RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

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Chanhassen, MN 55317
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www.rpbcwd.org

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2022-077

Application Received complete: February 17, 2023

Considered at Board of Managers Meeting: April 12, 2023

Applicant: Zehnder Homes

Consultant: Sathre-Bergquist Inc.

Project: Dunibar Court Residential Development – The applicant proposes a five-lot single family residential development on a vacant wooded lot.

Location: South of Ridgewood Road, east of Dunibar Ridge Road in the city of Minnetonka, Minnesota.

Reviewer: Katherine Tomaska, EIT, and Scott Sobiech, PE, Barr Engineering

Proposed Board Action

Manager _____ moved and Manager _____ seconded adoption of the following resolutions based on the permit report that follows and the presentation of the matter at the April 12, 2023 meeting of the managers:

Resolved that the application for Permit 2022-077 is approved, subject to the conditions and stipulations set forth in the Recommendations section of the attached report;

Resolved that on determination by the RPBCWD administrator that the conditions of approval have been met, the RPBCWD president or administrator is authorized and directed to sign and deliver Permit 2022-077 to the applicant on behalf of RPBCWD.

Upon vote, the resolutions were adopted, _____ [VOTE TALLY].

Applicable Rule Conformance Summary

Rule	Issue	Conforms to RPBCWD Rules?	Comments
C	**Erosion Control Plan**	See Comment	See rule-specific permit condition C1 related to name of individual responsible for on-site erosion control.
D	**Wetland and Creek Buffers**	Yes	See rule-specific permit condition D1 related to maintenance declaration review, approval, and recordation.

Rule	Issue	Conforms to RPBCWD Rules?		Comments
J	**Stormwater Management**	Rate	Yes	
		Volume	See comment	See permit condition J1 related to verifying the infiltration capacity of the soils and adequate separation to groundwater and J2 related to rock storage layer design.
		Water Quality	Yes	
		Low Floor Elev.	See comment	See rule-specific permit condition J3 related to verification of groundwater elevation at Lot 1.
		Maintenance	See comment	See rule-specific permit condition J4 related to recordation of stormwater facility maintenance declaration.
		Chloride Management	See Comment	See stipulation #5 related to providing a chloride management plan prior to project close-out.
		Wetland Protection	Yes	
L	**Permit Fee Deposit**	See Comment		$3000 received January 11, 2023. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued. As of March 31, 2023 the amount due is $5,969
M	**Financial Assurances**	See Comment		The financial assurance is calculated at $114,840.

Project Description

The proposed Dunibar Court includes the construction of a five-lot single-family residential development with associated sewer and utilities, cul-de-sac, construction of three rain gardens and an underground stormwater management facility to proves rate control, volume abstraction, and water quality. The 8.0-acre project is located south of Ridgewood Road and east of Dunibar Ridge Road in Minnetonka, MN. The following water resources are within the project site or downgradient of the proposed activities. The following table provides a brief explanation of how each resource is implicated in the permit application review process.

Water resource impacted by project

Water Resource	Potential resource impacts
Wetland 1	Wetland is a medium value onsite wetland downgradient from proposed land-disturbing activities (but will not be disturbed by the proposed work).
Wetland 2	Wetland is a medium value onsite wetland downgradient from proposed land-disturbing activities (but will not be disturbed by the proposed work).
Wetland 3	Wetland is on site, but is not downgradient from any land-disturbing activity and will not be disturbed by the proposed work.

The project site information is summarized below:

Project Site Information	Area (acres)
Total Site Area	8.0
Existing Site Impervious	0.0
Proposed Site Impervious Area	0.74
Change in Site Impervious Area	0.74
Regulated Impervious Surface	0.74
Total Disturbed Area	6.0

Exhibits:

1. Permit Application received November 03, 2022 (The applicant was notified on November 18, 2022 that the submittal was incomplete; information completing the application was received on February 17, 2023)
2. Stormwater Management Report dated October 28, 2022 (revised December 9, 2022, February 7, 2023, March 7, 2023, and April 4, 2023)
3. Project Plan Set dated November 02, 2022 (revised January 4, 2023, February 7, 2023, March 7, 2023, and April 4, 2023)
4. SWPP Plan dated November 02, 2022
5. HydroCAD model received January 05, 2023 (revised February 17, 2023, March 8, 2023, and April 4, 2023)
6. P8 model received January 05, 2023 (revised February 17, 2023 March 8, 2023, and April 4, 2023)
7. MNRAM assessment form received January 05, 2023
8. Minnesota Wetland Conservation Act Notice of Decision dated June 23, 2022
9. Wetland Delineation Report dated May 11, 2023
10. Easement Exhibit dated November 18, 2022 (revised February 27, 2023)
11. Conservation Easement dated February 01, 2023
12. Soils Report dated February 27, 2023
13. BMP cost estimate dated March 03, 2023

Rule Specific Permit Conditions

Rule C: Erosion and Sediment Control

Because the project will alter 6.0 acres of land-surface area, the project must conform to the requirements in the RPBCWD Erosion and Sediment Control rule (Rule C, Subsection 2.1).

The erosion control plan prepared by Sathre-Bergquist Inc. includes installation of silt fence perimeter control, rock construction entrance, inlet protection, concrete washout, erosion control blanket, weekly inspection, placement of a minimum of 6 inches of topsoil, decompaction of areas compacted during

construction, and retention of native topsoil onsite. To conform to the RPBCWD Rule C requirements the following revisions are needed:

C1. The Applicant must provide the name and contact information of the individual responsible for erosion control at the site. RPBCWD must be notified if the responsible individual changes during the permit term.

Rule D: Wetland and Creek Buffers

Because the proposed work triggers RPBCWD Rule J and the two of the onsite wetlands are downgradient from the proposed construction activities, Rule D, Subsections 2.1a and 3.1 require buffer along the edge of the wetlands downgradient of the activities. No land disturbing activities are proposed within the onsite wetlands.

A Minnesota Wetland Conservation Act Notice of Decision for the wetland boundaries and types, dated June 23, 2022, was included with the submittal. The Minnesota Routine Assessment Method analyses indicate that Wetland 1, Wetland 2, and Wetland 3 are considered medium value wetlands. Because there is no land-disturbing activity upgradient from Wetland 3 and Wetland 3 is not disturbed by the proposed work, Rule D does not impose wetland buffer requirements on Wetland 3.

Rule D, Subsection 3.2.a.iii requires wetland buffer with an average of 40 feet from the delineated edge of the wetland, minimum 20 feet for medium value wetlands. No buffer over 80 feet in width counts toward compliance and buffer averaging is used to achieve the required average buffer widths. The buffer widths are summarized in the table below.

Wetland ID	RPBCWD Wetland Value	Required Minimum Width (ft)	Required Average Width (ft)	Required Area (sq ft)	Provided Area (sq ft)	Provided Minimum Width (ft)	Provided Average Width (ft)
South Wetland (Wetland 1)	Medium	20	40	8,780	8,780	40	40
North Wetland (Wetland 2)	Medium	20	40	10,840	11,600	40	42.8

The plans require revegetating disturbed areas within the proposed buffer with native vegetation, thus conforming to Rule D, Subsection 3.3. The engineer's review of plan sheets shows that buffer markers will be placed per District criteria (Subsection 3.4). A note is included on the plan sheet indicating the project will be constructed so as to minimize the potential transfer of aquatic invasive species (e.g., zebra mussels, Eurasian watermilfoil, etc.) to the maximum extent possible conforming to Rule D, Subsection 3.6.

To conform to the RPBCWD Rule D the following revisions are needed:

D1. Buffer areas and maintenance requirements must be documented in a declaration recorded after review and approval by RPBCWD in accordance with Rule D, Subsection 3.5.

Rule J: Stormwater Management

Because the project will alter 6.0 acres of land-surface area, the project must meet the criteria of RPBCWD's Stormwater Management rule (Rule J, Subsection 2.1). Because this is development of a previously undeveloped site, the criteria listed in Subsection 3.1 apply to the entire site. The project proposes three rain gardens, an underground stormwater management facility, and two grass swales to provide volume control, water quality, and rate control.

Rate Control

In order to meet the rate control criteria listed in Subsection 3.1.a, the 2-, 10-, and 100-year post development peak runoff rates must be equal to or less than the existing discharge rates at all locations where stormwater leaves the site. The Applicant used a HydroCAD hydrologic model to simulate runoff rates for pre- and post-development conditions for the 2-, 10-, and 100-year frequency storm events using a nested rainfall distribution, and a 100-year frequency, 10-day snowmelt event. The existing and proposed 2-, 10-, and 100-year frequency discharges from the site are summarized in the table below.

Modeled Discharge Location	2-Year Discharge (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)		10-Day Snowmelt (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
Discharge North	5.4	3.8	8.6	7.2	12.6	12.1	1.6	1.6
Discharge West	0.6	0.2	1.1	0.4	2.2	0.8	0.1	<0.1
Discharge South	10.4	10.3	18.3	18.1	36.1	35.8	2.4	2.4

The proposed stormwater management plan will provide rate control in compliance with the RPBCWD requirements for the 2-, 10-, and 100-year events. Thus, the proposed project meets the rate control requirements in Rule J, Subsection 3.1a.

Volume Abstraction

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all impervious surface of the parcel. An abstraction volume of 2,961 cubic feet is required from the 0.74 acres (32,300 square feet) of new impervious area on the project for volume retention. The applicant requests that the site qualifies as restricted under subsection 3.3 of Rule J, and proposes to use three rain gardens and an underground stormwater management facility to abstract 1,480 cubic feet of runoff from the site. Plans indicate pretreatment for runoff entering the rain gardens is provided by grass overland flow, thus the proposed project conforms with RPBCWD Rule J, Subsection 3.1b.1.

