RILEY PURGATORY BLUFF CREEK WATERSHED DISTRICT

18681 Lake Drive East
Chanhassen, MN 55317
952-607-6512
www.rpbcwd.org

Riley Purgatory Bluff Creek Watershed District Permit Application Review

Permit No: 2022-026

Considered at Board of Managers Meeting: May 4, 2022

Received complete: April 19, 2022

Applicant: Chapel Hill Academy, Kristin Kishaba

Consultant: Elfering and Associates, Lee Elfering

Project: Chapel Hill Building Expansion – Expansion of the existing school building and associated parking lot modifications. A biofiltration basin with iron enhanced sand and underlying infiltration will provide storm water quantity, volume and quality control.

Location: 306 West 78th Street, Chanhassen

Reviewer: Scott Sobiech, P.E., 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 May 4, 2022 meeting of the managers:

Resolved that the application for Permit 2022-026 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 affirmatively resolved, the RPBCWD president or administrator is authorized and directed to sign and deliver Permit 2022-026 to the applicant on behalf of RPBCWD.

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

Applicable Rule Conformance Summary

Rule	Issue		Conforms to RBPCWD Rules?	Comments
C	**Erosion Control Plan**		Yes	
J	**Stormwater Management**	Rate	Yes.	
		Volume	See Comment	See stipulation 5 related to verifying the infiltration capacity of the soils and that the volume control capacity is calculated using the measured infiltration rate

Rule	Issue		Conforms to RBPCWD Rules?	Comments
		Water Quality	Yes.	
		Low Floor Elev.	Yes.	
		Maintenance	See comment.	See rule-specific permit condition J1 related to recordation of stormwater facility maintenance declaration.
		Chloride Management	See comment.	See stipulation 6 related to providing a chloride management plan prior to project close-out.
		Wetland Protection	NA	
L	**Permit Fee**		Yes.	$3,000 received April 11, 2022
M	**Financial Assurance**		See comment.	The financial assurance is calculated at $95,143

Background

The proposed redevelopment will consist of 9,200 square feet of building expansion and -associated parking lot modifications to accommodate the building expansions at Chapel Hill Academy in Chanhassen. A majority of the site will remain undisturbed. The project includes a biofiltration basin with iron enhanced sand and underlying infiltration for stormwater treatment. Stormwater from the biofiltration basin discharges to the existing storm sewer system on the site.

Because the property owner has undertaken a prior redevelopment project triggering the RPBCWD stormwater requirements since January 1, 2015 (i.e., when RPBCWD reinstituted a regulatory program), the presently proposed redevelopment must be considered in aggregate with prior changes, in accordance with the common scheme of development provision of Rule J. The proposed land-disturbing activities were previously approved under RPBCWD permit 2015-051. The applicant fulfilled the conditions of approval but only completed some of the authorized building construction. As part of this new application the applicant is seeking to complete the building expansion and associated stormwater management facility.

The treated runoff leaving the site from the biofiltration basin is conveyed via storm sewer directly to an off-site stormwater pond.

The project site information is summarized below:

Site Information	Permit 2015-051[1]	Permit 2022-026 (Current)	Site Aggregate Total (Includes both Projects)
Total Site Area (acres)	4.84	4.84	4.84
Existing Site Impervious Area (acres)	2.72[2]	2.72[2]	2.72[2]
New (increase) in Site Impervious Area (acres)	0.2	0.24	0.24
Percent Increase in Impervious Surface	7	9	9
Disturbed Site Impervious Area (acres)	0.25	0.21	0.45
Percent Disturbance of Existing Impervious Surface	9	7	16.5
Total Disturbed Area (acres)	0.64	0.76	0.76

[1]Permit 2015-051 was for work on the site involving building expansion and parking lot revisions. Only a small portin of the authorized work was completed under permit 2015-051

[2]Calculated based on pre-2015 project existing conditions (Common Scheme of Development Rule J, Subsection 2.5)

The following materials were reviewed in support of the permit request:

1. Application received March 22, 2022 (Incomplete notice was sent on April 11, 2022; materials submitted to complete application on April 19, 2022)
2. Stormwater Drainage Report dated March 22, 2022, (revised April 18, 2022)
3. Civil Plan Set (5 sheets) dated February 22, 2022 (revised April 19, 2022)
4. Geotechnical Exploration Report prepared by Element Materials Technology dated April 30, 2015.
5. Supplemental Geotechnical Exploration Report dated October 21, 2015.
6. City of Chanhassen Storm Network Map received March 22, 2022
7. City of Chanhassen Wetland Inventory Classification Map received March 22, 2022
8. Responses to review comments submitted April 19, 2022.
9. Appendix J1 Evaluation Documentation received November 18, 2015.
10. Opinion of Probable Costs for stormwater received April 19, 2022
11. Electronic HydroCAD models received March 22, 2022
12. Electronic P8 models received April 19, 2022
13. Draft Maintenance declaration received April 19, 2022

Rule C: Erosion and Sediment Control

Because the project will involve 0.76 acres of land-disturbing activity, 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 Elfering and Associates includes installation of perimeter control (silt fence or

sediment control logs), a stabilized rock construction entrance, inlet protection, daily inspection, staging areas, placement of a minimum of 6 inches of topsoil (at 5% organic matter), decompaction of areas compacted during construction, and retention of native topsoil onsite to the greatest extent possible. To conform to RPBCWD Rule C requirements, the following revisions are needed:

C1. The Applicant must provide the name, address and phone number of the individual who will remain liable to the District for performance under this rule and maintenance of erosion and sediment-control measures from the time the permitted activities commence until vegetative cover is established.

Rule J: Stormwater Management

Because the project will involve 0.76 acres of land-disturbing activity (i.e., more than 5,000 square feet), the project must meet the criteria of RPBCWD's Stormwater Management rule (Rule J). Under paragraph 2.5 of Rule J, Common Scheme of Development, activities subject to Rule J on a parcel or adjacent parcels under common or related ownership will be considered in the aggregate, and the requirements applicable to the activity under this rule will be determined with respect to all redevelopment that has occurred on the site and on adjacent sites under common or related ownership since the date this rule took effect (January 1, 2015). Because one project was permitted since the rules took effect (RPBCWD Permit 2015-051), the current activities proposed must be considered in aggregate with the activities proposed under the prior applications. Because the applicant only completed some of the authorized building construction and parking lot improvement authorized under permit 2015-051, the current application seeks to complete the modified building expansion and associated stormwater management facility.

The criteria listed in Subsection 3.1 only apply to the disturbed areas on the project site because the project, when considered in aggregate with the other permitted activities at the site, increases the imperviousness by 9 percent and disturbs a combined 16.5 percent of the existing impervious surface on the site (Rule J, Subsection 2.3) (see project site information table above). The aggregate extent of disturbance is less than 50 percent of the impervious area of the site, and the two projects, in aggregate, expand the impervious area of the site by less than 50 percent, therefore RPBCWD's stormwater management requirements apply only to the increased and disturbed and reconstructed impervious areas of the site proposed for this project.

