	1:00 PM	MAWD Handbook Meeting

B. **Upcoming Meetings and Dates**

Metro MAWD Meeting	April 19, 2022
CAC Meeting	April 26, 2022
May Board Meeting	May 4, 2022
June Board Meeting	June 1, 2022
WaterFest	June 4, 2022
July Board Meeting	July 6, 2022

C. **Ongoing Project Update**

Wetland Policies – Staff are completing a scope summary for the plan and schedule for this work to be presented at the next board meeting. A working document of terms and definitions will also be shared for review and discussion.

D. **Office COVID Update**

As of the writing of this memo, we haven't yet returned to the office or have had a hybrid board meeting. We can use this time to provide an update at the meeting regarding how the first few days of transition are going in the office and any feedback on the board meeting procedures moving forward.

E. **Board Appointment Process**

I was notified by the Ramsey County administrative staff, that the board wanted more time to make the decision of board appointment. It is now anticipated that the new board member would be appointed in mid-April in time for our May board meeting.

F. **Minnesota Association of Watershed District (MAWD) Updates**

You should have recently received MAWD newsletter via email. Please let me know if you aren't receiving emails from MAWD. The summer tour originally planned to be hosted by Minnehaha Creek Watershed District in June has been changed to be held in East Grand Forks on August 24th. More information to come in the future on that opportunity.

****

Project and Program Status Reports

****

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

resourceful. naturally. engineering and environmental consultants BARR

Memorandum

To: Board of Managers and Staff

From: Tina Carstens and Brad Lindaman

Subject: Project and Program Status Report – April 2022

Date: March 31, 2022

Project feasibility studies

Interim emergency response planning for district areas at risk of flooding (Barr project manager: Gareth Becker; RWMWD project manager: Tina Carstens)

The purpose of this project is to provide information and guidance to cities throughout the district about how to protect low-lying habitable structures from flooding during the 100-year storm event. These emergency response plans address areas for which there is 1) not currently a feasible project that has been identified to protect structures or 2) a project that cannot be implemented in the near future due to logistical and/or budgeting reasons. This effort is an outcome of the Beltline resiliency study. This project will extend into 2022.

This period, Barr finalized materials needed for meetings in March with the cities of Maplewood and Saint Paul to discuss flood risks and potential mitigation strategies.

Kohlman Creek/Wakefield Lake Diversion feasibility study (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this study is to complete a feasibility evaluation of modifications to reduce flood risk on Kohlman Creek by diverting high flows to the historic County Ditch 17. Work includes coordination with stakeholders, evaluation of alternatives to reduce flood risk, preparation of cost estimates for each alternative, and identification of permitting requirements. This feasibility study is a follow-up study of a flood-prone area identified in the Beltline resiliency study.

This month, Barr and the RWMWD met with the City of Maplewood public works director to summarize the RWMWD's flood risk reduction efforts since 2014, discuss flood-prone areas within Maplewood, and review collaboration opportunities to mitigate flood risk. Barr and district staff presented concepts for storm sewer modifications and diversion of high flows and discussed information that will be needed to communicate with downstream property owners. Potential locations for system-scale improvements were compared to the city's street capital improvement plan.

Next month, we will begin the hydraulic evaluation of modifications for system-scale improvements. The feasibility study is anticipated to extend through summer 2023.

County Ditch 17 improvements feasibility study (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this study is to complete a feasibility evaluation of modifications to reduce flood risk northeast of Wakefield Lake along the historic County Ditch 17 to remove structures from the 100-year floodplain. Work includes coordination with the City of Maplewood, evaluation of alternatives to reduce

flood risk, preparation of cost estimates for each alternative, and identification of permitting requirements. This feasibility study is a follow-up study of a flood-prone area identified in the Beltline Resiliency study.

This month, Barr and the RWMWD met with the City of Maplewood public works director to summarize the RWMWD's flood risk reduction efforts since 2014, discuss flood-prone areas within Maplewood, and review collaboration opportunities to mitigate flood risk. Barr presented concepts for storm sewer modifications and discussed information that will be needed to communicate with downstream property owners. Potential locations were compared to the city's street capital improvement plan. Next month, we will begin hydraulic evaluation of modifications for system-scale improvements. The evaluation schedule will depend on the how the Kohlman Creek to Wakefield Lake diversion feasibility study progresses, as the diversion will impact the amount of flow that is conveyed through this part of the storm sewer system. The County Ditch 17 feasibility study is anticipated to extend through summer 2022.

