

Permit Application Review

Permit No. 2018-143
Received complete: February 12, 2019

Applicant: Alfred Korpela; Old Apostolic Lutheran Church
Consultant: Greg Halling; Halling Engineering
Project: Building Addition for the Church
Location: 5617 Rowland Road: Minnetonka
Rule(s): 3,4,5,10,11 and 12
Reviewer: BCO

General Background & Comments

The project proposes the construction of a 3,050 square foot building addition, dining room and Sunday school rooms, to the existing church building located at 5617 Rowland Road. The church was constructed in 1985. Fill material was imported to the corner of the wetland complex located northeast of the intersection of Rowland Road and the Chicago Milwaukee St. Paul and Pacific railroad (prior to the Wetland Conservation Act) for the construction of the church and surface parking areas. The fill material was compacted to meet required structural foundation standards for the building and surface parking resulting in the fill material having a very low permeability, similar to clay. Compacted soil is typically not conducive for volume retention through infiltration and typically precludes retention to the standard in District Rule 4.3.1b. This is verified by the geotechnical report provided by the applicant showing high blow counts in the borings taken throughout the site. Soils with an infiltration rate of 0.06 inches/hour require a significantly large area for compliance with the District's volume retention requirements. The site qualifies as a Restricted Site (under Rule 4.3.2). Rule 4.3.2 requires retention of at least 0.55 inches of runoff from the regulated impervious surface, rate control, on-site, and water quality management complying with the requirements of section 4.3.1b and c of the revised rules

The wetland complex to the north and east of the church site currently extends to the limits of the imported fill material. No impacts to the wetland are proposed, however the District's wetland buffer requirements, Rule 3.4 will apply. Existing buffers have established themselves to the limits of the original fill area. In addition, the South Fork of Nine Mile Creek also flows through this wetland complex. The closes point between the site between the site and the creek is approximately 150 feet. Again, no fill or impacts below the 900 M.S.L. 100-year flood elevation of the creek are proposed.

The project site information is:

- Total Site Area: 6.92 acres
- Existing Total Site Impervious Area: 2.66 acres (116,000 square feet)
- Proposed Site Impervious Area: 116,000 square feet
- Increase in Site Impervious Area: 0 square feet
- 0% increase in the percentage of site impervious area
- Existing impervious area disturbed and reconstructed: 3,050 square feet
- 2.6% of the existing site impervious area will be disturbed and reconstructed

The Nine Mile Creek Watershed District's Rule for Redevelopment, Rule 4.2.3, states, if a proposed activity will disturb more than 50% of the existing impervious surface on a parcel or will increase the imperviousness of the parcel by more than 50%, storm water management will apply to the entire project parcel. Otherwise, the storm water requirements will apply only to the disturbed areas and additional impervious area on the parcel. Since there is no new impervious area proposed and the area to be disturbed is impervious (sidewalks, parking lot, a portion of the existing building) and will be reconstructed as impervious, storm water management is required for the 3,050 square feet of disturbed and reconstructed impervious area.

The District's requirements for both storm water management and erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed, Rules 4.2.1a and 5.2.1a.

Volume retention, rate control and water quality management will be provided within a bio-filter basin. The basin is a swale being approximately 60 feet long, 10 feet wide and will consist of 24-inches of bio-filter media over 10-inches of clear rock. A 4-inch PCV pipe will be installed providing a minimum 0.24 feet of inundation depth for compliance with the District's stormwater management requirements.

There are two variances requested for the project; 1) compliance with Rule 3.4 – Wetland buffers and 2) compliance with Rule 4.3.3 requiring no opening where surface water can enter a structure being less than two feet above the 100-year high water elevation of an adjacent facility or water body.

Silt fence and sediment logs are to be installed to provide erosion control.

Exhibits

1. Permit Application dated December 28, 2018.
2. Plans dated December 26, 2018 prepared by Halling Engineering.
3. Storm Water Management Technical Memo and calculations dated December 27, 2018 and revised February 12, 2019, prepared by Halling Engineering.
4. Geotechnical Report dated December 20, 2018 prepared by Northern Technologies Inc.
5. E-mail correspondence dated January 4, 2019 summarizing 4 items that needed to be addressed/submitted for the application to be complete.

The project submittal is complete.