The applicant is proposing construction of a biofiltration basin with iron enhanced sand and underlying infiltration to provide the rate control, volume abstraction and water quality management on the site. A grass filter strip will provide pretreatment for the biofiltration basin.

Rate Control

In order to meet the rate control criteria 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 disturbed site area are summarized in the table below. The proposed project is in conformance with RPBCWD Rule J, Subsection 3.1.a.

Modeled Discharge Location Leaving the Site	2-Year Discharge (cfs)		10-Year Discharge (cfs)		100-Year Discharge (cfs)		10-Day Snowmelt (cfs)	
	Ex	Prop	Ex	Prop	Ex	Prop	Ex	Prop
West	8.8	7.8	14.0	13.6	23.7	23.7	0.6	0.6
East[1]	0.3	0.0	0.6	0.0	1.0	0.0	<0.1	0.0

[1]Only represents the disturbed areas draining to the east.

Volume Abstraction

Subsection 3.1.b of Rule J requires the abstraction onsite of 1.1 inches of runoff from all new or disturbed impervious surface of the parcel. An abstraction volume of 1,797 cubic feet is required from the 0.45 acres of new and reconstructed impervious area on the site for abstraction. Pretreatment for runoff entering the biofiltration basin is being provided by grass filter strips to conform to Rule J, Subsection 3.1.b.1.

Soil borings performed by Element Materials Technology show that soils in the project area are clays. Soil borings performed by Element Materials Technology show no groundwater to a boring depth of 16-21 feet. This indicates that groundwater is at least 3 feet below the bottom of the proposed infiltration section below the biofiltration basin (Rule J, Subsection 3.1.b.2.a). Analysis by Element Materials Technology indicates that based on the encountered soil conditions and densities, the actual infiltration rates are likely in the range of 0.01-0.04 inches per hour. The Engineer concurs that soil information, existing site infrastructure and layout, and limited area of impervious surface disturbance show 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 3.1.a 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. The Applicant provided a design supporting a determination that volume abstraction is provided through the biofiltration basin to infiltrate 0.03 inches of runoff from the impervious areas on the site. An abstraction volume of 56 cubic feet is provided from the 19,602 square feet of new and disturbed impervious area on the project for volume

retention. This represents the maximum abstraction volume practicable based on site constraints. The Engineer concurs with the applicant's evaluation of the entire property determining there were no other areas on the site that were available for the installation of volume control practices due to site grades, existing public and private utilities, mature trees and the need to maintain the school playgrounds and access routes.

The engineer concurs with the applicant's design infiltration rates of 0.01 inches per hour for clayey soils. Based on the design infiltration rate, the engineer concurs that the biofiltration basin will draw down within 48 hours (Rule J, subsection 3.1b.3). Per Rule J, Subsection 3.1.b.2.c measured infiltration capacity of the soils at the bottom of the infiltration systems must be provided. However, the applicant has chosen to wait until construction to conduct infiltration testing. The applicant must submit documentation verifying the infiltration capacity of the soils 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 3.3b or there is inadequate 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).

The table below summarizes the volume abstraction for the site based on the design infiltration capacity of the biofiltration basin. With the conditions noted above regarding verification of subsurface conditions, the engineer concurs with the submitted information and finds that the proposed project will conform with Rule J, Subsection 3.3.b.

Volume Abstraction Summary

Required Abstraction Depth (inches)	Required Abstraction Volume (cubic feet)	Provided Abstraction Depth (inches)	Provided Abstraction Volume (cubic feet)
1.1	1,797	0.03	56

Water Quality Management

Subsection 3.1.c of Rule J requires the Applicant provide for at 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 proposinga biofiltration basin with iron enhanced sand and underlying infiltration to achieve the required TP and TSS removals and submitted a P8 model to estimate the TP and TSS removals. The results of this modeling are summarized in tables below. The engineer concurs with the modeling and finds that the proposed project is in conformance with Rule J, Subsection 3.1.c.

Annual TSS and TP removal summary:

Pollutant of Interest	Regulated Site Loading (lbs/yr)	Required Load Removal (lbs/yr)	Provided Load Reduction (lbs/yr)
Total Suspended Solids (TSS)	404	364 (90%)	371 (91.7%)
Total Phosphorus (TP)	1.3	0.8 (60%)	0.9 (68.2%)

Summary of net change in TSS and TP leaving the site

Pollutant of Interest	Existing Site Loading (lbs/yr)	Proposed Site Load after Treatment (lbs/yr)	Change (lbs/yr)
Total Suspended Solids (TSS)	1570	1331	-239
Total Phosphorus (TP)	5.1	4.6	-0.5

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. Because the low floor elevation of 974.35 is 1 foot above the emergency overflow of the biofiltration basin with iron enhanced sand and underlying infiltration, the applicant provided analysis demonstrates conformance with Rule J, Subsection 3.6a as summarized below.

Structure	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Biofiltration Basin (feet)	Freeboard (feet)	Biofiltration Emergency overflow (feet)	Separation Between Emergency Overflow and Low Floor (feet)
Chapel Hill Building Expansion	974.35	973.13	1.22	973.35	1.0

Because the low floor elevation of the off-site, existing residential structure to the north of the proposed biofiltration basin is estimated to be below the 100-year flood elevation in the basin, an analysis was performed using *Appendix J1 Plot 1: Minimum Depth to Water Table for No Further Evaluation.* The result of the low floor analysis is summarized in the following table. The results demonstrate the provided separation is greater than the minimum required, thus meeting the habitable structure requirements in Rule J, Subsection 3.6b.

Structure	Low Floor Elevation of Building (feet)	100-year Event Flood Elevation of Biofiltration Basin (feet)	Freeboard to 100-year Event (feet)	Distance from Building to Adjacent Facility (feet)	Water Table Elevation (feet)	Minimum Permissible Depth to Water Table (feet)	Provided Depth from Low Floor Elevation to Water Table (feet)
Adjacent Off-site Residential Structure to the North	973[1]	973.13	-0.13	90	953[1]	3.5	20

[1]Estimated based on Caver County topographic information.

Maintenance

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

J1. Permit applicant must provide a recorded 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 and approval prior to recordation.

Wetland Protection

Because runoff from this site is directly tributary to a downstream, off-site stormwater pond and is not tributary to any wetland, the proposed project does not trigger analysis under Rule J, subsection 3.10.

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. 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 April 11, 2022. 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.