Phalen Village feasibility study (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose of this study is to complete a feasibility evaluation of modifications to reduce flood risk near Phalen Village north of Lake Phalen to remove structures from the 100-year floodplain. Work includes coordination with the City of Maplewood, evaluation of alternatives to reduce flood risk, preparation of cost estimates for each alternative, and identification of permitting requirements. This feasibility study is a follow-up study of a flood-prone area identified in the Beltline resiliency study.

This month, Barr and the RWMWD met with the City of Maplewood public works director to summarize the RWMWD's flood risk reduction efforts since 2014, discuss flood-prone areas within Maplewood, and review collaboration opportunities to mitigate flood risk. Barr presented concepts for storm sewer modifications and locations for underground storage and floodplain storage. Potential locations were compared to the city's street capital improvement plan. Next month, we will begin hydraulic evaluation of modifications for system-scale improvements. The feasibility study will extend through summer 2022.

Ames Lake area flood risk reduction planning study (Barr project manager: Brandon Barnes; RWMWD project manager: Tina Carstens)

The purpose is to complete a planning-level evaluation of modifications to reduce flood risk near Ames Lake, supported by the City of Saint Paul. Work includes coordination discussions with Saint Paul; review of potential pipe alignments, land acquisition costs, utility conflicts, and permitting issues; and related design. If the planning study identifies projects that impact regional drainage, a feasibility study will be completed in 2023. This planning study is a follow-up study that was identified in the Beltline resiliency study.

This month, Barr and the RWMWD met with the new Saint Paul water resources coordinator to summarize the RWMWD's flood risk reduction efforts since 2014, our understanding of flood risk near Ames Lake, and our approach to working with the city to identify feasible system modifications to reduce flood risk. Following this initial meeting, we provided Saint Paul with several memorandums and studies that document the current understanding of flood-prone areas within the city. Barr will meet with Saint Paul again in April to discuss the city's comments specifically related to Ames Lake and potential system modifications. In May, we will meet with the Saint Paul water resources working group, which consists of staff from multiple departments, to discuss potential system modifications to reduce flood risk.

This planning-level study will extend through summer 2022. The Beltline Resiliency Study identified modifications to the stormwater system that are typically implemented by cities, such as additional catch basins and increasing storm sewer pipes. However, if potential system-scale modifications are identified, a feasibility study could be completed in 2023.

Owasso Basin area/North Star Estates improvements (Barr project manager: Sam Redinger; RWMWD project manager: Tina Carstens)

The purpose of this study is to evaluate the benefit-cost of flood risk reduction strategies in the Owasso Basin/North Star Estates area by reviewing potential pipe and berm alignments, land acquisition costs, utility conflicts, permitting issues, and related design as well as construction and long-term maintenance costs associated with each alternative that achieves the project objective of removing habitable structures from the floodplain in this area. Stakeholder outreach with the City of Little Canada is an important part of this effort. This study is a continuation of the Owasso Basin bypass study, which laid out several phases of implementation and areas of further study.

This period, Barr updated the RWMWD's watershed model for the Owasso Basin area to incorporate the changes from recent construction projects. We also evaluated the 100-year flood impact to the homes in North Star Estates relative to the survey data the City of Little Canada provided for select homes. This data serves as the basis for redefining flood risk around Owasso Basin. Next period, Barr will develop updated flood maps for Owasso Basin and flood-prone structures.

Water quality and project monitoring

Annual water quality report assistance (Barr project manager: Keith Pilgrim; RWMWD project manager: Eric Korte)

The purpose of this effort is to update and report on lake and stream water quality, monitoring of selected best management practices (BMPs), and other water quality improvement projects that highlight district efforts.

Primary activities during this period included organizing chloride monitoring data from a special monitoring event conducted in 2021 and presenting data to the RWMWD as part of monitoring planning for 2022.

Special project BMP monitoring (Barr project manager: Chris Bonick and Keith Pilgrim; RWMWD project manager: Eric Korte)

The objective is to monitor specific water quality BMPs that the RWMWD has implemented, particularly those that include filtration media such as iron-enhanced sand, spent lime, or CC17 crushed limestone aggregate, and/or that leverage continuous monitoring and adaptive control (CMAC) technology.

This period, Barr and the RWMWD met to discuss 2022 monitoring needs across the district.

Research projects

Shallow lake aeration study (Barr project manager: Keith Pilgrim; RWMWD project manager: Bill Bartodziej)

The purpose of this study is to evaluate the potential effectiveness of aeration in shallow lakes by studying the effect of aeration in two smaller shallow systems (Markham Pond and Frog Pond) in detail during 2021 and 2022. This approach is being pursued as an alternative to whole-lake alum treatments.