Based on the test pits in the Preliminary Geotechnical Exploration and Review Report conducted by Haugo GeoTechnical Services on January 16, 2023, the site is predominately sandy lean clay soils. Groundwater was not encountered at either of the two test pit locations, the deepest of which extended to elevation 882.5 feet. The bottom of the lowest rain garden is at elevation 891.66 feet. The subsurface investigation information summarized in the table below supports a determination that groundwater is at least 3 feet

below the bottom of the proposed rain garden 3 and 4 (Rule J, Subsection 3.1.b.2.a). Because the geotechnical report does not contain soil borings or test pits at rain gardens 1 and 2, additional subsurface investigation is needed to confirm adequate separation to groundwater.

Proposed BMP	Nearest Subsurface Investigation	Boring is within footprint?	Groundwater Elevation (feet)	BMP Bottom Elevation (feet)	Separation (feet)
Rain Garden 1	None	No	Unknown	900.76	Unknown
Rain Garden 2	None	No	Unknown	891.66	Unknown
Rain Garden 3	TP-2	Yes	No groundwater observed at boring bottom (approx. el 895.6ft)	903.76	8.16
Underground Stormwater Facility	TP-1	Yes	No groundwater observed at boring bottom (approx. el 882.5ft)	891.4	8.9

Because the engineer concurs that the soil boring information supports that the abstraction standard in Subsection 3.1 of Rule J cannot practicably be met, the site is considered a restricted site and stormwater runoff volume must be managed in accordance with Subsection 3.3 of Rule J. For restricted sites, Subsection 3.3 of Rule J requires rate control in accordance with Subsection 3.1a and that abstraction and water quality protection be provided in accordance with the following sequence: (a)Abstraction of 0.55 inches of runoff from site impervious surface determined in accordance with paragraphs 2.3, 3.1 or 3.2, as applicable, and treatment of all runoff to the standard in paragraph 3.1c; or (b) Abstraction of runoff onsite to the maximum extent practicable and treatment of all runoff to the standard in paragraph 3.1c; or (c) Off-site abstraction and treatment in the watershed to the standards in paragraph 3.1b and 3.1c.

Based on the presence of clay soil at the two soil test pit sites (TP-1 and TP-2), the applicant used a design infiltration rate of 0.06 in/hr beneath the three proposed rain gardens and underground stormwater management facility based on the Minnesota Pollution Control Agency's recommended design infiltration rate for clay soils. The engineer finds that under these presumed design infiltration rate, the rain gardens will draw down within 48 hours (Rule J, subsection 3.1biii). The geotechnical report does not contain infiltration or hydraulic conductivity testing results at any of the three rain gardens or the underground stormwater management facility as required by Rule J, subsection 3.1.b.ii.C. To confirm the design presumptions and ensure the applicant has incorporated abstraction in accordance with Rule J, subsection 3.3a, supporting information in the form of infiltration or hydraulic conductivity testing at the proposed rain gardens must be provided before the proposed BMPs are constructed. If infiltration capacity is less than needed to conform with the volume abstraction requirement in subsection 3.3a for the proposed rain gardens or there is less than three feet of separation to groundwater, design modifications to achieve compliance with RPBCWD requirements to maximize the abstraction will need to be submitted (in the form of an application for a permit modification or new permit).

The table below summarizes the volume abstraction for the site.

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Depth (inches)	Provided Abstraction Volume (cubic feet)
0.55	1,480	0.56	1,512

With the conditions noted below, the engineer concurs with the submitted information and finds that the proposed project will conform with Rule J, Subsection 3.3.a.

J1. Supporting information in the form of subsurface investigation and infiltration or hydraulic conductivity testing at the proposed rain gardens and underground stormwater management facility must be provided before the permit is issued. If infiltration capacity is less than needed to conform with the volume abstraction requirement in subsection 3.3a for the proposed rain garden, or there is in adequate separation to groundwater, design modifications to achieve compliance with RPBCWD requirements will need to be submitted in the form of an application for a permit modification or new permit.

J2. Revise the underground stormwater management facility design to provide for at least 1,069 cubic feet of storage between the bottom of the rock storage layer and the primary outlet elevation (e.g, increase the rock layer to eight inches).

Water Quality Management

Subsection 3.1.c of Rule J requires the Applicant to provide volume abstraction in accordance with 3.1b or least 60 percent annual removal efficiency for total phosphorus (TP), and at least 90 percent annual removal efficiency for total suspended solids (TSS) from site runoff, and no net increase in TSS or TP loading leaving the site from existing conditions. The Applicant is proposing three rain gardens, an underground stormwater management facility, and two grass swales to treat runoff from the regulated impervious area. P8 was used to evaluate the removal efficiencies of the stormwater management features. The results of this modeling are summarized in tables below showing the annual TSS and TP removal requirements are achieved and that there is no net increase in TSS and TP leaving the site. The engineer concurs with the modeling and finds that the proposed project is in conformance with Rule J, Subsection 3.1.c.

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr)	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	674	607 (90%)	614 (91%)
Total Phosphorus (TP)	2.21	1.32 (60%)	1.33 (60%)

Pollutant of Interest	Existing Site Loading (lbs/yr)	Proposed Site Load after Treatment (lbs/yr)	Change (lbs/yr)
Total Suspended Solids (TSS)	564	60	-504
Total Phosphorus (TP)	1.79	0.87	-0.92

Low floor Elevation

All new buildings must be constructed such that the lowest floor is at least two feet above the 100-year high water elevation or one foot above the emergency overflow of a stormwater-management facility according to Rule J, Subsection 3.6a. In addition, a stormwater-management facility must be constructed at an elevation that ensures that no adjacent habitable building will be brought into noncompliance with this requirement according to Rule J, Subsection 3.6b.

The low floor elevation of the proposed structure on each lot and the 100-year event flood elevation of the adjacent rain garden are summarized below. Because the low floor elevations of the proposed structure on lots 2-5 are more than two feet above the 100-year flood elevation of the stormwater facility, the proposed project is in conformance with Rule J, Subsection 3.6.

Structure	Low Floor Elevation of Building (ft)	Waterbody or Stormwater Facility	100-year Event Flood Elevation of Waterbody (ft)	Freeboard to 100-year Event (ft)	Distance from Building to Adjacent Facility (ft)	Water Table Elevation (ft)	Minimum Permissible Depth to Water Table[2] (ft)	Provided Depth from Low Floor Elevation to Water Table (ft)
Lot 1	894.5	Rain Garden 2	892.0	2.5	NA	NA	NA	NA
Lot 1	894.5	Underground Stormwater Facility	893.07	1.43	20	882.5	5.5	12
Lot 1	894.5	Wetland 2	891.0[1]	3.5	NA	NA	NA	NA
Lot 2	903.3	Underground Stormwater Facility	893.07	10.23	NA	NA	NA	NA
Lot 3	905	Rain Garden 1	901.2	3.8	NA	NA	NA	NA
Lot 4	906.5	Rain Garden 3	904.1	2.4	NA	NA	NA	NA
Lot 5	900.5	Wetland 1	887.76[1]	12.64	NA	NA	NA	NA

1Flood elevations of wetland from RPBCWD PCSWMM modeling

2Based on Plot 2 of Rule J, Appendix J1

Because the low floor elevation of Lot 1 is less than 2 feet above the 100-year high-water elevation, an alternative low floor analysis was conducted as outlined in Rule J, Appendix J.1 – Low-Floor Elevation Assessment. Groundwater was not discovered in the two test pits in the vicinity of structure on lot 1, thus the groundwater elevations were presumed to be at the elevation of the bottom of the test pit nearest the structure. The results of the low floor analysis using *Appendix J1 Plot 2: Minimum Depth to Water Table for No Further Evaluation* is summarized in the above table. The results demonstrate the provided separation is greater than the minimum required, thus meeting the habitable structure requirements in Rule J, Subsection 3.6. Because the test pit is not located at the proposed structures perimeter closest location to the underground stormwater management facility, additional subsurface investigation is needed to verify adequate separation between the proposed low floor and groundwater. The following revisions are needed to conform to RPBCWD Rule J, subsection 3.6.b requirements:

J3. The applicant must submit supporting documentation demonstrating there is adequate freeboard or separation to groundwater to achieve the low floor criteria for Lot 1. If the technical information demonstrates the structure would not comply with the low floor requirement in subsection 3.6a, design modifications to achieve compliance with RPBCWD requirements will need to be submitted (in the form of an application for a permit modification or new permit).

Maintenance

Subsection 3.7 of Rule J requires the submission of a maintenance plan. All stormwater management structures and facilities must be designed for maintenance access and properly maintained in perpetuity to assure that they continue to function as designed.

J4. Permit applicant must provide a maintenance and inspection declaration. A maintenance declaration template is available on the permits page of the RPBCWD website. (http://www.rpbcwd.org/permits/). A draft declaration must be provided for District review prior to recording.

Wetland Protection

Because the proposed activities discharge to two medium value wetlands on the site and alter the discharge the wetlands receive from the site, the project must conform to RPBCWD wetland protection criteria (Rule J, subsection 3.10).

Because the applicant's design does not alter the runout elevation of the wetlands and the HydroCAD model results demonstrate, and the engineer concurs, that the proposed flow rates and volumes flowing towards the on-site wetlands are less than the under existing conditions, the bounce and inundation will not increase, thus the project meets the Bounce and Inundation criteria in 3.10a.

Rule J, Subsection 3.10b requires that treatment of runoff to medium value wetland meet the water quality treatment criteria in Rule J, subsection 3.1c. Because the proposed the rain gardens provides the water quality treatment required in accordance with 3.1c.ii, the engineer finds that the proposed project is in conformance with Rule J, Subsection 3.10b.

Chloride Management

Subsection 3.8 of Rule J requires the submission of chloride management plan that designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan. The RPBCWD chloride-management plan requirement applies to the streets and common areas of the project site, but not the individual single-family homes. If the streets within the proposed residential development will be within public right of way that will be maintained by the city of Minnetonka, the City must provide its chloride management plan and its designated state-certified chloride applicator. To close out the permit and release the $5,000 in financial assurance held for the purpose of chloride management, the permit applicant must provide a chloride management plan that

designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan at the site.