2.0 Floodplain Management and Drainage Alterations

As previously stated, the 100-year flood elevation of the South Fork of Nine Mile Creek riparian to the site is 900 M.S.L. The project work includes no additional fill or impacts below the 100-year flood elevation of the creek. Rule 2.0 is not triggered.

3.0 Wetlands Management

The existing site is surrounded by a medium value wetland complex. The medium value was determined using the Minnetonka Wetland Inventory (1991 which includes a modified MnRAM Assessment, the NWI mapping and a review of aerial photographs. Photographs reviewed from 1953 and subsequently 1989 show that a portion of the wetland was filled for the church construction – the church was constructed in 1985 prior to the Wetland Conservation Act. The existing wetland extends to the limits of the fill section within 10 feet +/- of the back of curb of the parking lot. The area between the wetland and parking lot is either landscaped or left as natural. The project does not propose any construction activities within the wetland however the bio-filtration basin to be constructed for compliance with the requirements of Rule 4.3.1 (Stormwater management) is to be located between the parking lot and the wetland. The location of the BMP is within the area of the fill section. The City of Minnetonka has required a Conservation Easement over all areas of the site that are beyond the limits of the existing parking lot – to the back of the existing curb. The applicant has requested a variance from compliance with the required wetland buffer widths in District Rule 3.4.1b and is further discussed in the paragraphs for Rule 10.0, Variances and Exceptions.

4.0 Stormwater Management

Stormwater management, volume retention, rate control and water quality management will be provided within a bio-filter basin consisting of 24-inches of bio-filter media over 10-inches of clear rock. A 4-inch PCV pipe will be installed providing a minimum 0.24 feet of inundation depth for compliance with the District's stormwater management requirements

The no increase in the site impervious area will not increase the rate of runoff leaving the site. The proposed on-site stormwater management will however reduce the rate of runoff being generated from the site. There is one discharge point from the site that will be influenced by the project and the following table provides a comparison of the existing and proposed 2, 10 and 100 year frequency discharges from this point:

Frequency	Existing Discharge to the Wetland c.f.s.	Proposed Discharge to the Wetland c.f.s.
2 year	7.0	6.9
10 year	11.7	11.5
100 year	22.1	21.6

The existing discharge from the other locations on the site will not be affected by the project and will not change from existing conditions. Rule 4.3.1b is met.

The applicant has submitted information in support of a finding that the site qualifies as restricted under subsection 4.3.2 of the NMCWD rules. Given the subsurface conditions, as summarized above, the NMCWD engineer concurs that infiltration would require a significant area to comply with the requirements of section 4.3.1a of the District rules and because the area available for volume retention is entirely in the area of compacted fill or wetland site qualifies as restricted. The area available is located between the parking lot and the wetland and is limited. Under 4.3.2a, an infiltration volume of 140 cubic feet would be required from the 3,050 square feet of reconstructed site impervious area using a runoff of 0.55-inches from the impervious area (Rule 4.3.2a). The proposed bio-filtration basin will provide 160 cubic feet of retention volume with an inundation depth of 0.24 feet and an inundation area of 620 square feet. With the soils being similar to a Type D (clay), a maximum depth of 0.24 feet of inundation within the basin allows for the volume retained to be drawn down within 48 hours, Rule 4.3.1a (ii).

The District's water quality criterion requires a 60% annual removal efficiency for phosphorus and 90% annual removal efficiency for total suspended solids. The results of a MIDS calculator submitted indicate the bio-filtration basin provides an annual removal efficiency of 92% for total suspended solids (23.9 lbs.) and an annual removal efficiency of 76% for total phosphorus (0.11 lbs.). Rule 4.3.1c is met.

The geotechnical information submitted indicates that groundwater was encountered at a depth of 8 feet, elevation 894.5 M.S.L. The bottom of the bio-filtration basin is 897.8 M.S.L., a separation of 3.3 feet. A three (3) foot separation is required between the bottom of an infiltration facility and groundwater.

Rule 4.3.3c states, all new and reconstructed buildings must be constructed such that the low floor is at least two feet above the 100-year high water elevation or one foot above the emergency overflow of a constructed facility. As an alternate an applicant may site a stormwater management facility relative to a new or reconstructed building at a location in accordance with Appendix 4a, "Low-Floor Elevation Assessment." Referring to Plot 1, Appendix 4A of the District Rules with the depth to groundwater being 8.5 feet from the low floor elevation of the existing church building (elevation 903 M.S.L.) the minimum distance required between the building and the bio-filtration basin is 45 feet. The plans provided show that a distance of 135 feet will be provided. Rule 4.3.3 is met.