Barr compiled the data collected in 2021 into a PowerPoint presentation and discussed it with Bill Bartodziej. The data offer a good baseline from which to evaluate the capacity of aeration to reduce internal loading in Frog Pond and Markham Pond, and in shallow lakes in general.

As previously described, an aerator has been installed in Markham Pond for winter operation, with the goal of minimizing fish kills from low oxygen levels and promoting a sunfish population that will eat carp eggs, thereby reducing the carp population in Markham Pond. Barr will monitor the effects of aeration in 2022 and will report the results in the fall. Bennett Lake will be included in this study (e.g., sediment and water column monitoring) as a potential full-scale shallow aeration study site. It is expected that 2022 monitoring data will serve as a pre-aeration baseline data set. Aerators are likely to be installed in 2023 but may be installed in mid-2022 if the City of Roseville wants to expedite installation at its expense.

Capital improvements

Ryan Drive and Keller Parkway conveyance (Barr project manager: Sam Redinger; RWMWD project manager: Dave Vlasin)

The purpose of this project is to implement improved conveyance through Gervais Creek, as recommended by the Owasso Basin bypass feasibility study. This CIP is an implementation item from the study recommended in the Beltline resiliency study.

This project has continued into 2022 due to last summer's supply chain issues. The work is substantially complete, and the project is functioning as intended. Completion of the punch list and remaining site work with restoration is anticipated to occur next period, as weather permits. This month's packet does not include a partial payment application. Additionally, Barr and the RWMWD have been communicating with Little Canada regarding the city's cost participation in the Ryan Drive work.

Targeted retrofit projects (Barr project manager: Marcy Bean; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to design, provide bid assistance for, and oversee construction of BMP retrofits on previously identified commercial, school, and faith-based properties throughout the district.

BMP retrofits at St. Pascal Baylon Catholic Church and Mounds Park Academy in Saint Paul are proposed to be advertised for bid this month. These projects include a tree trench, pavement reduction, and a combined rain garden and outdoor classroom. A summary memorandum describing these projects is included in this month's board packet.

The Board should consider a motion to accept the preliminary design, scope of work, estimate of probable construction costs and direct staff to advertise the project for bid. Assuming board support for the project, bids will be due April 25; and a likely recommendation to award will be made at the May

meeting, with construction expected to begin in June 2022. Project drawings depicting the preliminary design, scope of work, and opinion of probable construction costs have been included with this board packet.

Woodbury Target stormwater retrofits (Barr project manager: Katie Turpin-Nagel; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to create concept-level designs for Woodbury's Valley Creek Target shopping complex.

This new project opportunity recently arose through the RWMWD's Target contact from previous projects in North St. Paul and East St. Paul. This period, Barr began composing a scope summary, which will be included in the May board packet for manager consideration.

South Lake Emily filtration BMP (Barr project manager: Leslie DellAngelo; RWMWD project manager: Paige Ahlborg)

The purpose of this project is to complete final design, plans, and specifications for a regional stormwater filter downstream of Lake Judy (wetland) and upstream of Lake Emily for the purpose of decreasing phosphorus loads to Lake Emily.

This period, Barr began composing a scope summary, which will be included in the May board packet for manager consideration.

CIP project repair and maintenance

Beltline five-year inspection (Barr project manager: Sam Redinger, RWMWD project manager: Dave Vlasin)

The purpose of this project is to maintain the existing Beltline and Battle Creek tunnel systems and infrastructure owned and operated by the RWMWD.

The remaining portion of the 2020/2021 inspection (the Mississippi River Branch and Battle Creek pipe) was performed this winter (in January and February). Barr and the RWMWD successfully inspected the remaining portion of the Mississippi River Branch. (Inspection was deferred from 2020/2021 due to in-tunnel safety concerns.) The Battle Creek inspection was only partially completed; ice columns forming in the tunnel from the creek overflow structures into the tunnel restricted safe passage. Flows in the tunnel were too high to allow staff to perform a baseline survey of the Battle Creek pipe. This survey, as well as remaining pipe inspections, will be completed this spring as schedules permit.

Barr, the RWMWD, and the contractor (PCiRoads, LLC) completed a warranty walk-through of the 2016-2018 repair project in February. The walkthrough went smoothly. The warranty period for the Beaver Lake Branch portion of the repairs is now over, with one more year remaining on the Mississippi River and mainline portion of the past project. Barr will schedule a final warranty walkthrough for January or February 2023.