Rule L: Permit Fee Deposit:

The RPBCWD permit fee schedule adopted in February 2020 requires permit applicants to deposit $3,000 to be held in escrow and applied to cover the $10 permit-processing fee and reimburse RPBCWD for permit review and inspection-related costs and when a permit application is approved, the deposit must be replenished to the applicable deposit amount by the applicant before the permit will be issued to cover actual costs incurred to monitor compliance with permit conditions and the RPBCWD Rules. A permit fee deposit of $3,000 was received on January 11, 2023. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued. Subsequently, if the costs of review, administration, inspections and closeout-related or other regulatory activities exceed the fee deposit amount, the applicant will be required to replenish the deposit to the original amount or such lesser amount as the RPBCWD administrator deems sufficient within 30 days of receiving notice that such deposit is due. The administrator will close out the relevant application or permit and revoke prior approvals, if any, if the permit-fee deposit is not timely replenished.

L1. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued. As of March 31, 2023 the amount due is $5,969.

Rule M: Financial Assurance:

	Unit	Unit Cost	# of Units	Total
Rule C: Erosion Control				
Silt Fence	LF	$2.50	4,810	$12,025
Inlet Protection	EA	$100	5	$500
Rock Entrance	EA	$250	2	$500
Restoration of disturbance	Ac	$2,500	6	$15,000
Rule D: Wetland Buffer	LS	$5,000	1	$5,000
Rule J: Stormwater Management Infiltration basin: 125% of engineer's opinion of cost ($53,100)	EA	125% OPC	1	$66,375
Chloride Management Plan	LS	$5,000	1	$5,000
Contingency (10%)		10%		$10,440
Total Financial Assurance				**$114,840**

Applicable General Requirements:

1. The RPBCWD Administrator and Engineer shall be notified at least three days prior to commencement of work.
2. Construction must be consistent with the plans, specifications, and models that were submitted by the applicant that were the basis of permit approval. The date(s) of the approved plans,

specifications, and modeling are listed on the permit. The grant of the permit does not in any way relieve the permittee, its engineer, or other professional consultants of responsibility for the permitted work.

3. The grant of the permit does not relieve the permittee of any responsibility to obtain approval of any other regulatory body with authority.
4. The issuance of this permit does not convey any rights to either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.
5. In all cases where the doing by the permittee of anything authorized by this permit involves the taking, using or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements or interests, the permittee, before proceeding therewith, must acquire all necessary property rights and interest.
6. RPBCWD's determination to issue this permit was made in reliance on the information provided by the applicant. Any substantive change in the work affecting the nature and extent of applicability of RPBCWD regulatory requirements or substantive changes in the methods or means of compliance with RPBCWD regulatory requirements must be the subject of an application for a permit modification to the RPBCWD.
7. If the conditions herein are met and the permit is issued by RPBCWD, the applicant, by accepting the permit, grants access to the site of the work at all reasonable times during and after construction to authorized representatives of the RPBCWD for inspection of the work.

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project will conform to Rule C, D, and J if the Rule Specific Permit Conditions listed above are met.

Recommendation:

Approval of the permit contingent upon:

1. Financial Assurance in the amount of $114,840.
2. Permit applicant must provide the name and contact information of the general contractor responsible for the site. RPBCWD must be notified if the responsible party changes during the permit term.
3. Receipt in recordation a maintenance declaration for the operation and maintenance all stormwater management facilities and buffers. Drafts of all documents to be recorded must be approved by the District prior to recordation.
4. The applicant must submit documentation verifying the infiltration capacity of the soils in the rain gardens and the underground stormwater management facility and that the volume control capacity is calculated using the measured infiltration rate. If infiltration capacity is less than needed

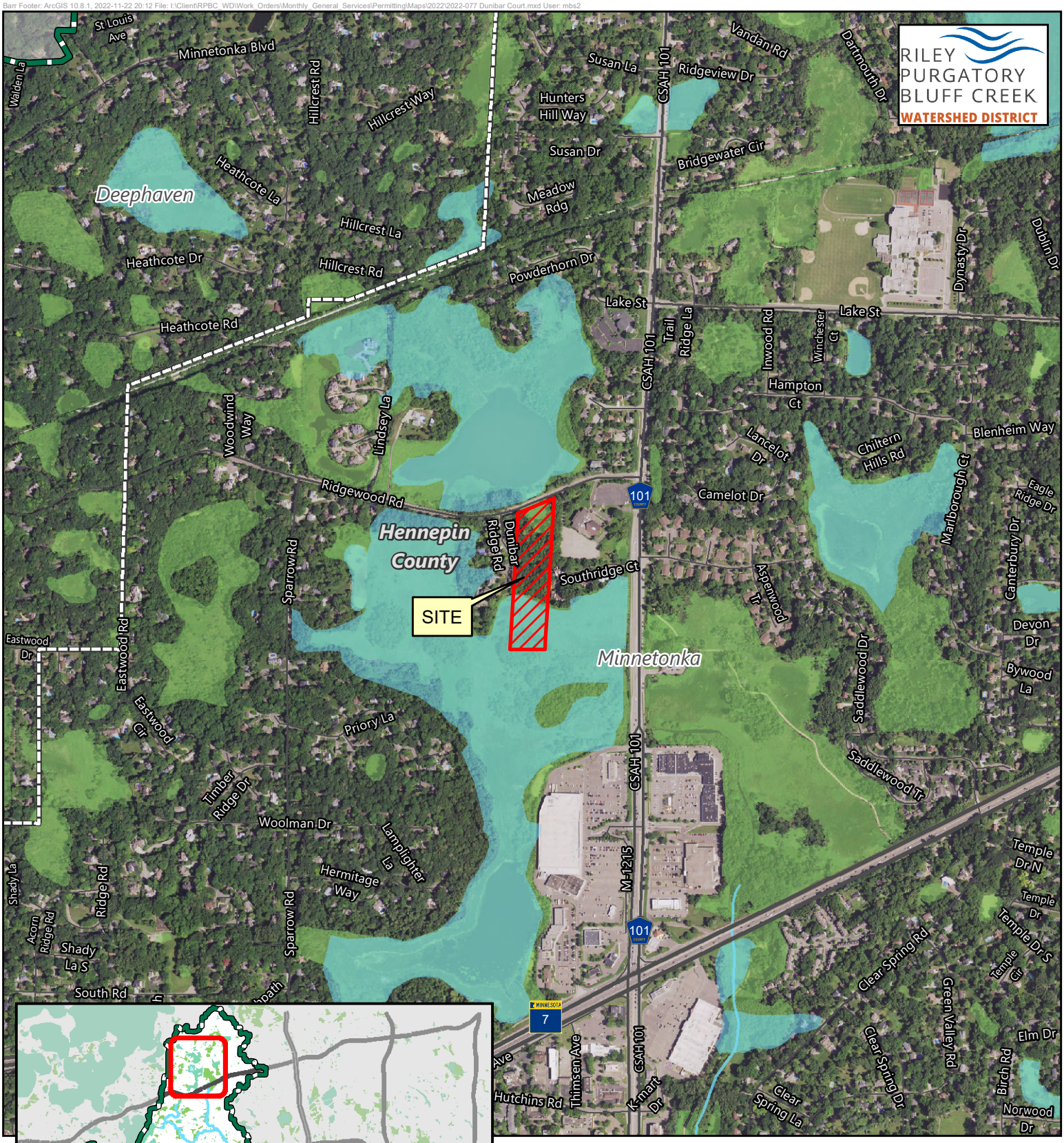
to conform with the volume abstraction requirement in subsection 3.3a or there is less than 3 feet of separation to groundwater from the bottom of the basin or redoximorphic soils, design modifications to achieve compliance with RPBCWD requirements will need to be submitted (in the form of an application for a permit modification or new permit).

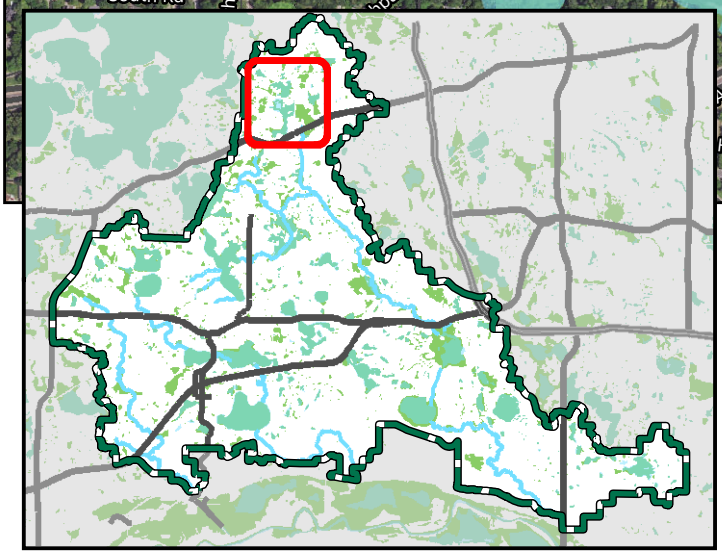
5. Receipt of updated drawings showing design revision so the underground stormwater management facility provides at least 1,069 cubic feet of storage between the bottom of the rock storage layer and the primary outlet elevation (e.g, increase the rock storage layer from six to eight inches).
6. The applicant must submit supporting documentation demonstrating there is adequate freeboard or separation to groundwater to achieve the low floor criteria for Lot 1 relative to rain garden 4. If the technical information demonstrates the structure would not comply with the low floor requirement in subsection 3.6a, design modifications to achieve compliance with RPBCWD requirements will need to be submitted (in the form of an application for a permit modification or new permit).
7. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued. The amount needed to replenish the permit fee deposit is $5,969 as of March 31, 2023.