District Rule 4.3.3 states that all new and reconstructed buildings must be constructed such that no opening where surface water can enter the structure is less than two feet above the 100-year high water elevation of an adjacent facility or waterbody. The plan indicates the existing entrances to the lower level of the church are at elevation 903 M.S.L. The high water elevation of the bio-filtration basin is 901.8 M.S.L., a separation of 1.2 feet. The overflow from the basin will flow down the curb line of the existing eastern parking lot and enter a catch basin at elevation 901.0 M.S.L. This system discharges into the wetland, way from the church building. Since the minimum of 2 feet of separation is not provided as required by paragraph

4.3.3, a variance from this requirement is being requested. This is further discussed in the paragraphs of Rule 10.

In accordance with Rule 4.3.1a (i), the pre-treatment of runoff prior to the infiltration area will be provided by the rain guardian structure to be installed at the curb inlet from the parking to the bio-filtration basin.

In accordance with Rule 4.3.4, a post-project chloride management plan must be provided that will, 1) designate an individual authorized to implement the chloride-use plan and 2) designate a MPCA certified salt applicator engaged in the implementation of the chloride-use plan for the site.

5.0 Erosion and Sediment Control

The erosion and sediment control plan submitted includes silt fence and sediment logs at the limits of construction. The project contact is Greg Halling, Halling Engineering.

10.0 Variances and Exceptions

A variance request for compliance with Rule 3.4.1b and 4.3.3 (attached) has been prepared by Halling Engineering on behalf of the applicant to address Rules 10.1-10.4. The variance request is for compliance with the required wetland buffer requirements from the wetland boundary of the riparian wetland. The location of the existing church parking lot does not comply with the minimum 20 foot buffer in several location or the average 40 foot buffer for the majority of the site. This existing condition will not change as a result of the project.

As previously stated, the existing wetland buffer has established itself to the limits of the fill section that is within 10 +/- feet of the back of the existing parking lot curb. The City of Minnetonka has required a Conservation Easement be provided for all areas of the site that are outside of the limits of the church parking lot.

The variance request is also for a shortfall from compliance with the section of Rule 4.3.3 stating that the opening where surface water can enter a structure is less than two feet above the 100-year high water elevation of an adjacent facility or water body. The 100-year high water elevation of the bio-filtration basin is 901.8 M.S.L. and the low entrances to the existing building are at elevation 903 M.S.L., a separation of 1.2 feet. Should an overflow from the basin result from a storm event greater than the 100-year event, the water will be directed along the existing parking lot curb line to a catch basin inlet structure at elevation 901 M.S.L. This system discharges into the existing wetland rather than being directed towards the church building.

The engineer finds that the risk of flooding of the church facility is minimized by the routing of stormwater notwithstanding the shortfall from the 2-foot outlet freeboard requirement and what risk remains is borne by the applicant. If inclined to approve the variance, the managers may wish to consider options for record affirmation by the applicant of assumption of the risk from the shortfall.

11.0 Fees

Fees for the project are:

Rules 2.0-6.0	\$1,500
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12.0 Financial Assurances

Financial Assurances for the project are:

Rule 4.0 Volume Retention: 583 sq. ft. x \$12/sq. ft. = \$6,996	\$6,996
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Chloride Management:	\$5000
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Rule 5: Silt fence: 140 L.F. x \$2.50/L.F. = \$350	
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Sediment log: 150 L.F. x \$5/L.F. = \$750	
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Site restoration: 0.1 acres x \$2500/ acre = \$250	\$1,350
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Contingency and Administration	\$3,654
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Findings

The proposed project includes the information necessary, plan sheets and erosion control plan, for review.

1. Rules 4 and 5 are met.

The applicant is requesting a variance from compliance with Rule 3.4.1b and 4.3.3, buffer setback requirements and the two foot elevation separation between the low structure entry and the 100-year flood elevation of a stormwater facility, as applied to the project.

The existing site conditions for both variance requests are a result of site development pre-2008 rules of the District.