Next period, Barr will finish the remaining inspection and survey work in the Battle Creek Tunnel and will begin developing the inspection report.

District inspection standardization (Barr project manager: Tyler Olsen; RWMWD project manager: Tina Carstens)

The purpose of this project is to standardize the district's creek and facilities inspection process, evaluation, and related data collection effort. Work includes review of current methods, development of a scoring system, and implementation of mobile data collection.

Barr presented the draft tool methodology and applications to the RWMWD board of managers at its March board meeting. One requested update was to incorporate a tracking system for sites that may need more frequent maintenance or inspections. To accommodate this in the tool, a coding system and frequency of maintenance tracking will be added as fields in the database so that users can see when inspections/maintenance are required and can schedule activity accordingly.

Barr will work with the RWMWD to plan field testing of the tool in May. President Swope provided potential sites to visit based on past inspections. Barr and the RWMWD have an additional short list of sites to use to test the tool. Barr will provide testing progress and results to the managers at future board meetings.

CIP maintenance/repairs 2022 project (Barr project manager: Greg Nelson; RWMWD project manager: Dave Vlasin)

The purpose of this project is to maintain existing systems and infrastructure owned and operated by the RWMWD and to assist and facilitate stormwater pond cleanouts to allow other public entities to meet their municipal separate storm sewer systems (MS4) requirements.

This project is on schedule, although no work has been completed in recent weeks. Melting snow, thawing ground, and upcoming road load restrictions will keep Fitzgerald from working in most areas for now. Work will restart in April as weather and road restrictions allow. Due to this pause, Fitzgerald did not submit a progress payment application for the April meeting.

Natural Resources Update – Bill Bartodziej and Matt Doneux

Ecological Restoration in Keller Regional Park

Over the last decade, we have partnered with Ramsey County in creating and improving natural areas in Keller Regional Park through ecological restoration. We have the opportunity to expand this work by securing funding through *DNR's Conservation Partners Legacy Grant Program*. Key proposal elements are listed below:

OVERVIEW

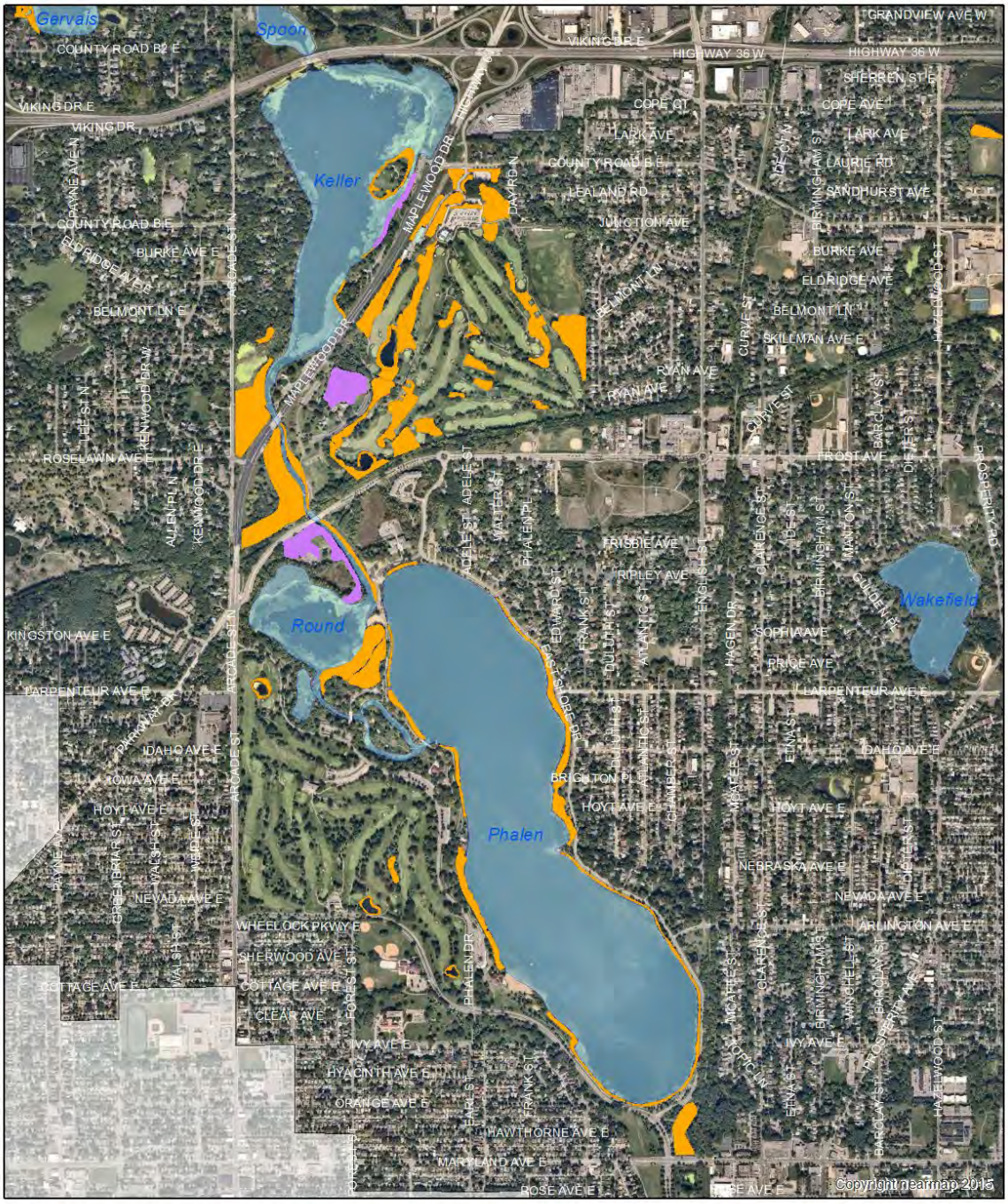
Keller Regional Park (248 acres) has a mix of recreational and natural land cover that serves as a refuge for a multitude of wildlife species. Natural areas along the Phalen Chain of Lakes are critical shoreland buffers, supporting the highest biological diversity in the park. Between 2015-2018, the Watershed restored over 2000 linear feet of Keller Creek shoreline to quality buffer habitat (see map below). During that same period, Ramsey County restored over 40 acres of woodlands and savanna and converted 15 acres of brome field to native prairie. The ecological restoration work in Keller Golf Course is also a significant component to the Phalen Chain of Lakes corridor.