By accepting the permit, when issued, the applicant agrees to the following stipulations:

1. Continued compliance with General Requirements.
2. Per Rule J Subsection 4.5, upon completion of the site work, the permittee must submit as-built drawings demonstrating that at the time of final stabilization the stormwater management facilities conforms to design specifications and functions as intended and approved by the District. As-built/record drawings must be signed by a professional engineer licensed in Minnesota and include, but not limited to:
    a) the surveyed bottom elevations, water levels, and general topography of all facilities;
    b) the size, type, and surveyed invert elevations of all stormwater facility inlets and outlets;
    c) the surveyed elevations of all emergency overflows including stormwater facility, street, and other;
    d) other important features to show that the project was constructed as approved by the Managers and protects the public health, welfare, and safety.
3. Providing the following additional close-out materials:
    a) Documentation that constructed infiltration facility performs as designed. This may include infiltration testing, flood testing, or other with prior approval from RPBCWD
    b) Documentation that disturbed pervious areas remaining pervious have been decompacted per Rule C.2c criteria
4. The work on the Dunibar subdivision under the terms of permit 2022-077, if issued, must have an impervious surface area and configuration materially consistent with the approved plans. Design that differs materially from the approved plans (e.g., in terms of total impervious area) will need to be the subject of a request for a permit modification or new permit, which will be subject to review for compliance with all applicable regulatory requirements.
5. To close out the permit and release the $5,000 in financial assurance held for the purpose of the chloride management, the permit applicant must provide a chloride management plan that

designates the individual authorized to implement the chloride management plan and the MPCA-certified salt applicator engaged in implementing the plan at the site.





Feet

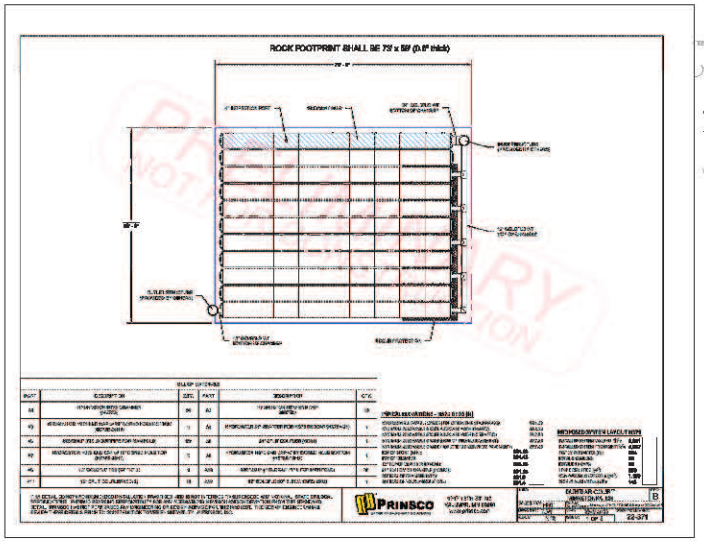
0 1,000

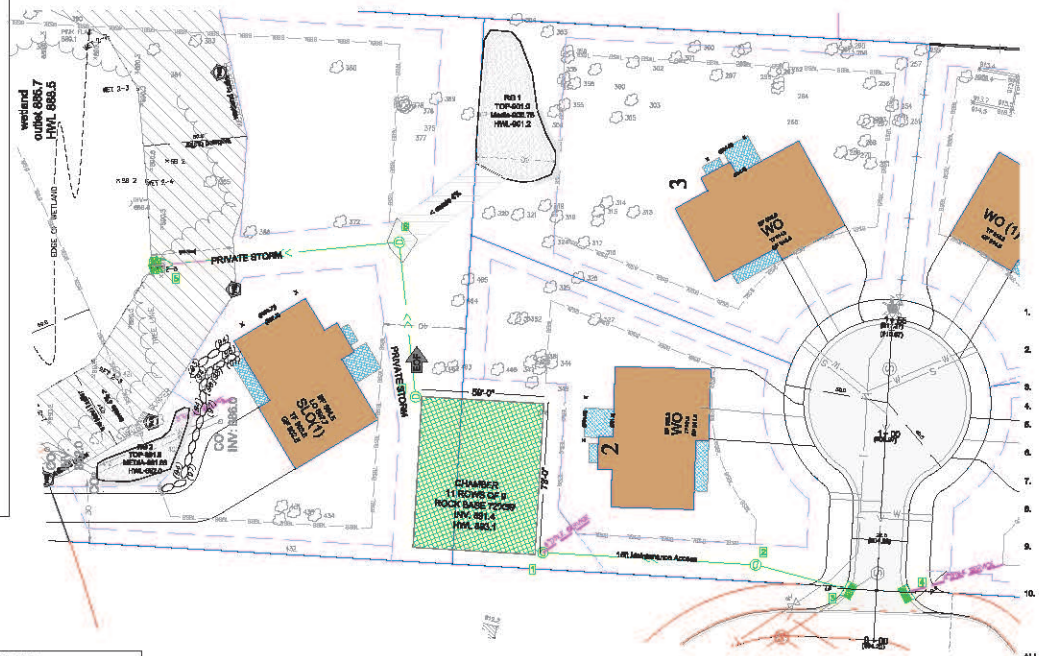
Permit Location Map

DUNIBAR COURT

Permit 2022-077

Riley Purgatory Bluff Creek Watershed District



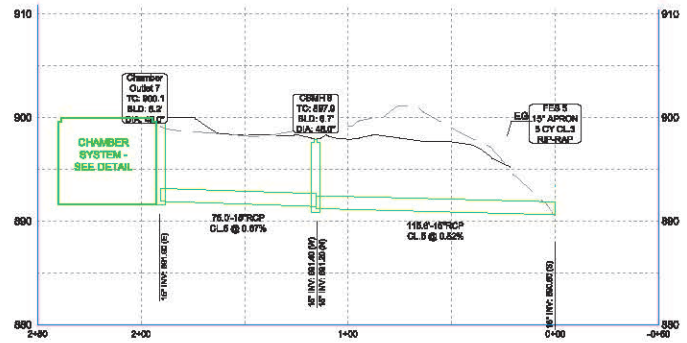


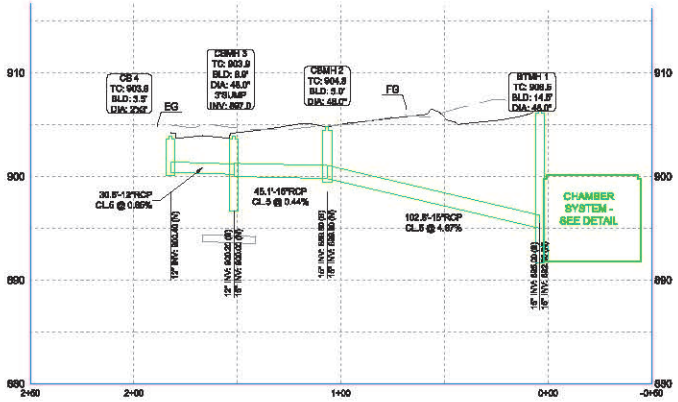
1. 4" RIGID PVC DRAINTILE SHALL BE INSTALLED AT THE LOWPOINT CATCH BASINS 120' MIN. (STD) IN EACH DIRECTION & 250' IN THE UPHILL DIRECTION FOR ON SLOPE CATCH BASINS.
2. 4" PERFORATED REAR YARD DRAINTILE NOT WITH THE INFILTRATION/FILTRATION AREAS SHALL COMPLY TO CITY DETAIL 102 AND 170
3. TIE THE LAST 3 PIPE JOINTS TO FLARED END SECTIONS (TYPICAL).
4. TRASH GUARDS SHALL BE PLACED ON ALL FLARED END SECTIONS.
5. TIE ALL PIPE JOINTS BETWEEN STORM SEWER CONTROL STRUCTURES AND APRONS AND CULVERT APRONS.
6. TIE ALL JOINTS BETWEEN CSB STRUCTURES AND FLARED END SECTIONS.
7. WIMCO'S OR APPROVED EQUAL TO BE INSTALLED AT ALL STORM INLETS.
8. GRANULAR MATERIAL SHALL BE PLACED UNDER STORM SEWER PIPE OR STRUCTURES THAT ARE LESS THAN 48" BELOW FINISHED GRADE AND EXTEND TO AT LEAST 48" BELOW FINISHED GRADE.
9. RIP-RAP FOR STORM SEWER SHALL BE CONSTRUCTED USING GRANITE ROCK 1" DIAMETER OR LARGER AND SHALL BE HAND PLACED. RIP-RAP SHALL BE CLASS 3 ON FILTER MATERIAL OR GEOTEXTILE FABRIC.
10. CHAMBER SYSTEM ROCK FOOT PRINT SHALL BE 59' X 73' - 6" THICK (ROCK SHALL EXTEND BEYOND CHAMBER)

ALL STORM SEWER STRUCTURES SHALL BE EXPOSED DURING STRING LINE OF CURB TO ENSURE PROPER FIT WITH CONCRETE RINGS.

STRUCTURE TABLE							
STRUCTURE NAME	TYPE	DIAMETER	RIM	SUMP	INV	CASTING	NOTES
1	STMH	48.0"	906.5	14.5'	892.0	R-1642B	
2	CBMH	48.0"	904.8	5.0'	899.8	R-4342	
3	CBMH	48.0"	903.9	5.5'	897.3	R-3250-1	
4	CB	2' x 3'	903.9	3.5'	900.4	R-3250-1	
5	CBMH	48.0"	897.9	6.7'	891.2	R-1342	
7	Chamber Outlet	48.0"	900.1	6.2'	893.9	R-1642B	

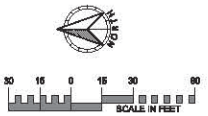
FES TABLE				
Structure Name	TYPE	SIZE (IN.)	INV	C.Y. RIP RAP
5	FES	15	893.6	5





LEGEND

DESCRIPTION	PROPOSED	EXISTING
BUILDING SETBACK LINE		
GARAGE SETBACK LINE		
PARCEL BOUNDARY LINE		
DRAINAGE AND UTILITY EASEMENTS		
CURB AND GUTTER		
RIGHT-OF-WAY		
SANITARY SERVICE		
BACKYARD CATCH BASIN		
CATCH BASIN		
STORM SEWER MANHOLE		
FLARED END SECTION W/RIP-RAP		
STORM STRUCTURE LABEL	CB HB	
SANITARY STRUCTURE LABEL	SMH	
SANITARY SEWER MANHOLE		
WATERMAIN		
HYDRANT		
GATE VALVE		



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DRAWING NAME	NO.	BY	DATE	REVISION
RIDGEVIEW	1	CAW	11/8/2022	CITY COMMENTS
DRAWN	2	CAW	12/19/2022	CITY COMMENTS
CAW	3	CAW	1/4/2023	WATERSHED
CHECKED	4	CAW	2/7/2023	WATERSHED & CITY COMMENTS
CAW	5	CAW	3/7/2023	WATERSHED COMMENTS
DATE	6	CAW	5/31/2023	CITY COMMENTS
11/8/2022	7	CAW	4/4/2023	CHAMBER NOTE REVISIONS

I HEREBY CERTIFY THAT THIS PLAN OR SPECIFICATION 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.