Recommendation

If the managers determine to grant the variance, the engineer recommends approval of the remaining terms of the permit, contingent upon:

1. General Conditions
2. Financial Assurance in the amount of \$17,000 - \$12,000 for stormwater management, erosion control and site restoration and \$5,000 for compliance with the chloride management requirements.
3. Submission of documentation that a drainage easement over the stormwater-management facility has been submitted to Minnetonka (4.5.4i), if such easement is required by the city.
4. A receipt showing recordation of a maintenance declaration for the on-site storm water management facility and wetland buffer. A draft of the declaration must be approved by the District prior to recordation.

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

1. Per Rule 4.5.6, an as-built drawing of the storm water facilities, including a stage-volume relationship in tabular form, for the bio-filtration basin conforming to the design specifications as approved by the District must be submitted.

2. Submission of a plan for post-project management of Chloride use on the site. The plan must include 1) the designation of an individual authorized to implement the chloride use plan and 2) the designation of a Minnesota Pollution Control Agency certified salt applicator engaged in the implementation of the chloride-use plan for the site. The release of the \$5,000 of the financial assurance required for the chloride-management plan requires that chloride-management plan has been provided and approved by the District's Administrator.
3. For the release of the \$12,000 financial assurance required in Recommendation #2, Rule 12.4.1b requires demonstration and confirmation that the storm water management facilities have been constructed or installed and are functioning as designed and permitted. Verification, through daily observation logs and photographs, must be provided showing the storm water facilities used for volume retention have drawn down within 48 hours from the completion of two 1-inch (approximate) separate rainfall events.
4. Buffer markers installed in accordance with Rule 3.4.5.

Board Action

It was moved by Manager _____, seconded by Manager _____ to approve permit application No. 2018-143 with the conditions recommended by staff.

Permit #: 2018-143
Project Name: Building Addition – Old Apostolic Lutheran Church: Minnetonka
Approval Date: February 20, 2019

General Provisions

1. All temporary erosion control measures shown on the erosion and sedimentation control plans must be installed prior to commencement of surface or vegetation alteration and be maintained until completion of construction and vegetation is established as determined by NMCWD.

If silt fence is used, the bottom flap must be buried and the maximum allowable spacing between posts is 4-foot on center. All posts must be either 2-inch x 2-inch pine, hardwood, or steel fence posts. If hay bales are used, all bales must be staked in place and reinforced on the downstream side with snow fence.

2. All areas altered because of construction must be restored with seed and disced mulch, sod, wood fiber blanket, or be hard surfaced within two weeks after completion of land alteration and no later than the end of the permit period.
3. Upon final stabilization, the permit applicant is responsible for the removal of all erosion control measures installed throughout the project site.
4. At the entryway onto the site, a rock filter dike being a minimum of two feet in height and having maximum side slopes of 4:1 must be constructed. This rock filter dike will enable construction traffic to enter the site and also provide an erosion control facility.
5. If dewatering is required and sump pumps are used, all pumped water must be discharged through an erosion control facility prior to leaving the construction site. Proper energy dissipation must be provided at the outlet of the pump system.
6. The NMCWD must be notified a minimum of 48 hours prior to commencement of construction.
7. The NMCWD, its officers, employees and agents review, comment upon, and approve plans and specifications prepared by permit applicants and their consultants for the limited administrative purpose of determining whether there is reasonable assurance that the proposed project will comply with the regulations and criteria of the NMCWD. The determination of the NMCWD that issuance of this permit is appropriate was made in reliance on the information provided by the applicant.
8. The grant of this permit shall not in any way relieve the permittee, its engineer, or other professional consultants of responsibility, nor shall it make the NMCWD responsible for the technical adequacy of the engineer's or consultant's work. The grant of this permit shall not relieve the permittee from complying with all conditions and requirements of the permit which shall be retained by the permittee with the permit.
9. The issue of this permit does not convey any property rights in 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.
10. This permit is permissive only. No liability shall be imposed upon the NMCWD or any of its officers, agents or employees, officially or personally, on account of the granting of this permit or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors.