OBJECTIVES

The proposed project will continue restoration efforts in the park and convert 4.5 acres of mowed turf to native prairie, restore 0.5 acres of high-quality oak woodland, and restore 1,335 linear feet of Keller Lake shoreland. These areas are not being used for recreational purposes, and the woodland and shore areas are currently dominated by invasive species, mainly buckthorn and reed canary grass.

GENERAL APPROACH AND TIMELINE

The total funding request is $72,000. All of the restoration elements, such as the design, site preparation, installation, and maintenance will be conducted by NR and Ramsey County staff. This makes the project economical, and we are assured a very high quality restoration. Watershed education staff will develop programs to support this restoration effort. Volunteers will be on site to learn and assist with plant installation. If this project is funded, site preparation work will begin this fall. A majority of the installation will take place in 2023 and 2024. Long-term maintenance will be conducted by NR and Ramsey County staff.



Keller Regional Park - Ecological Restoration

Ramsey-Washington Metro Watershed District

0 500 1,000 2,000 Feet

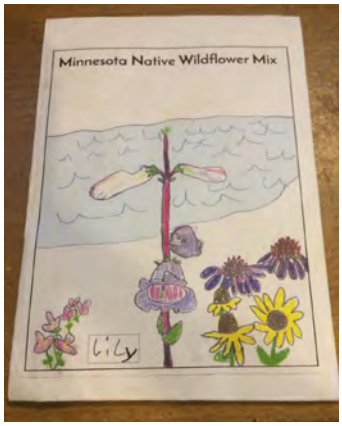
N

Key

- Proposed Restoration Sites
- Lakes
- Existing Restorations

Public Involvement and Education Program – Sage Passi

Transplanting Seedlings – Bring On Spring!



We've been making the rounds at L'Etoile du Nord, Weaver and Hazel Park Schools this month, to help classes transplant the native plant seedlings they started that are reaching toward the lights in the racks we have set up at these schools. Coupled with that activity, we are engaging classes in designing covers for the native seed packets that we will be giving away at WaterFest in June. Be sure to stop by the Natural Resources table at this event to pick up some free seeds!

Harding High School Earth Club Takes on Adopt-A-Drain in their Neighborhood

The Harding High Earth Club in East St. Paul works with many organizations including: Wilderness Inquiry, Ramsey Washington Metro Watershed District, Minnesota Department of Natural Resources, St Paul Parks and Recreation, Friends of the Mississippi and others interested in the natural environment. Recently they signed up to adopt 12 storm drains in the vicinity of their school. Thank you to all of these youth and their leader, Sinthang Has!