CHARLES A. WIENERLAGE, P.E.
Date: 11/01/2022 Lic. No. 41180

SATHRE-BERGQUIST, INC.
14000 26TH AVENUE NORTH, SUITE 120
PLYMOUTH, MN 55447 (952) 476-6000

CITY PROJECT NO.
—

MINNETONKA, MINNESOTA

FINAL STORM SEWER PLAN
DUNIBAR COURT
ZEHNDER HOMES, INC.

FILE NO.
99595-141

04
11

PRINSCO
WATER MANAGEMENT SOLUTIONS

DUNIBAR COURT
MINNETONKA, MN
HYDROSTOR HS75 STORMWATER CHAMBER SYSTEM

STORMWATER CHAMBER SPECIFICATIONS

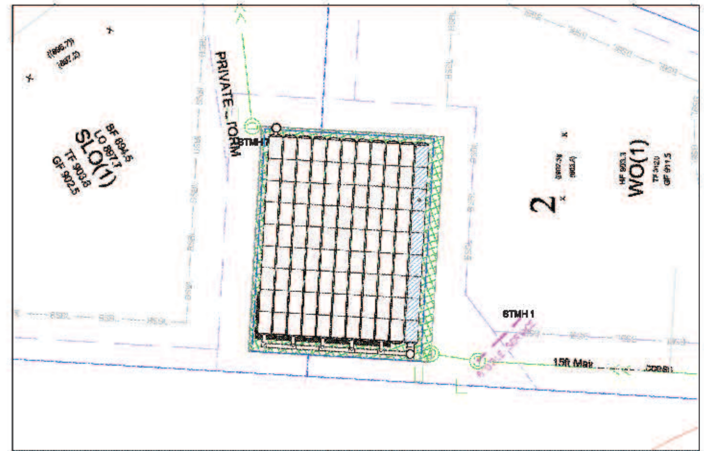
NOTES:

PROJECT INFORMATION:

- PROJECT NUMBER: 22-271
- PRINSCO SALES CONTACT: John Santjer: 320-905-7565 & Matt Baragary : 320-212-6857
- ENGINEER: ---
- CONTRACTOR: ---
- DISTRIBUTOR: ---

THE UNDERSIGNED HEREBY APPROVES THE ATTACHED (8) PAGES

CUSTOMER — DATE



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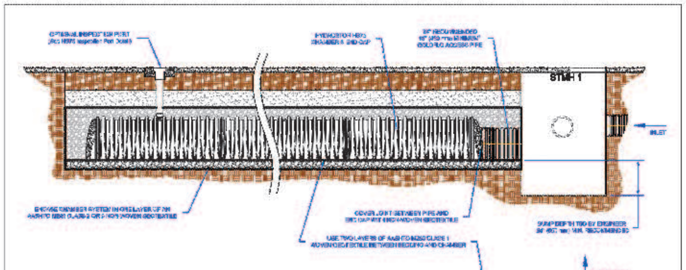
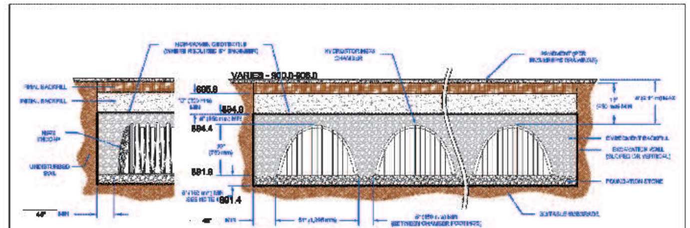


HYDROSTOR HS75 - SEDIMENT ROW — D-7-302



HYDROSTOR HS75 - CROSS SECTION — D-7-303A

EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.

DRAWING NAME	NO.	BY	DATE	REVISION
REDCEVIEW	1	CAW	11/9/2022	CITY COMMENTS
DRAWN	2	CAW	12/19/2022	CITY COMMENTS
CAW	3	CAW	1/4/2023	WATERSHED
CHECKED	4	CAW	2/7/2023	WATERSHED & CITY COMMENTS
CAW	5	CAW	3/7/2023	WATERSHED COMMENTS
DATE	6	CAW	3/31/2023	CITY COMMENTS
11/02/22	7	CAW	4/4/2023	CHAMBER NOTE REVISIONS

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CHARLES A. WIEMERSLAGE, P.E.
Date: 11/02/2022 Lic. No. 49180

SATHRE-BERGQUIST, INC.
14000 25TH AVENUE NORTH, SUITE 120
PLYMOUTH, MN 55447 (952) 476-6000

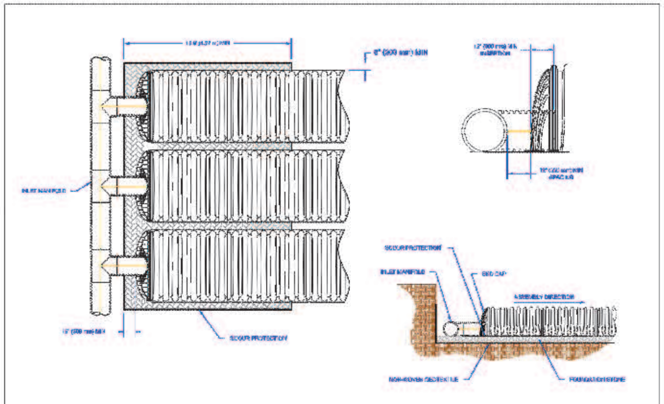
CITY PROJECT NO. —

MINNETONKA, MINNESOTA

FINAL STORM SEWER PLAN
DUNIBAR COURT
ZEHNDER HOMES, INC.

FILE NO. 99595-141

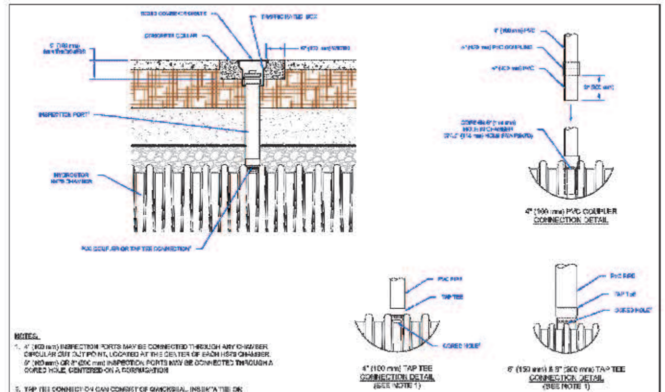
05 / 11



NOTES:

1. SCOUR PROTECTION SHOULD USE A WOVEN GEOTEXTILE. GEOTEXTILE SHOULD MEET AASHTO M288 CLASS 1
2. SCOUR PROTECTION IS ONLY NEEDED WITH CHAMBER ROWS CONNECTED TO THE INLET MANIFOLD.

PRINSCO — HYDROSTOR HS75 - SCOUR PROTECTION — 3-7-307



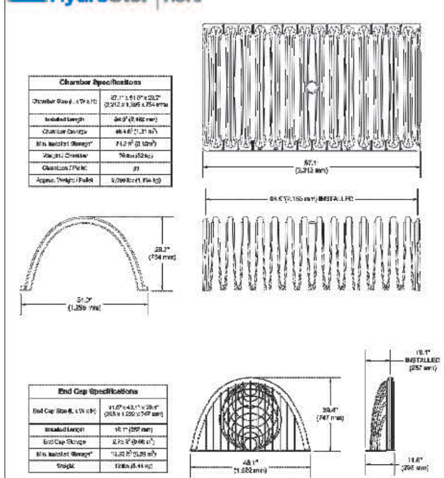
NOTES:

1. 4" (100 mm) INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CIRCULAR CUT OUT POINT, LOCATED AT THE CENTER OF EACH HS75 CHAMBER. 6" (150 mm) OR 8" (200 mm) INSPECTION PORTS MAY BE CONNECTED THROUGH A CORED HOLE, CENTERED ON A CORRUGATION
2. TAP TEE CONNECTION CAN CONSIST OF QWICKSEAL, INSERTA TEE OR APPROVED ENGINEERING EQUIVALENT.
3. ALL PVC FITTINGS TO BE SOLVENT CEMENTED.
4. PVC MAY BE EITHER SDR 35 OR SCH 40
5. CORED HOLE SIZES AS FOLLOWS: 4" (100 mm) CUT TO 4" (100 mm); 6" (150 mm) CUT TO 7" (180 mm); 8" (200 mm) CUT TO 9" (230 mm)

PRINSCO — HYDROSTOR HS75 - INSPECTION PORT — 3-7-333

HydroStor | HS75

Chamber Specifications	
Chamber Size (L x W x H)	87.1" x 51.0" x 29.7" (2,212 x 1,295 x 754 mm)
Installed Length	84.5" (2,146 mm)
Chamber Storage	46.4 ft³ (1.31 m³)
Min. Installed Storage*	71.2 ft³ (2.02 m³)
Weight / Chamber	76 lbs (32 kg)
Chambers / Pallet	11
Approx. Weight / Pallet	2,700 lbs (1,184 kg)



End Cap Specifications	
End Cap Size (L x W x H)	11.6" x 48.1" x 29.4" (295 x 1,222 x 747 mm)
Installed Length	10.1" (257 mm)
End Cap Storage	2.75 ft³ (0.08 m³)
Min. Installed Storage*	13.32 ft³ (0.38 m³)
Weight	12 lbs (5.44 kg)

PRINSCO — HYDROSTOR HS75 - SPECIFICATION

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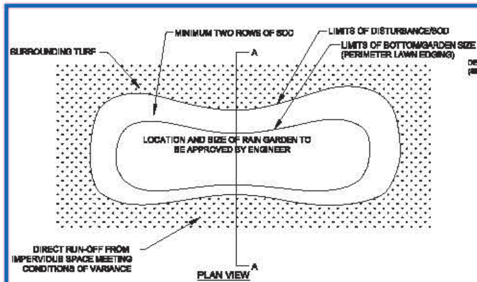
CITY PROJECT NO. —

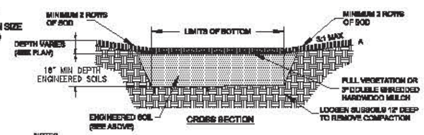
MINNETONKA, MINNESOTA

FINAL STORM SEWER PLAN
DUNIBAR COURT
ZEHNDER HOMES, INC.