Rule M: Financial Assurance:

	Unit	Unit Cost	# of Units	Total
Rules C: Silt fence:	LF	$2.50	960	$2,400
Inlet protection	EA	$100	13	$1,300
Rock Entrance	EA	$250	1	$250
Restoration	Ac	$2,500	0.76	$1,900
Rules J: Chloride Management	LS	$5,000	1	$5,000
Rules J: Stormwater Management wet pond, two infiltration basins and biofiltration basin): 125% of engineer's opinion of cost ($60,515)	EA	125% OPC	1	$75,643
Contingency (10%)		10%		$8,649
Total Financial Assurance				**$95,143**

<u>Applicable General Requirements:</u>

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 above and on the permit. The granting 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 conforms with Rule C.
3. The proposed project will conform to Rules C and J if the Rule Specific Permit Conditions listed above are met.

Recommendation:

The engineer recommends approval of the permit, contingent upon:

1. Receipt of financial assurance in the amount of $95,143.
2. Permit applicant must provide a recorded 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 and approval prior to recordation.
3. The applicant must replenish the permit fee deposit to the original amount due before the permit will be issued.

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, all stormwater management facilities conform to design specifications and function 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 (including below ground information);
    c) the surveyed elevations of all emergency overflows including stormwater facility, street, and other;

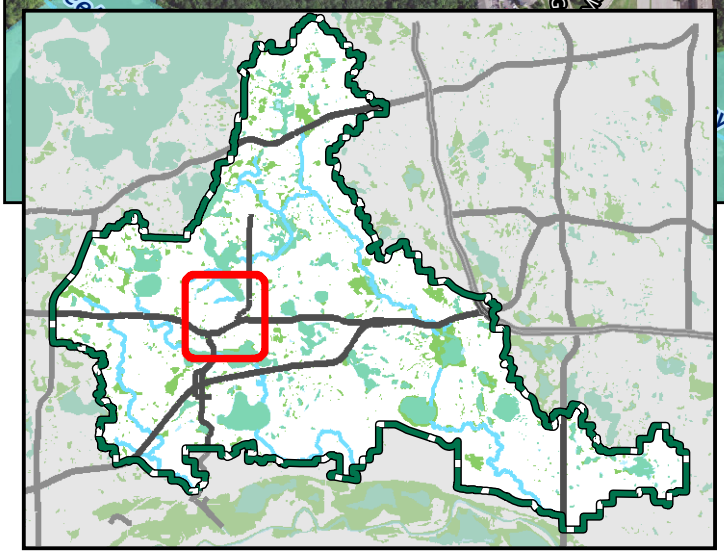
d) other important features to show that the project was constructed as approved by the Managers and protects the public health, welfare, and safety.
e) photographic evidence of buffer marker locations indicated by permanent, free-standing markers in accordance with Rule D, Subsection 3.4 criteria.

3. Providing the following additional close-out materials:
   a) Documentation that constructed infiltration and filtration facilities perform 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 parcel under the terms of permit 2022-026, 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. Per Rule J, Subsection 3.1.b.ii measured infiltration capacity of the soils at the bottom of the biofiltration basin must be provided. The applicant must submit documentation verifying the infiltration capacity of the soils 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 3.3b, 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).

6. To close out the permit and release the 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.



N

Feet

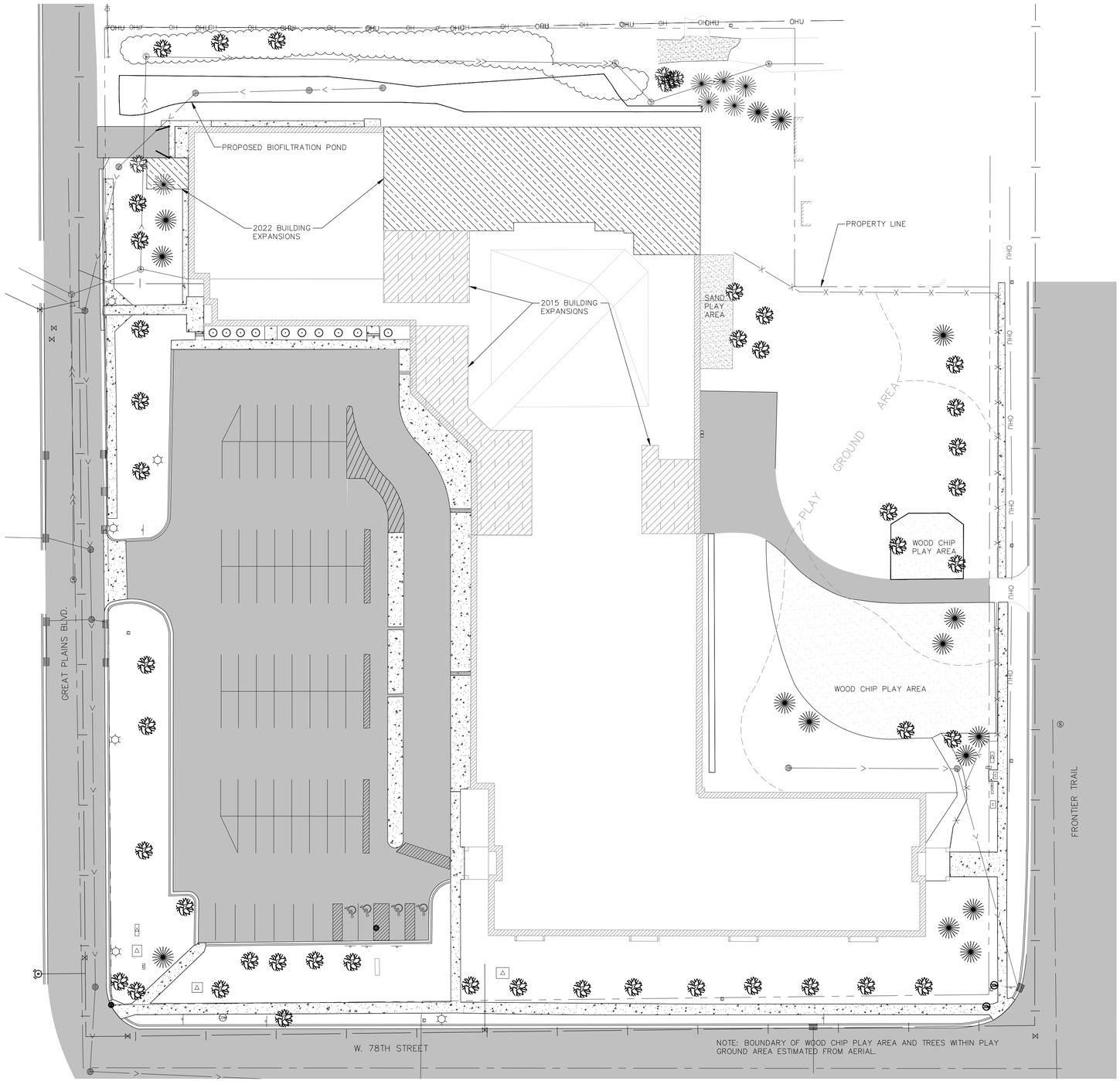
0 1,000

Permit Location Map

CHAPEL HILL

Permit 2022-026

Riley Purgatory Bluff Creek Watershed District



NORTH

0 30
0 VERT. 5

LEGEND

- ABANDONDED STORM SEWER
- EXISTING STORM SEWER
- EXISTING STORM MANHOLE
- EXISTING CATCH BASIN
- EXISTING SANITARY SEWER
- EXISTING SANITARY MANHOLE
- EXISTING WATER MAIN
- EXISTING GATE VALVE
- EXISTING HYDRANT
- TELEPHONE PEDESTAL (TELE)
- TELEPHONE CABLE (TELE)
- TELEPHONE MANHOLE
- FIBER OPTIC CABLE (FO)
- FIBER OPTIC HAND HOLE
- OVERHEAD WIRES (OHU)
- ELECTRICAL BOXES
- GAS MAIN (GAS)
- UTILITY POLE
- GUY OR ANCHOR
- STREET LIGHT
- GUARD POST
- SIGN
- BITUMINOUS
- CONCRETE