School Participation in Lake Owasso Shoreline Restoration This Spring

Photo above: We will offer birdwatching and other nature activities along the trails next to Lake Wabasso and use the park shelter/natural playground during lunch while involving classes in the shoreline restoration across the parkway at Lake Owasso. We will also introduce them to all the watershed-friendly BMPs in both parts of the park.

To plan for school involvement in the spring shoreline restoration at Lake Owasso, we scheduled meetings in March with teams of teachers at Farnsworth Aerospace, American Indian Magnet and Central Park Elementary to coordinate dates for the pre-lessons for this upcoming service learning opportunity and work on our scheduling and logistics for the planting/field days in May/early June. We will be using the Lake Wabasso side of the park for nature studies/birdwatching and alternate those activities with the shoreline planting at Lake Owasso on the south side of the parkway. We also hope to engage one class of Island Lake Elementary fifth graders and one class from Hazel Park Academy in the project.

Partnering on Upcoming Blue Thumb Workshops this Spring

RWMWD is partnering with Vadnais Lake Area Watershed Management Organization and Rice Creek Watershed District to cohost the following online Blue Thumb workshops this spring:

Resilient Yards Workshop $15 (virtual) Tuesday, March 29, 6:30-8:00 PM

Upon registering, participants will receive an online presentation to watch ahead of time with a series of videos and lessons about creating resilience, information on redirecting runoff, putting in a rain garden, native planting, using trees and shrubs, turf alternatives, and prompts to help

Start on plans for incorporating resiliency tactics in their yard. The 1.5-hour workshop will feature an expert presenter followed by a Q&A.
Register at: https://bluethumb.thinkific.com/courses/rcwd-vlawmo-rwmwd-resilient-yards-workshop-032922

Pollinator Planting Workshop $15 (virtual), Tuesday, April 5, 6:30-8:00 PM
This workshop led by James Wolfin will focus on making yards a haven for bees, butterflies and other pollinators! Participants can gain an understanding of the value of native bees and other pollinators, learn ways to support them through plantings, and find out about resources to take action. By March 12, those who sign up will receive access to a series of online learning modules to watch at their convenience. These lessons can be viewed after the live virtual workshop, so participants can revisit what they have learned. Register here: https://bluethumb.thinkific.com/courses/rcwd-vlawmo-rwmwd-pollinator-plantings-workshop-april-5-2022

Resilient Yards Workshop $15 (virtual) Thursday, May 5, 6:30-8:00 PM
After registering, participants will receive an online presentation to watch ahead of time with a series of videos and lessons about creating resilience, information on redirecting runoff, putting in a rain garden, native planting, using trees and shrubs, turf alternatives, and more. It will include prompts to help get started on plans for incorporating resiliency tactics in their yards. The 1.5-hour workshop will feature an expert presenter followed by a Q&A.
Register here: https://bluethumb.thinkific.com/courses/rcwd-rwmwd-vlawmo-resilient-yards-workshop-may-5th-2022

Communications and Outreach Report - Lauren Hazenson

Annual Report

The content and editing of most sections of the Annual Report were completed this month. We also proceeded with grant recipient interviews for quotes and gathered content for the By The Numbers section. Apart from any unanticipated delays, the Annual Report has an expected publication date in April.

WaterFest

Promotion of WaterFest, including social media campaigns and press releases, began this month. We are also exploring underwriting at local radio stations and newspaper ads to regain PR momentum after several years away from our traditional format. Further information on WaterFest planning can be found in the attached report.

Website Redesign

This month, much of the website work involved prepping content for uploading onto the new site and reviewing design iterations. More details on our website work can be found in the attached report.

Volunteer Program

The staff team planning the organization's volunteer management program completed the job description template and began accepting applications from the general interest form. They also began drafting the volunteer manual and created job descriptions for their respective programs.

MS4 Roundtable

RWMWD Communications is co-hosting a brown bag lunch series with Rice Creek Watershed District and VLAWMO for city communications, public works, engineering staff, and commission members. The series will cover MS4 resources and provide helpful communication tools to reach residents better. Lauren and Nicole Soderholm will be coordinating on a presentation covering MS4 updates. The first meeting will be held on April 27.

Stewardship Grant Campaign

Jazmine Ngwu worked on drafting a Facebook ad campaign and Instagram and Twitter posts promoting the Stewardship Grant program. The Facebook ad alone gained 2,344 views and 246 engagements. Jazmine also completed pet waste and Adopt A Drain campaign materials this month to further encourage residents to adopt best management practices into their lifestyle.