FILE NO. 99595-141

06 / 11





SUBSOIL TYPE	SUBSOIL TYPE	RECOM. DEPTH
A	SAND/GRAVEL	12"–18"
B	SAND WITH CLAY OR SILT	8"–12"
C	CLAY OR SILT WITH SAND	6"–8"
D	CLAYS OR SILTS	6"

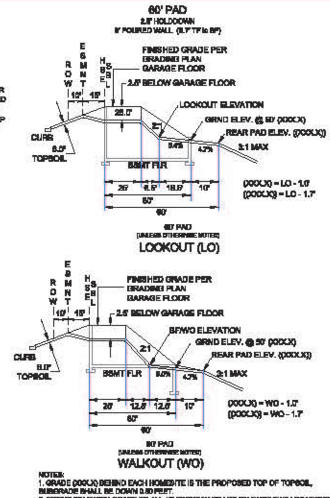
NOTE:
RAIN GARDEN VEGETATION SHALL BE GARDEN VARIETY PERENNIALS, SHRUBS, OR NATIVE PLANTS FROM A CONTAINER (PLUG TO HALF GALLON SIZE) PLACED ACCORDING TO RECOMMENDED PLANT SPACING REQUIREMENTS OR AS APPROVED BY THE ENGINEER.

ENGINEERED SOIL
TOP 6" OF RAING GARDEN SHALL BE ENGINEERED SOILS.
USE ON SITE SOILS FOR THE REMAINING 12" PROVIDED THAT SAND SEEM IS INTERSECTED WHEN BASIN IS CONSTRUCTED. SHOULD SAND SEEM NOT BE FOUND THEN THE ENGINEERED SOILS LISTED BELOW SHALL BE USED.
(DCSWCD MIX B)
80% COARSE-WASHED SAND (MNDOT 3126)
20% LEAF-LITTER COMPOST (ORGANIC, GRADE 2, MNDOT 3890) NO TOPSOIL OR ON-SITE SOILS MAY BE USED IN ENGINEERED SOIL MIX UNLESS APPROVED BY THE ENGINEER. 3 RING INFILTROMETER TESTING AND INFILTRATION TEST ON ENGINEERED SOILS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

NOTES
1. FINAL GRADE AND MULCHING SHALL BE DONE BY HAND.
2. NO EQUIPMENT WILL BE ALLOWED ON THE RAIN GARDEN AFTER EXCAVATION BEGINS.
3. PERIMETER EROSION CONTROL SHALL BE INSTALLED AND REMAIN IN PLACE UNTIL TURF IS ESTABLISHED AROUND RAIN GARDEN.
4. OWNER IS RESPONSIBLE FOR NOTIFYING ENGINEER FOR INSPECTION OF RAIN GARDEN FOR
(1) FINALIZING RAIN GARDEN SIZE AND LOCATION.
(2) OBSERVATION OF EXCAVATION AND SCARIFYING OF SUBSOIL.
(3) APPROVAL TO BACKFILL WITH ENGINEERED SOILS.
(4) FINAL INSPECTION WITH MULCH AND PLANTS INSTALLED.

Construction Sequencing

1. Delineate the location of areas not to be disturbed before work begins.
2. Establish sediment control practices on all down gradient perimeters before any up gradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established.
3. Install all perimeter sediment control devices and construction entrances. The timing of installation of sediment control practices may be adjusted in order to accommodate short-term activities, but sediment control practices must be installed before the next precipitation event even if the short-term activity is not complete.
4. Contact the City for approval of the sediment control devices.
5. Rough grade the site.
6. Install utilities.
7. Install pavements.
8. Install lawn and landscape & soil amendments.
9. Restore all disturbed areas.
10. Clean all storm sewer and conveyance systems.
11. After all disturbed areas are stabilized, obtain approval from the City and/or Watershed District.
12. Remove all temporary sediment control devices.



NOTES:
1. GRADE (XXX.X) BEHIND EACH HOMESITE IS THE PROPOSED TOP OF TOPSOIL, SUBGRADE SHALL BE DOWN 0.50 FEET.
2. ESTABLISH FINISH GRADE TO ALL 10' FRONT YARD UTILITY EASEMENT LOCATIONS.
3. THESE DETAILS REFERENCE A 9' POURED FOUNDATION WALL (8.7' TF to BF)

GENERAL NOTES:
1. THE GRADING CONTRACTOR IS RESPONSIBLE FOR ALL STORM WATER INSPECTIONS ACCORDING TO THE MPCA STORM WATER PERMIT. THIS INCLUDES BOTH WEEKLY INSPECTIONS AND INSPECTIONS DONE AFTER A 0.5" RAIN EVENT. A COPY OF THE INSPECTION REPORT MUST BE EMAILED TO THE ENGINEER AND DEVELOPER ON A WEEKLY BASIS.

2. THE CONTRACTOR SHALL PLACE INLET PROTECTION DEVICES IN ACCORDANCE WITH THE CITY OF MINNETONKA DETAIL FOR ALL STORM SEWER INLETS AND MAINTAIN THEM AS AN EFFECTIVE SILT CONTROL DEVICE. INLET PROTECTION SHALL BE REMOVED WHEN RESTORATION HAS BEEN ESTABLISHED.

3. ALL RETAINING WALLS WILL REQUIRE A STRUCTURAL DESIGN, A BUILDING PERMIT & A FINAL INSPECTION REPORT.

4. A 1"-2" CRUSHED ROCK ENTRANCE BERM SHALL BE PLACED AT THE SITE ENTRANCE, TO REPLACE SILT FENCE, AND MINIMIZE EROSION ON TO THE STREETS. THE ROCK BERMS SHALL BE THE WIDTH OF THE ENTRANCE AND 2 FEET HIGH WITH 4:1 SLOPES. (SEE DETAIL).

5. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING PAD AND STREET AREAS THROUGHOUT CONSTRUCTION.

6. THE CONTRACTOR SHALL ATTEMPT TO PREVENT SOIL MATERIALS FROM LEAVING THE SITE BY EROSION AND VEHICLE WHEEL TRACKING. HE SHALL BE RESPONSIBLE FOR CLEANING OF STREET, BOULEVARD AND UTILITY FACILITIES THAT RECEIVE ANY ERODED OR TRACKED SOIL MATERIAL OR OTHER CONSTRUCTION DEBRIS OR MATERIAL.

7. EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.

8. BUILDING PADS ARE 60' DEEP, UNLESS OTHERWISE NOTED. THE FRONT AND REAR BUILDING PAD LINES ARE SHOWN ON THE PLAN. THE ENGINEER SHOULD BE CONTACTED IF THE CONTRACTOR HAS ANY QUESTIONS REGARDING BUILDING PADS. REAR PAD ELEVATIONS SHOULD BE ESTABLISHED BASED OFF THE 2:1 SLOPE FROM THE 25' FLAT BENCH, OR AT MOST 50' BEHIND FRONT OF PAD.

9. STAKING OFF AND MARKING OF PROPOSED INFILTRATION FACILITIES TO PREVENT SOIL COMPACTION BY HEAVY EQUIPMENT, STOCKPILING OF MATERIALS, AND TRAFFIC. IF INFILTRATION FACILITIES ARE IN PLACE DURING CONSTRUCTION ACTIVITIES, BEST PRACTICES MUST BE DEPLOYED TO PREVENT SEDIMENT AND OTHER MATERIAL FROM ENTERING THE PRACTICE(S). INFILTRATION FACILITIES MUST NOT BE EXCAVATED TO WITHIN 3FT OF FINAL GRADE UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN CONSTRUCTED AND FULLY STABILIZED. ANY ACCUMULATED SEDIMENT IN AN INFILTRATION FACILITY MUST BE REMOVED IN A MANNER THAT PREVENTS COMPACTION OF THE FACILITY BOTTOM. TO PROVIDE A WELL-AERATED, HIGHLY POROUS SURFACE, THE SOILS BELOW AN INFILTRATION PRACTICE MUST BE LOOSENED TO A MINIMUM OF 18 INCHES PRIOR TO INSTALLATION OR PLANTING.

10. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDAR DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED ON A PROPERTY THAT DRAINS TO AN IMPAIRED WATER, WITHIN 14 DAYS OTHERWISE.

11. CONSTRUCTION SHOULD INCLUDE MINIMIZATION OF THE DISTURBANCE INTENSITY AND DURATION, INCLUDING PHASING OF DISTURBANCE TO MINIMIZE QUANTITY OF DISTURBED AREA AT ANY ONE TIME.