IMPERVIOUS SURFACE SUMMARY

PRE 2015 EXISTING IMPERVIOUS	118,685 SF
FINAL 2022 SITE IMPERVIOUS	129,385 SF
NET IMPERVIOUS ADDITION	10,700 SF

2022 PARKING SUMMARY

REGULAR STALLS	67
HANDICAPPED STALLS	4
TOTAL PARKING STALLS	71

NO.	DATE	BY	REVISION DESCRIPTION
1	04/18/22	LWE	ADDRESS WATERSHED COMMENTS

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.

SIGNATURE _____ DATE 04/18/22

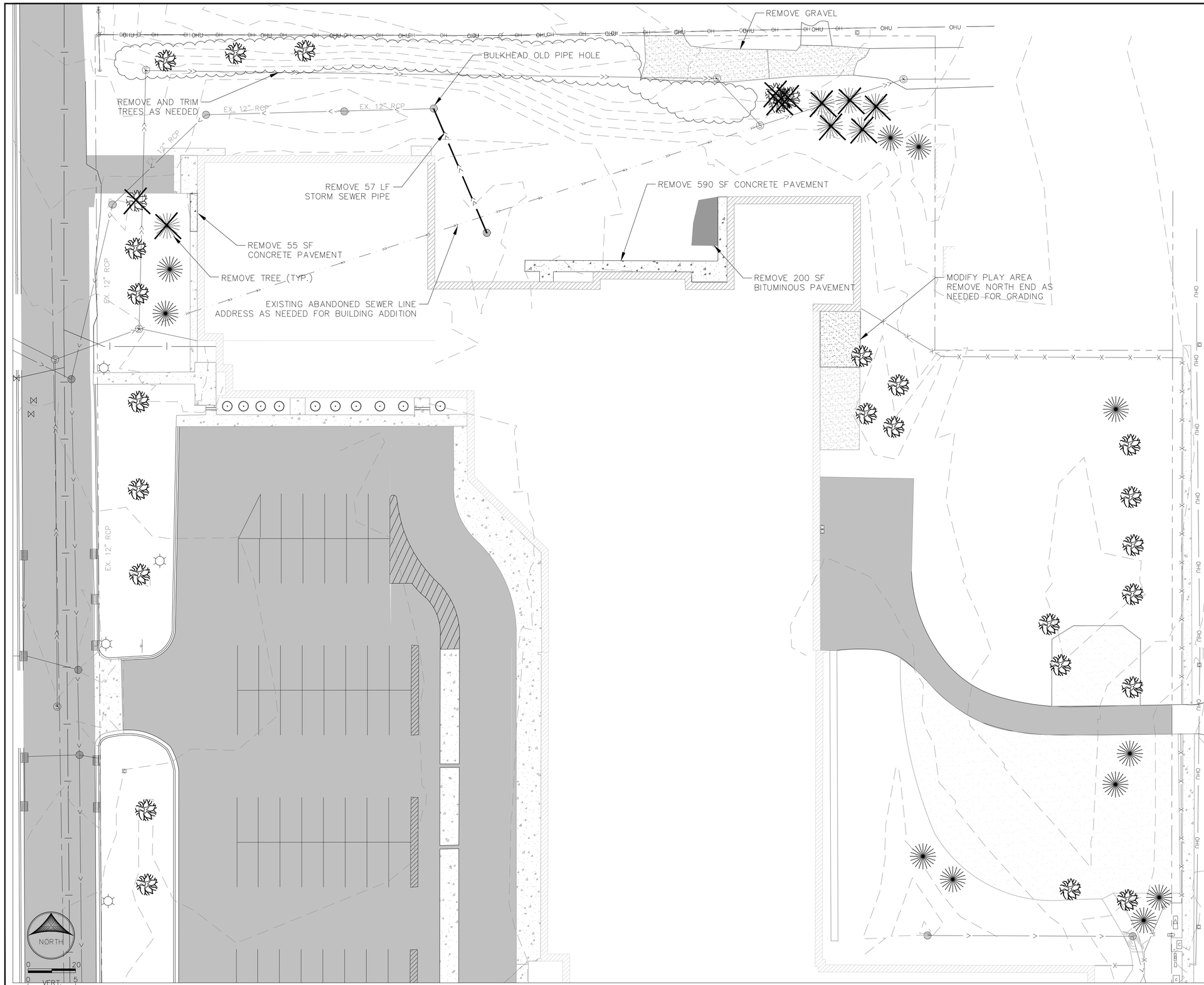
PRINTED NAME LEE W. ELFERING LIC.NO. 41613

CHAPEL HILL ACADEMY

SITE PLAN

DESIGNED BY: LWE
APPROVED BY: LWE
DRAWN BY: ANA
JOB NUMBER: 900034E
CAD DATE: 09/08/15
CAD FILE: ../LAND/EXISTING

SHEET
1



LEGEND

- EXISTING BITUMINOUS, SEE DETAIL
- EXISTING CONCRETE, SEE DETAIL
- REMOVAL BITUMINOUS,
- REMOVAL CONCRETE,

NOTES

1. CONTRACTOR SHALL INSPECT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS RELATING TO THE NATURE AND SCOPE OF THE WORK.
2. CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
3. THE EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE ARISING OUT OF THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
4. PRIOR TO ANY REMOVALS CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES PER THE EROSION CONTROL PLAN ON SHEET 4 TO THE SATISFACTION OF THE OWNER, CITY AND WATERSHED DISTRICT.
5. CONTRACTOR SHALL FULL DEPTH STRAIGHT LINE SAW CUT ALL BITUMINOUS AND CONCRETE AT MATCH POINTS.
6. CONTRACTOR TO SALVAGE EXISTING TOPSOIL FOR REUSE ON SITE.

NO.	DATE	BY	REVISION DESCRIPTION
1	04/18/22	LWE	ADDRESS WATERSHED COMMENTS

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.