E-newsletter

March Newsletter

Subscribers: 1,582 Open rate: 43.4% Click rate: 2.2%

Social Media (Facebook, Twitter, Instagram)

Numbers as of March 29:
Audience: 5,122 (does not include ads)
Impressions/Post Views: 8,730
Engagement (likes, comments, shares): 529

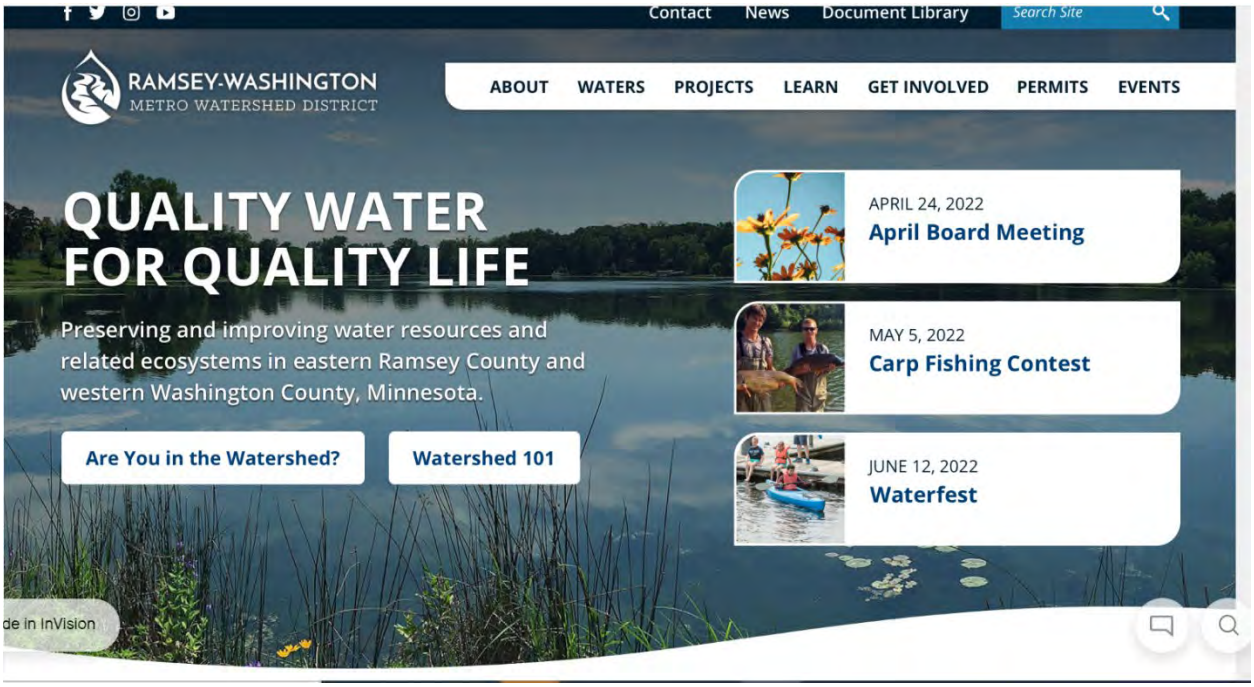
March 2022 Website Redesign Report

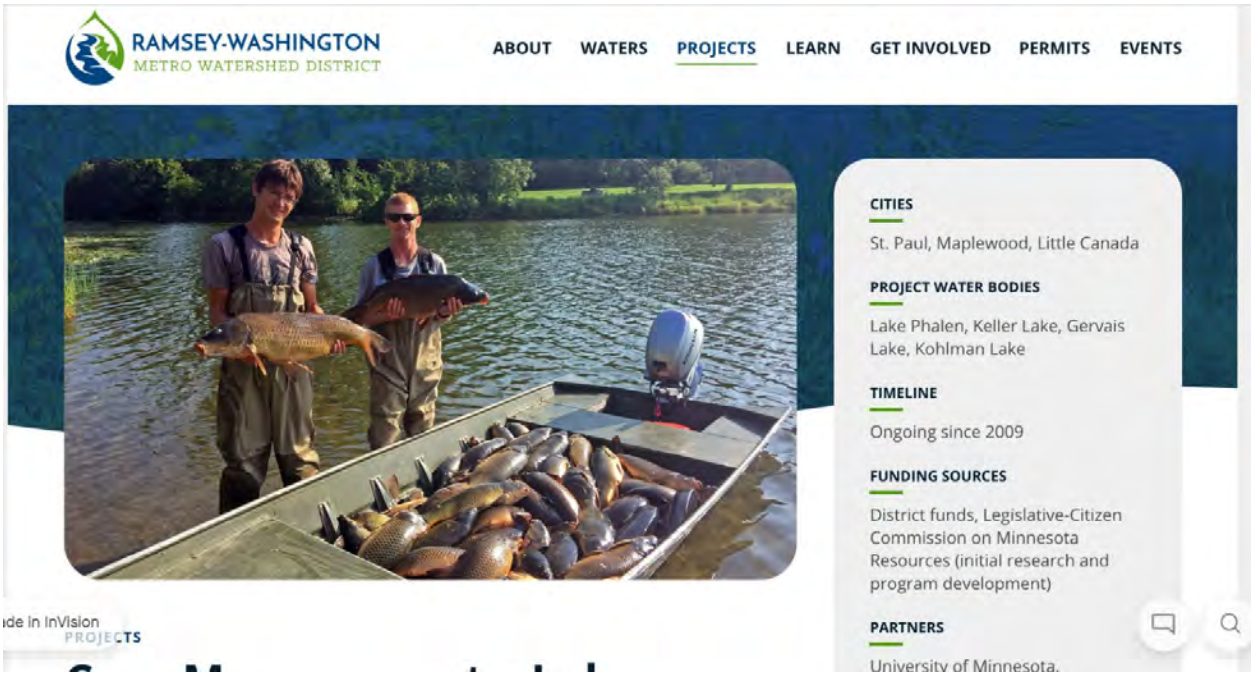
Prototype Usability Testing

In early March, St. Paul Media conducted usability testing with 3 participants, including Board member Val Eisele. The other two participants had no prior experience with RWMWD to ensure we could replicate a new audience experience with the website. The feedback garnered through the process primarily suggested more cross-links between sections and more prominent placement for Stewardship Grant information within the project section

Design Directions

Like the examples provided at the February Board meeting, several potential design directions were reviewed by staff this month. The designs include home page and project pages examples and are available to view upon request. The screen shots below are examples of the designs shared. The design directions will be finalized in early April.





Project Schedule:

April
Content Population
A staff team is currently reviewing the project page and education content to be uploaded onto the new site. Additional page content, such as the Data and Watershed 101 sections, will have new content created. Much of these pages will be populated throughout April as the architecture and designs for each section are finalized.

Final Design Work
Final design work on modules and templates for the Education and Waters sections are planned for April.
Module and Template Development
Modules for the About, Learn, Get Involved, and Waters sections will be in various phases of completion this month. Staff will work to create content for new pages and reformat educational resources for the new “Learn” section.

May
Final Usability Testing