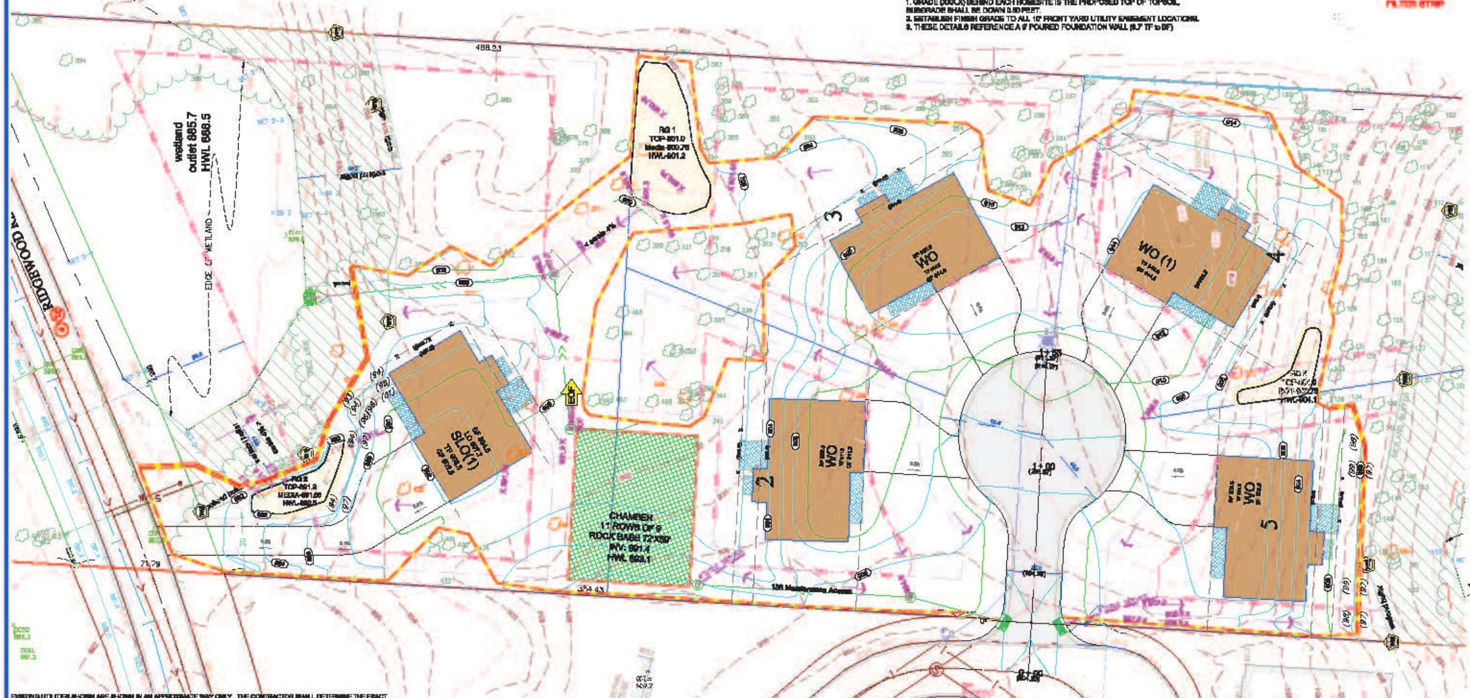
12. SOILS SURFACES COMPACTED DURING CONSTRUCTION & REMAINING PERVIOUS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED TO ACHIEVE:
A. A SOIL COMPACTION TESTING PRESSURE OF LESS THANT 1,400KPA OR 200PSI IN THE UPPER 12" OF SOIL OR;
B. A BULK DENSITY OF LESS THAN 1.4G PER CC OR 87 LB/FT^3 IN THE UPPER 12" OF SOIL.
IN ADDITION, UTILITIES, TREE ROOTS, AND OTHER EXISTING VEGITATION MUST BE PROTECTED UNTIL FINAL REVEGITATION OR OTHER STABILIZATION OF THE SITE.

13. PROTECTION OF NATURAL TOPOGRAPHY AND SOILS CONDITIONS, INCLUDED RETENTION ON SITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE(PER RULE C SUBSECTION 5.1A)

14. THE PERMITTEE WILL INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES TO ENSURE INTEGRITY & EFFECTIVENESS. THE PERMITTEE WILL REPAIR, REPLACE OR SUPPLEMENT ALL NON FUNCTIONAL BMPS WITH FUNCTIONAL BMPS WITHIN 48HRS OF DISCOVERY & PRIOR TO THE NEXT PRECIPITATION EVENT UNLESS ADVERSE CONDITIONS PRECLUDE ACCESS TO THE RELEVANT AREA OF THE SITE, IN WHICH CASE THE REPAIR MUST BE COMPLETED AS SOON AS CONDITIONS ALLOW. WHEN ACTIVE LAND-DISTURBING ACTIVITIES ARE NOT UNDERWAY THE PERMITTEE WILL PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED. THE PERMITTEE WILL MAINTAIN A LOG OF ACTIVITIES UNDER THIS SECTION FOR INSPECTION BY THE DISTRICT ON REQUEST.

FILTER STRIP

CONSTRUCTION NOTES
1. INSTALL SILT FENCE AS SHOWN ON PLAN, AS REQUIRED BY THE CITY OF MINNETONKA OR DIRECTED BY THE ENGINEER.
2. INSPECT SILT FENCE, AND ROCK ENTRANCE BERM AFTER ALL RAINFALL EVENTS AS REQUIRED BY THE NPDES PERMIT.
3. WO PADS 3:1 MAX. ALL OTHER SLOPES 4:1 MAX (UNLESS NOTED)
4. RESTORATION - 5.0 ACRES
A. RESTORE ALL DISTURBED AREAS WITH MIN 6" OF TOPSOIL, OR EXISTING ON-SITE ORGANIC MTRL.
B. SEED POND SLOPES AND DETENTION AREAS WITH MN/DOT 310 OR BWSR P6 SEED MIX AT A RATE OF 100 LBS./ACRE AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE. SEED WETLAND BUFFER AREAS WITH MN/DOT 350-MESIC PRAIRIE (38.5 PLS LBS/AC) OR BWSR 35-241 SEED MIX AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE. (REFER TO WETLAND CREATION/BANKING PLAN FOR WETLAND SEED MIX REQUIREMENTS).
C. SEED ALL OTHER DISTURBED AREAS WITH RESIDENTIAL TURF 270 AT A RATE OF 100 LBS./ACRE AND FERTILIZE WITH 20-0-10 AT 100 LBS./ACRE. (UNLESS OTHERWISE NOTED)
D. ONLY PHOSPHOROUS FREE FERTILIZER IS TO BE USED ON SITE.
E. MULCH WITH TYPE 1 AT A RATE OF 2 TONS/ACRE AND DISC ANCHOR IMMEDIATELY AFTER PLACEMENT. USE WOODFIBER BLANKET ON ALL SLOPES 3:1 (FT) OR GREATER.
F. MAINTAIN ALL SILT FENCE UNTIL TURF HAS BEEN ESTABLISHED.
G. RESTORATION WORK WILL BE COMPLETED WITHIN 72 HOURS OF GRADING COMPLETION.
H. ALL WETLAND BUFFERS AND FULL CONSERVATION EASEMENT SHALL BE FULLY ESTABLISHED IN NATIVE VEGETATION BY A QUALIFIED RESTORATION COMPANY. NO TURF OR LAWN MAINTENANCE ACTIVITIES ARE ALLOWED WITHIN THE BUFFER AREAS. ANY EROSION BLANKET INSIDE THE CONSERVATION EASEMENT MUST BE FULLY BIODEGRADEABLE SUCH AS S31BD OR S32BD.
5. GRADE BACK 1:1 - 3' FROM FACE OF ALL RETAINING WALLS
6. SILT FENCE - BEFORE GRADING - 4,600 LF
AFTER GRADING - 210 LF
7. 16' MAINTENANCE ACCESS ROUTE - SEE 12' POND ACCESS SECTION DETAIL ABOVE.
8. TOPSOIL SHALL BE STOCKPILED AND SAVED FOR RESPREAD AFTER CONSTRUCTION IS COMPLETE. ALL DISTURBED AREAS SHALL BE RESTORED WITH TOPSOIL MEETING RPBCWD'S DEFINITION (INCLUDING AT LEAST 5% ORGANIC MATERIAL).
9. LOT 1 SHALL DRAIN ALL ROOF WATER TO FRONT YARD VIA GUTTERS & DOWNSPOUTS OR SIMILAR METHOD TO MAXIMIZE HARD COVER RUNOFF TO RAIN GARDEN 2. LOTS 2 & 5 SHALL DRAIN ALL ROOF WATER TO FRONT YARD VIA GUTTERS & DOWNSPOUTS OR SIMILAR METHOD TO MAXIMIZE HARD COVER RUNOFF TO RAIN GARDEN 4.

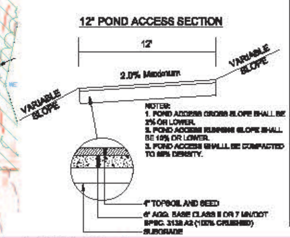


30 15 0 15 30 60
SCALE IN FEET

WETLAND BUFFER

PROPOSED CHAMBER LOCATION
73' X 59' - 6" ROCK BASE SEE SHEETS 4 - 5 & 6

12' POND ACCESS SECTION



NOTES:
1. POND ACCESS CROSS SLOPE SHALL BE 2% OR LOWER.
2. POND ACCESS RUNNING SLOPE SHALL BE 10% OR LOWER.
3. POND ACCESS SHALL BE COMPACTED TO 95% DENSITY.

SYMBOL LEGEND

DESCRIPTION	PROPOSED	EXISTING
MINOR CONTOUR		
MAJOR CONTOUR		
LOT LINE		
BUILDING SETBACK LINE		
GARAGE SETBACK LINE		
PARCEL BOUNDARY LINE		
DRAINAGE AND UTILITY EASEMENTS		
CURB AND GUTTER		
RIGHT-OF-WAY		
BACKYARD CATCH BASIN		
CATCH BASIN		
STORM SEWER MANHOLE		
FLARED END SECTION W/RIP RAP		
SANITARY SEWER MANHOLE		
HYDRANT		
GATE VALVE		
DRAINAGE/RUNOFF ARROW		
EMERGENCY OVERFLOW SWALE		
SILT FENCE (PRE CONSTRUCTION)		
SILT FENCE (POST CONSTRUCTION)		
SPOT ELEVATION		
TBD SPOT ELEVATION		

EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.