SIGNATURE _____ DATE 04/18/22

PRINTED NAME LEE W. ELFERING LIC.NO. 41613

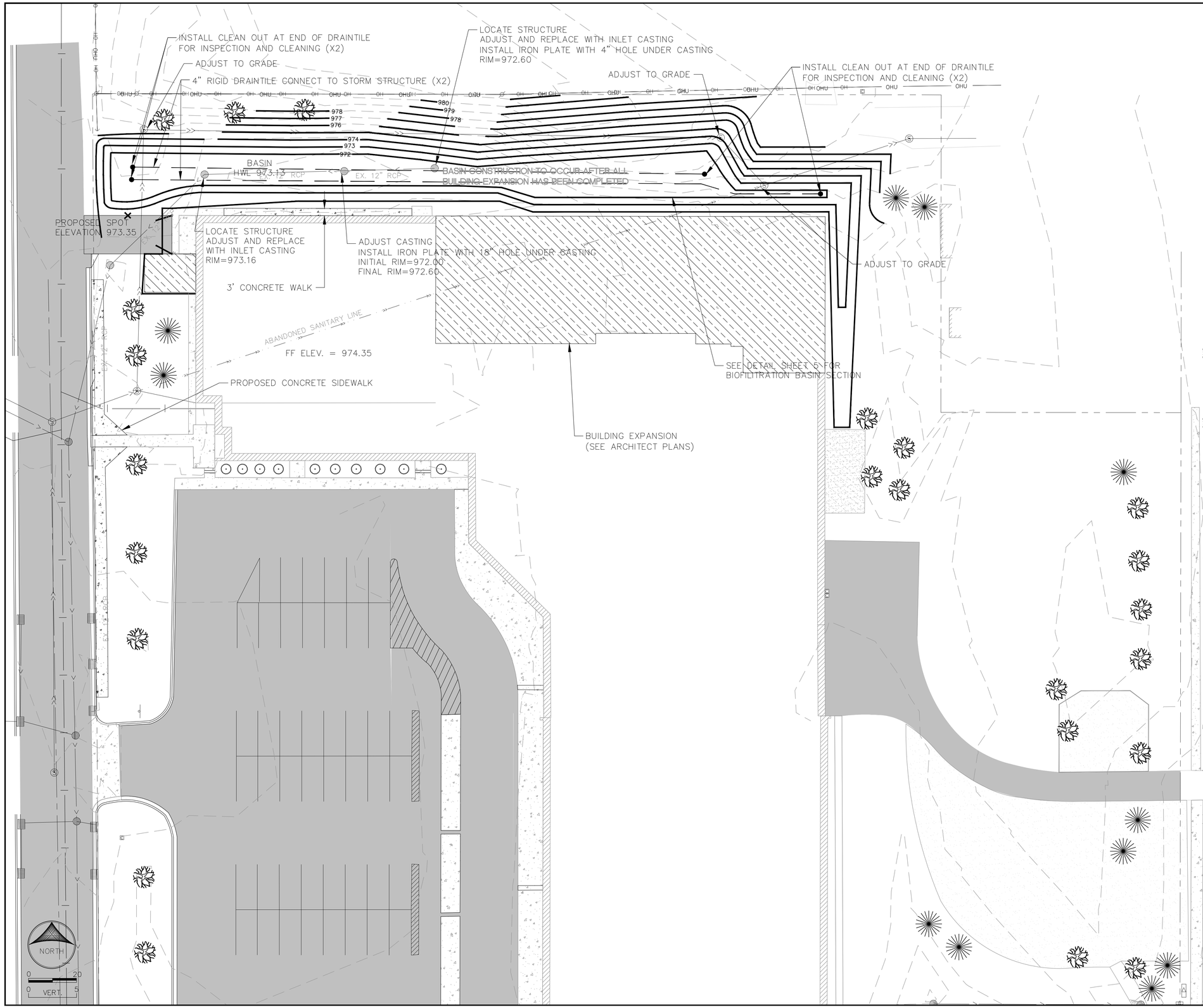
CHAPEL HILL ACADEMY

EXISTING CONDITIONS AND REMOVALS

DESIGNED BY: LWE
APPROVED BY: LWE
DRAWN BY: ANA
JOB NUMBER: 900034E
CAD DATE: 09/03/15
CAD FILE: ../LAND/EXISTING

SHEET

2



LEGEND

- EXISTING BITUMINOUS, SEE DETAIL
- EXISTING CONCRETE, SEE DETAIL
- NEW CONCRETE

GENERAL NOTES

1. CONTRACTOR SHALL INSPECT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS RELATING TO THE NATURE AND SCOPE OF THE WORK.
2. CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
3. THE EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE ARISING OUT OF THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
4. CONTRACTOR TO SALVAGE EXISTING TOPSOIL FOR REUSE ON SITE.
5. CONTRACTOR TO INSTALL CONCRETE SPLASH BLOCK AT ALL DOWNSPOUT LOCATIONS.
6. SEE SHEET 4 OF THE PLANS FOR ALL EROSION CONTROL AND LANDSCAPING NOTES THAT MUST BE ADHERED TO.

INFILTRATION BASIN NOTES

1. THE BIOFILTRATION AREA SHALL NOT BE CONSTRUCTED UNTIL ALL WORK IS COMPLETED ON THE NORTH BUILDING EXPANSION. COMPACTION OF SOILS IN THAT AREA FROM CONSTRUCTION ACCESS AND STAGING ACTIVITIES MUST BE MITIGATED BY RIPPING THE SOIL A MINIMUM OF 2 FEET BELOW THE LOWEST EXCAVATED ELEVATION AND VERIFIED WITH TESTING.
2. SEE DETAIL SHEET FOR BIOFILTRATION BASIN PLANTING SOIL AND SAND REQUIREMENTS.
3. AS NOTED ON THE PLAN THE OUTLET STORM STRUCTURE IN THE BIOFILTRATION BASIN SHALL INITIALLY BE SET AT THE BOTTOM OF THE POND (972.00) AFTER VEGETATION IS ESTABLISHED IN THE BASIN THE STRUCTURE SHALL BE ADJUSTED TO 872.60.

NO.	DATE	BY	REVISION DESCRIPTION
1	04/18/22	LWE	ADDRESS WATERSHED COMMENTS

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.