A second usability testing process will be conducted after more of the design and content is completed to ensure participants can give in depth feedback on the website user experience. All Board members are invited to be a part of this process, which will occur in May or June.

Development
Further work on templates and modules, including the document library, will be completed this month.

Final Content Population
Staff and St. Paul Media will complete the final content population of the website through late May and early June.

June
Quality Assurance Testing
Final Launch Planning
WordPress Training for Additional Staff
Website Launch (late June, date TBD)

Waterfest Planning Update

Event Details:
June 4, 2022, 11- 4 pm, Lake Phalen Park

Exhibitor and Sponsorship
- Exhibitor and sponsorship forms were updated and posted on the website event page
- Outreach to past exhibitors and sponsors. Sponsors were contacted by email and phone.
- Completed research into potential new exhibitors and vendors

Map, Passport, and T-shirt Design
- Event t-shirts were pre-ordered due to low supply across the printing industry. Sponsor logos will still be placed on the back of the t-shirt, and printing will be completed in early May.
- Event Coordinator Maddy Bohn and Lauren Hazenson met with Studio Lola to plan signage, event map, and passport designs for the event

Volunteer Recruitment and Engagement
- Maddy and other staff met with the volunteer group assisting with the event on 3/10
- The volunteer signup form was updated and posted on the event page. Staff will also redirect interested event volunteers that submit a general RWMWD volunteer interest form with a WaterFest role selected.

Marketing
- Social media event ads posted on 3/22 will run through 5/21
- Event calendar postings at Star Tribune, Pioneer Press, Minnesota Monthly, Minneapolis/St. Paul Magazine, MN Spokesman-Recorder, and others were completed this month
- A press release will be sent to our partner network and local media outlets on 4/3

Other
- Permits and insurance forms were submitted and accepted