DRAWING NAME	NO.	BY	DATE	REVISION
RIDGEVIEW	1	CAW	11/9/2022	CITY COMMENTS
DRAWN	2	CAW	12/19/2022	CITY COMMENTS
CAW	3	CAW	1/4/2023	WATERSHED
CHECKED	4	CAW	2/7/2023	WATERSHED & CITY COMMENTS
CAW	5	CAW	3/7/2023	WATERSHED COMMENTS
DATE	6	CAW	3/31/2023	CITY COMMENTS
11/02/22	7	CAW	4/4/2023	CHAMBER NOTE REVISIONS

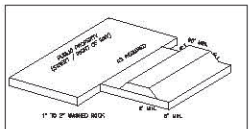
I HEREBY CERTIFY THAT THIS PLAN OR SPECIFICATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Charles A. Wiemerslage
CHARLES A. WIEMERSLAGE, P.E.
Date: 11/02/2022 Lic. No. 49180

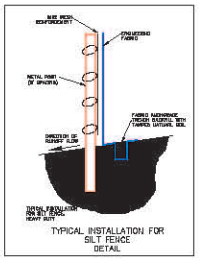
SATHRE-BERGQUIST, INC.
14000 25TH AVENUE NORTH, SUITE 120
PLYMOUTH, MN 55447 (952) 476-6000

CITY PROJECT NO. —
MINNETONKA, MINNESOTA

FINAL GRADING PLAN
DUNBAR COURT
ZEHNDER HOMES, INC.

FILE NO. 99595-141
07 / 11





CONSTRUCTION NOTES

1. INSTALL SILT FENCE AS SHOWN ON PLAN, AS REQUIRED BY THE CITY OF MINNETONKA OR DIRECTED BY THE ENGINEER.
2. INSPECT SILT FENCE, AND ROCK ENTRANCE BERM AFTER ALL RAINFALL EVENTS AS REQUIRED BY THE NPDES PERMIT.
3. WO PADS 3:1 MAX. ALL OTHER SLOPES 4:1 MAX (UNLESS NOTED)
4. RESTORATION - 4.0 ACRES
   A. RESTORE ALL DISTURBED AREAS WITH A MINIMUM 6" OF TOPSOIL, OR EXISTING ON-SITE ORGANIC MATERIAL.
   B. SEED POND SLOPES AND DETENTION AREAS WITH MNDOT 310 OR BWSR P8 SEED MIX AT A RATE OF 100 LBS/ACRE AND FERTILIZE WITH 20-0-10 AT 100 LBS/ACRE. SEED WETLAND BUFFER AREAS WITH MNDOT 350-MESIC PRAIRIE (35LS PLS LBS/AC) OR BWSR 35-241 SEED MIX AND FERTILIZE WITH 20-2-10 AT 100 LBS./ACRE. (REFER TO WETLAND CREATION/BANKING PLAN FOR WETLAND SEED MIX REQUIREMENTS).
   C. SEED ALL OTHER DISTURBED AREAS WITH RESIDENTIAL TURF 270 AT A RATE OF 150 LBS/ACRE AND FERTILIZE WITH 20-0-10 AT 150 LBS/ACRE. (UNLESS OTHERWISE NOTED)
   D. ONLY PHOSPHOROUS FREE FERTILIZER IS TO BE USED ON SITE.
   E. MULCH WITH TYPE 1 AT A RATE OF 2 TON/ACRE AND DISC ANCHOR IMMEDIATELY AFTER PLACEMENT. USE WOODFIBER BLANKET ON ALL SLOPES 3:1 (FT) OR GREATER.
   F. MAINTAIN ALL SILT FENCE UNTIL TURF HAS BEEN ESTABLISHED.
   G. RESTORATION WORK WILL BE COMPLETED WITHIN 72 HOURS OF GRADING COMPLETION.
   H. ALL WETLAND BUFFERS AND FULL CONSERVATION EASEMENT SHALL BE FULLY ESTABLISHED IN NATIVE VEGETATION BY A QUALIFIED RESTORATION COMPANY. NO TURF OR LAWN MAINTENANCE ACTIVITIES ARE ALLOWED WITHIN THE BUFFER AREAS. ANY EROSION BLANKET INSIDE THE CONSERVATION EASEMENT MUST BE FULLY BIODEGRADEABLE SUCH AS 9318D OR 9829D.
5. GRADE BACK 1:1 - 3' FROM FACE OF ALL RETAINING WALLS
6. SILT FENCE - BEFORE GRADING - 4,000 LF
   AFTER GRADING - 210 LF
7. ALL AREAS OUTSIDE SILT FENCE SHALL BE PREVENTED FROM COMPACTION.
8. ALL DISTURBED GREEN SPACE AREAS SHALL BE DECOMPACTED AFTER CONSTRUCTION IS COMPLETE.
9. ALL BUFFER AREAS DISTURBED MUST BE REPLANTED WITH NATIVE VEGETATION & MAINTAINED TO RETAIN NATURAL RESOURCES & ECOLOGICAL VALUE. NO FILL, DEBRIS OR OTHER MATERIAL SHALL BE PLACED IN THE BUFFER.
10. THE POTENTIAL TRANSFER OR AQUATIC INVASIVE SPECIES (E.G. ZEBRA MUSSELS, EURASIAN WATERMILFOIL, ETC. MUST BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE.
11. LIABILITY TO RESIDING FOR MAINTENANCE OF EROSION & SEDIMENT CONTROL SHALL BE
    ERIC ZEHNDER
    2780 ALAMO CIRCLE NE
    BLAINE, MN 55449
    651-303-5745

GENERAL NOTES:

1. THE GRADING CONTRACTOR IS RESPONSIBLE FOR ALL STORM WATER INSPECTIONS ACCORDING TO THE NPDA STORM WATER PERMIT. THIS INCLUDES BOTH WEEKLY INSPECTIONS AND INSPECTIONS DONE AFTER A 0.5" RAIN EVENT. A COPY OF THE INSPECTION REPORT MUST BE EMAILED TO THE ENGINEER AND DEVELOPER ON A WEEKLY BASIS.
2. THE CONTRACTOR SHALL PLACE INLET PROTECTION DEVICES IN ACCORDANCE WITH THE CITY OF MINNETONKA DETAIL FOR ALL STORM SEWER INLETS AND MAINTAIN THEM AS AN EFFECTIVE SILT CONTROL DEVICE. INLET PROTECTION SHALL BE REMOVED WHEN RESTORATION HAS BEEN ESTABLISHED.
3. ALL RETAINING WALLS WILL REQUIRE A STRUCTURAL DESIGN, A BUILDING PERMIT & A FINAL INSPECTION REPORT.
4. A 1"-3" CRUSHED ROCK ENTRANCE BERM SHALL BE PLACED AT THE SITE ENTRANCE, TO REPLACE SILT FENCE, AND MINIMIZE EROSION ON TO THE STREETS. THE ROCK BERM SHALL BE THE WIDTH OF THE ENTRANCE AND 2 FEET HIGH WITH 4:1 SLOPES. (SEE DETAIL)
5. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING PAD AND STREET AREAS THROUGHOUT CONSTRUCTION.
6. THE CONTRACTOR SHALL ATTEMPT TO PREVENT SOIL MATERIALS FROM LEAVING THE SITE BY EROSION AND VEHICLE WHEEL TRACKING. HE SHALL BE RESPONSIBLE FOR CLEANING OF STREET, BOULEVARD AND UTILITY FACILITIES THAT RECEIVE ANY ERODED OR TRACKED SOIL MATERIAL OR OTHER CONSTRUCTION DEBRIS OR MATERIAL.
7. EXISTING UTILITIES SHOWN ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES ARISING OUT OF HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
8. BUILDING PADS ARE 60' DEEP, UNLESS OTHERWISE NOTED. THE FRONT AND REAR BUILDING PAD LINES ARE SHOWN ON THE PLAN. THE ENGINEER SHOULD BE CONTACTED IF THE CONTRACTOR HAS ANY QUESTIONS REGARDING BUILDING PADS. REAR PAD ELEVATIONS SHOULD BE ESTABLISHED BASED OFF THE 2:1 SLOPE FROM THE 29' FLAT BENCH, OR AT MOST 5' BEHIND FRONT OF PAD.

ROCK ENTRANCE BERM
CONCRETE WASHOUT
INLET PROTECTION
EROSION BLANKET
CAT 3 TYPE 1S

30 15 0 15 30 60
SCALE IN FEET

SYMBOL LEGEND

DESCRIPTION	PROPOSED	EXISTING
MINOR CONTOUR		
MAJOR CONTOUR		
LOT LINE		
BUILDING SETBACK LINE		
GARAGE SETBACK LINE		
PONDS, BOUNDARY LINE		
DRAINAGE AND UTILITY EASEMENTS		
CURB AND GUTTER		
RIGHT-OF-WAY		
EMERGENCY OVERFLOW SWALE		
CATCH BASIN		
STORM SEWER MANHOLE		
PLANTED END SECTION WITH RIP-RAP		
SANITARY SEWER MANHOLE		
HYDRANT		
GATE VALVE		
DRAIN TILE/BURIED FABRIC		
EMERGENCY OVERFLOW SWALE		
SILT FENCE - PRE CONSTRUCTION		
SILT FENCE - POST CONSTRUCTION		
SPOT ELEVATION	x 885.0	x 885.0
TBD SPOT ELEVATION	x 885.0	

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CHARLES A. WIENERLAGE, P.E.
Date: 11/01/2022 Lic. No. 41180

SATHRE-BERGQUIST, INC.
14000 26TH AVENUE NORTH, SUITE 120
PLYMOUTH, MN 55447 (952) 476-6000

CITY PROJECT NO.
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MINNETONKA, MINNESOTA

FINAL EROSION CONTROL PLAN
DUNIBAR COURT
ZEHNDER HOMES, INC.

FILE NO.
095505-141

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