SIGNATURE _____ DATE 04/18/22

PRINTED NAME LEE W. ELFERING LIC.NO. 41613

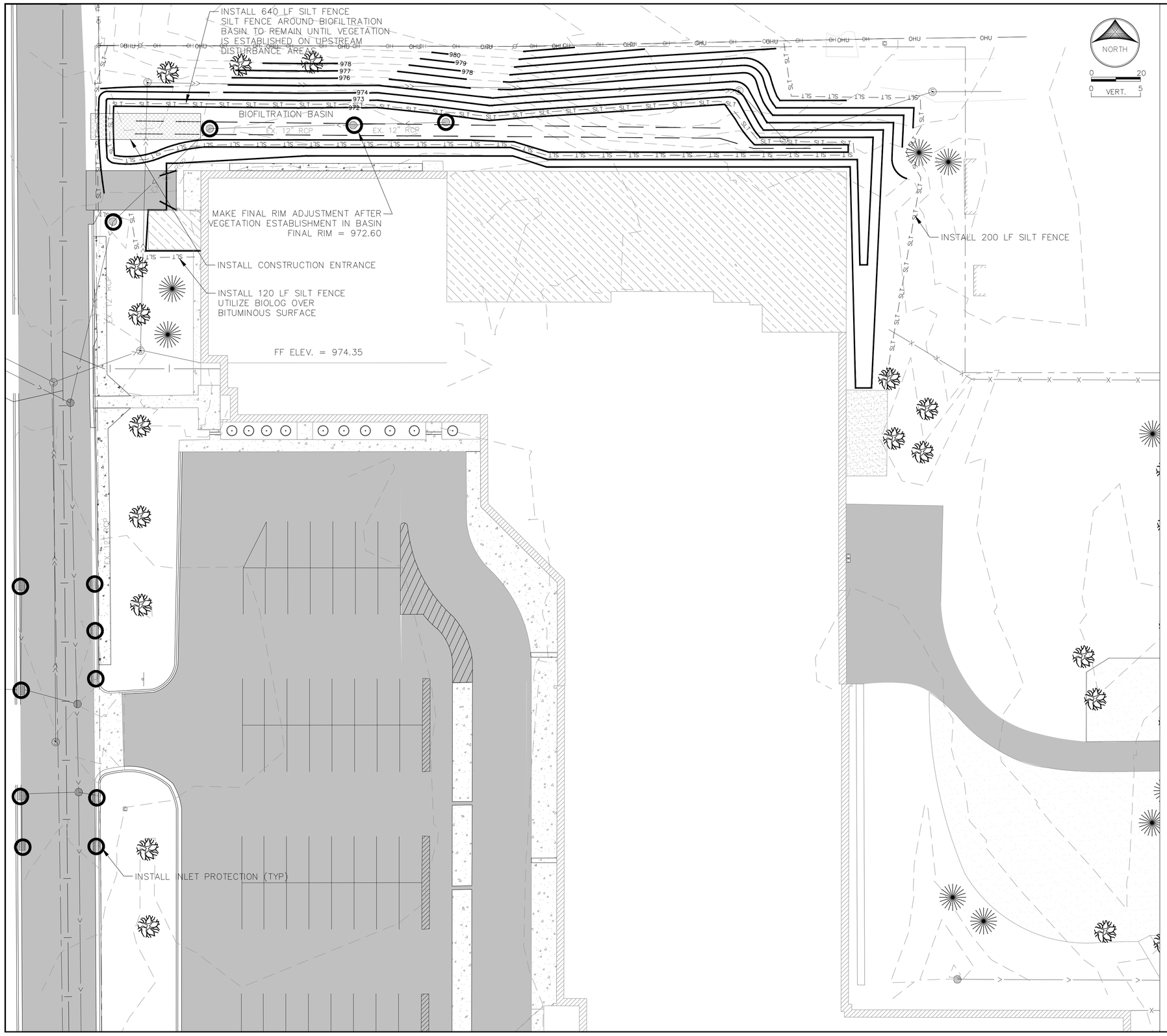
CHAPEL HILL ACADEMY

PROPOSED

DESIGNED BY: LWE
APPROVED BY: LWE
DRAWN BY: ANA
JOB NUMBER: 900034E
CAD DATE: 09/03/15
CAD FILE: /LAND/PROPOSE

SHEET

3



LEGEND

- EXISTING BITUMINOUS, SEE DETAIL
- EXISTING CONCRETE, SEE DETAIL
- NEW CONCRETE
- SLT — SILT FENCE
- INLET PROTECTION

GENERAL NOTES

1. NATURAL TOPOGRAPHY AND SOIL CONDITIONS MUST BE PROTECTED, INCLUDING RETENTION ONSITE OF NATIVE TOPSOIL TO THE GREATEST EXTENT POSSIBLE.
2. CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
3. THE EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE ARISING OUT OF THE FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES.
4. THE BIOFILTRATION AREA SHALL BE USED AS A STAGING AREA FOR CONSTRUCTION. COMPACTION OF SOILS IN THAT AREA MUST BE MITIGATED BY RIPPING THE SOIL A MINIMUM OF 2 FEET BELOW THE LOWEST EXCAVATED ELEVATION.
5. CONSTRUCTION SITE WASTE MUST BE PROPERLY MANAGED, SUCH AS DISCARDED BUILDING MATERIALS, CHEMICALS, LITTER, AND SANITARY WASTE AT THE CONSTRUCTION SITE.

EROSION CONTROL NOTES

1. INSTALL PERIMETER EROSION CONTROL AT LOCATIONS SHOWN ON THE PLAN AND AS DIRECTED BY THE ENGINEER OR CITY PRIOR TO COMMENCEMENT OF ANY LAND DISTURBING ACTIVITIES.
2. BEFORE BEGINNING CONSTRUCTION, INSTALL A TEMPORARY ROCK CONSTRUCTION ENTRANCE AT EACH POINT WHERE VEHICLES EXIT THE CONSTRUCTION SITE THAT IS NOT A PAVED SURFACE. USE 2-INCH OR GREATER DIAMETER ROCK IN A LAYER AT LEAST 6-INCHES THICK ACROSS THE ENTIRE WIDTH OF THE ACCESS AS SHOWN IN THE DETAIL.
3. MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES IN PLACE UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED. THE CONTRACTOR IS RESPONSIBLE FOR ALL STORM WATER AND EROSION INSPECTIONS. THE CONTRACTOR MUST INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL FACILITIES AND SOIL STABILIZATION MEASURES TO ENSURE INTEGRITY AND EFFECTIVENESS. THE CONTRACTOR MUST REPAIR, REPLACE OR SUPPLEMENT ALL NONFUNCTIONAL BMPs WITH FUNCTIONAL BMPs WITHIN 48 HOURS OF DISCOVERY AND PRIOR TO THE NEXXT PRECIPITATION ENIVENT UNLESS ADVERSE CONDITIONS PRECLUDE ACCESS TO TEH RELEVANT AREA OF THE SITE, IN WHICH CASE TEH REPAIR MUST BE COMPLETED AS SOON AS CONDITIONS ALLOW. WHEN ACTIVE LAND-DISTURBING ACTIVITIES ARE NOT UNDER WAY, THE CONTRACTOR MUST PERFORM THESE RESPONSIBILITIES AT LEAST WEEKLY UNTIL VEGETATIVE COVER IS ESTABLISHED. THE CONTRACTOR WILL MAINTAIN A LOG OF ACTIVITIES UNDER THIS SECTION FOR INSPECTION BY THE DISTRICT ON REQUEST.
4. TEMPORARY OR PERMANENTLY STABILIZE ALL CONSTRUCTION AREAS WHICH HAVE UNDERGONE FINAL GRADING , AND ALL AREAS IN WHICH GRADING ACTIVITIES ARE NOT ACTIVELY UNDERWAY AGAINST EROSION DUE TO RAIN, WIND, AND RUNNING WATER WITHIN 7-DAYS.
5. THE CONTRACTOR SHALL REMOVE ALL SOILS AND SEDIMENTS TRACKED OR OTHERWISE DEPOSITED ONTO PUBLIC AND PRIVATE PAVEMENT AREAS. REMOVAL SHALL BE ON A DAILY BASIS WHEN TRACKING OCCURS AND MAY BE ORDERED BY THE OWNER REPRESENTATIVES OR CITY AT ANY TIME. SWEEPING SHALL BE DONE IN A MANNER TO PREVENT DUST BEING BLOWN TO ADJACENT PROPERTIES.
6. ALL TEMPORARY EROSION AND SEDIMENT CONTROLS BMP'S MUST BE REMOVED UPON FINAL STABILIZATION.

RESTORATION NOTES:

1. DISTURBED GREEN AREAS OUTSIDE OF THE BIOFILTRATION BASIN SHALL RECEIVE AT LEAST SIX INCHES (6") OF TOPSOIL DURING FINAL SITE RESTORATION. AREAS SHALL THEN BE HYDROSEEDED, FERTILIZED, AND HYDRAULIC MULCHED. USE MNDOT SEED MIX 25-151 HIGH MAINTENANCE TURF AND MANUFACTURERS RECOMMENDED RATES AND TYPES FOR FERTILIZER AND MULCH DEPENDING ON SOIL CONDITIONS AND SLOPES.
2. THE TOPSOIL SHALL CONSIST OF CLAY, SILT, AND SAND IN PROPORTIONS CONDUCIVE TO PROMOTION OF ROOT PENETRATION AND PLANT GROWTH. IT MUST HAVE A MINIMUM OF 5% ORGANIC MATTER.
3. ANY SOIL SURFACES COMPACTED DURING CONSTRUCTION AND REMAINING PERVIOUS UPON COMPLETION OF CONSTRUCTION MUST BE DECOMPACTED TO ACHIEVE A SOIL COMPACTION TESTING PRESSURE OF LESS THAN 1,400 KILOPASCALS OR 200 POUNDS PER SQUARE INCH IN THE UPPER 12 INCHES OF THE SOIL PROFILE WHILE TAKING CARE TO PROTECT UTILITIES, TREE ROOTS, AND OTHER EXISTING VEGETATION. TEST RESULTS MUST BE PROVIDED TO DOCUMENT THE COMPLIANCE OF THIS REQUIREMENT.
4. BIOFILTRATION BASIN TO BE SEEDED, FERTILIZED, AND HYDRAULIC MULCHED. USE MNDOT SEED MIX 35-241 MESIC PRAIRIE GENERAL AND MANUFACTURERS RECOMMENDED RATES FOR FERTILIZER AND MULCH.
5. AS NOTED ON THE PLAN THE OUTLET STORM STRUCTURE IN THE BIOFILTRATION BASIN SHALL INITIALLY BE SET AT THE BOTTOM OF THE POND (972.00) AFTER VEGETATION IS ESTABLISHED IN THE BASIN THE STRUCTURE SHALL BE ADJUSTED TO 872.60.

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SIGNATURE Lee W. Elfering DATE 04/18/22

PRINTED NAME LEE W. ELFERING LIC.NO. 41613

CHAPEL HILL ACADEMY

EROSION CONTROL AND LANDSCAPE

DESIGNED BY: LWE
APPROVED BY: LWE
DRAWN BY: ANA
JOB NUMBER: 900034E
CAD DATE: 09/03/15
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SHEET

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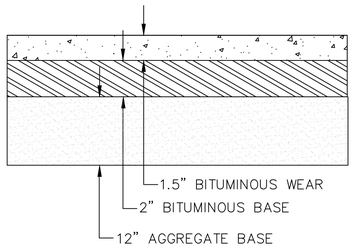
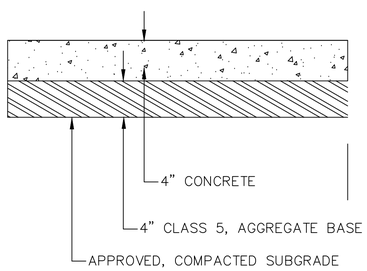
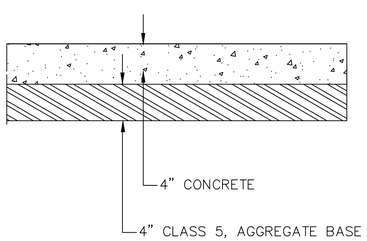


DUMPSTER ACCESS SECTION

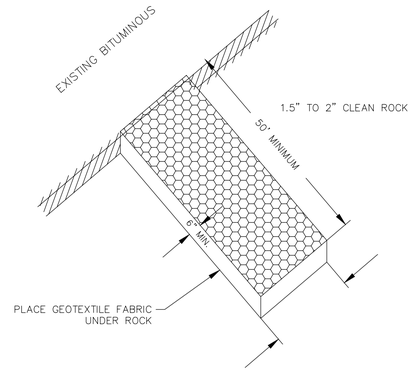


CONCRETE SIDEWALK

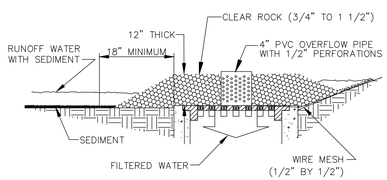


THICKEN SIDEWALK SECTION TO 6" AGGREGATE BASE AND 6" CONCRETE ACROSS DUMPSTER ACCESS

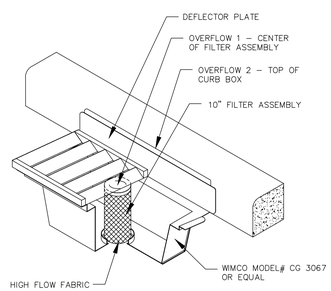
SIDEWALK SECTION



ROCK CONSTRUCTION ENTRANCE

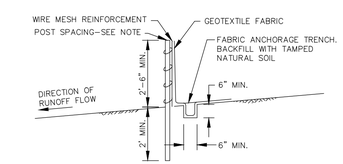


CATCH BAIN W/O CASTING SEDIMENTATION BARRIER



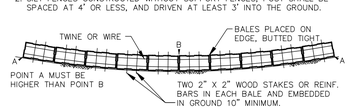
CATCH BASIN INLET PROTECTION WITH CASTING

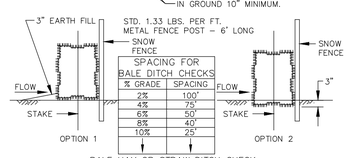
CATCH BASIN INLET PROTECTION



SILT FENCE DETAIL

NOTE:
1. SILT FENCES CONSTRUCTED WITH SUPPORT FENCES, POSTS SHALL BE SPACED AT 10' OR LESS, AND DRIVEN AT LEAST 2' INTO THE GROUND.
2. SILT FENCES CONSTRUCTED WITHOUT SUPPORT FENCES, POST SHALL BE SPACED AT 4' OR LESS, AND DRIVEN AT LEAST 3' INTO THE GROUND.





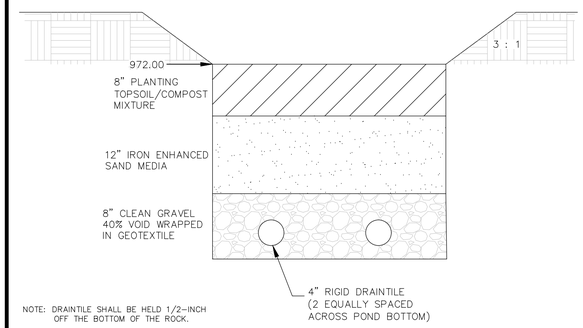
SPACING FOR BALE DITCH CHECKS	
% GRADE	SPACING
2%	100'
4%	75'
6%	50'
8%	40'
10%	25'

BALE HAY OR STRAW DITCH CHECK

TO BE USED WITH SNOW FENCE AT LOCATIONS AS SHOWN ON PLAN SHEETS. ALSO TO BE USED WITH OR WITHOUT SNOW FENCE AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER.

REV: 3/2006

EROSION CONTROL DETAIL



NOTE: DRAINTILE SHALL BE HELD 1/2–INCH OFF THE BOTTOM OF THE ROCK.

TOPSOIL/COMPOST MXTURE

A. THE PLANTING TOPSOIL/COMPOST MIXTURE TOPSOIL USED IN THE BIOFILTRATION BASIN SHALL CONSIST OF 3 PARTS TOPSOIL (6") WITH 2 PARTS COMPOST (4") UNIFORMLY MIXED PRIOR TO PLACEMENT. (IT IS ASSUMED THAT MIXING 6" OF TOPSOIL WITH AN EQUIVALENT 4" OF COMPOST WILL RESULT IN A DEPTH AFTER PLACEMENT OF 8 INCHES DUE TO COMPRESSION OF THE COMPOST. COMPOST MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT STANDARD SPECIFICATIONS 3890 FOR GRADE 2 COMPOST.

SAND MEDIA

A. SAND MEDIA SHALL BE COMPOSED OF 95% SAND/ 5% STEEL FIBER (BY WEIGHT)
B. THE SAND SHOULD HAVE LESS THAN 40% OF THE PARTICLES BY WEIGHT PASSING A NUMBER 40 SIEVE AND LESS THAN 5% OF THE PARTICLES BY WEIGHT PASSING A NUMBER 200 SIEVE.
C. NO CROSS–CONTAMINATION OF FOREIGN MATERIALS OR SOILS INTO THE SAND/STEEL FIBER MIXTURE MAY OCCUR PRIOR TO PLACEMENT.
D. THE SAND AND STEEL FIBER MAY BE MIXED BY THE CONTRACTOR PROVIDED THE ENGINEER IS ALLOWED TO OBSERVE ALL MIXING OPERATIONS AND ENGINEER IS ALLOWED TO OBTAIN SAMPLES OF THE MATERIAL AND VERIFY QUALITY CONTROL.
E. NO MIXING WITHIN THE EXCAVATION AREA SHALL OCCUR.
F. PRIOR TO PLACEMENT IN THE EXCAVATED TRENCH, SAND/STEEL FIBER MIXTURE SHALL BE UNIFORMLY AND COMPLETELY MIXED TO CONTAIN A MINIMUM OF 5% AND MAXIMUM OF 6% STEEL FIBER BY WEIGHT.
G. SAND/STEEL FIBER STOCKPILE SHALL NOT EXCEED 5 FEET IN ORDER TO KEEP STOCKPILE AERATED.
H. SAND/STEEL FIBER MIXTURE SHALL NOT BE PLACED UNTIL ENGINEER APPROVES MIXTURE. THIS APPROVAL MAY TAKE UP TO 7 DAYS AFTER MIXING IF LABORATORY TESTS ARE NECESSARY. CONTRACTOR SHALL ALLOW FOR THIS TIME GAP IN ITS SCHEDULING OF WORK.

PRODUCTS

STEEL FIBER
STEEL FIBER (SPEC ETI CC–1004) SHALL BE PROVIDED BY CONNELY–GPM, INC., 3154 SOUTH CALIFORNIA AVENUE, CHICAGO, IL, 60608–5176; PHONE (773) 247–7231, OR ENGINEER–APPROVED EQUIVALENT, AND BE COMPLETELY MIXED/BLENDED INTO THE SAND. THE MIXTURE STEEL FIBER AND SAND SHALL CONSIST OF A MINIMUM OF 5% AND A MAXIMUM OF 6% STEEL FIBER, BY WEIGHT. THE CONTRACTOR SHALL SUBMIT A GRAIN SIZE ANALYSIS OF THE SPECIFIC PRODUCT FROM A TESTING FACILITY TO CERTIFY THAT SIEVE SIZE REQUIREMENTS (BY WEIGHT) ARE MET BEFORE SHIPMENT TO THE SITE. ENGINEER MAY REQUIRE FURTHER TESTING IF VISUAL INSPECTION SUGGESTS GRADATION VARIES FROM DELIVERED PRODUCT.

SIEVE SIZE	PERCENT PASSING
#4	100%
#8	95–100%
#16	75–90%
#30	25–45%
#50	0–10%
#100	0–10%
#200	0–5%

WASHED SAND
A. SHALL BE A FINE AGGREGATE OF NATURAL SAND WASHED AND FREE OF ANY ORGANIC IMPURTIES AND MEETING THE REQUIREMENTS OF MNDOT STANDARD SPECIFICATIONS 3126.2 FOR FINE AGGREGATE.
B. GRADATION REQUIREMENTS

SIEVE SIZE	PERCENT PASSING
#3/8"	100%
#4	95–100%
#8	80–100%
#16	55–85%
#30	30–60%
#50	5–30%
#100	0–10%
#200	0–2.5%

C. THE CONTRACTOR SHALL SUBMIT A GRAIN SIZE ANANLYSIS OF THE SPECIFIC PRODUCT FROM A TESTING FACILITY TO CERTIFY THAT SIEVE SIZE REQUIREMENTS (BY WEIGHT) ARE MET BEFORE SHIPMENT TO THE SITE.

BIOFILTRATION BASIN

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CHAPEL HILL

DETAILS

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APPROVED BY: LWE
DRAWN BY: ANA
JOB NUMBER: 900067E
CAD DATE: 02/22/22
CAD FILE: Detail.dwg

SHEET

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