11. In all cases where the doing by the permittee of anything authorized by this permit shall involve 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, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all necessary property, rights, and interest.
12. The permit is transferable only with the approval of the NMCWD (see NMCWD Rule 1.0). The permittee shall make no changes, without written permission previously obtained from the NMCWD, in the dimensions, capacity, or location of any items of work authorized by this permit.
13. The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the NMCWD for inspection of the work authorized by this permit.
14. This permit may be terminated by the NMCWD at any time deemed necessary in the interest of public health and welfare, or for violation of any of the provisions of this permit.
15. Construction work authorized under this permit shall be completed on or before date specified above. The permittee may, in writing, request that the NMCWD extend the time to complete the project in accordance with NMCWD Rule 1.0.



Permit No.2018-143

Is hereby issued to Alfred Korpela Old Apostolic Lutheran Church, subject to the conditions specified in the attached form:

For the construction of a building addition to Old Apostolic Lutheran Church located at 5617 Rowland Road in Minnetonka.

Steve Kloiber, Chair
Nine Mile Creek Watershed District

This permit expires on: March 1, 2020

Halling Engineering, Inc.

3727 E 255th Street • Webster, MN 55088 • Phone: 952-440-1680

To: Nine Mile Creek Watershed District Managers

Re: Proposed addition to the Old Apostolic Lutheran Church, Minnetonka, MN

Date: December 27, 2018 Amended February 12, 2019

From: Gregory R. Halling, PE Lic No. 12783

I have examined the past grading plans for potential areas to construct an infiltration basin to meet the district's rules for infiltrating 1.1 inch of runoff on the newly constructed impervious areas for this project. Including the oversizing for the foundation excavation, I have estimated that we will be constructing up to 3,350 square feet of new impervious area (this includes existing impervious being replaced as well as new). There will be up to 700 square feet of new impervious where there was none before. There are three potential areas where we can get enough stormwater to it that should be above the water table for this area. The three areas are between the church and the railroad tracks, a landscape area north of the addition, and near the catch basin in the SW corner of the parking lot up front. I reviewed the soil survey which shows that the hill where the church is located was a granular material that should be good for infiltration. I observed soil borings in all three areas and found that all of the areas had been cut and backfilled with a predominately clayey sand soil. However, in all locations the soil has poor structure and is severely compacted. All three of these areas are above the lowest opening of the church which violates district rules.

A large portion of the parcel was wetland and extensive grading was done to fill these wetlands for this church in 1985. The good granular was used to fill in the wetlands prior to adding the fill that had more fines. In order to get good compaction in a wetland it is necessary to fill with clean granular soil first and the good granular soil on the site was used for this purpose. There was a 6" layer of loamy sand encountered between the church and the RR tracks at a depth of 6' and we considered digging a deep trench and backfilling with a clean sand to try to create a trench that would infiltrate. However, after consulting with other church members, concern was brought to my attention that there is a high potential for a sand seam to direct water to the church foundation which is 14' below grade along the RR tracks. So this location has been deemed to be unsuitable for an infiltration basin. The boring between the catch basin and the RR tracks in front encountered groundwater (probably perched water) approximately 2.5 feet below the top of the catch basin. This confirmed the severe compaction of the fill as there is very little grass area that infiltrates in this area but the water is not moving downward at an acceptable rate. Therefore this area was also dismissed as being suitable for an infiltration basin. The soil boring SB-1 by AET shows 6.5' of silty and clayey sand fill with a clayey sand below that elevation with wet soil encountered at an elevation of 900 and a water table at 898. Relatively high

blow counts of 11 at 10' +/- depth along with the clayey sand is not suitable for infiltration working here either. These soils have more than 12% passing the 200 sieve. Blow counts of 11 are considered as medium dense or rather stiff. AET indicates that the clayey sands are relatively impervious.

So the next best alternative is to collect an area of the parking lot and construct a biofiltration basin to treat the runoff and to keep the existing runoff rates from increasing for the 2, 10 and 100 year storm. Also by treating more than 8 times the new impervious area, we are reducing the sediment and phosphorus load from the parking lot to the wetland and ultimately 9 mile creek significantly. The only location that works for the basin grade wise is shown on the plans. Other areas are too low to construct a proper biofilter or too high to catch any runoff.

Because of the impervious nature of the fill which has been encountered on the site, it is necessary to request a reduction in the infiltration to 0.55" of runoff over the new impervious. Using an infiltration rate of 0.06" per hour for a clay soil, we can accommodate this runoff under the draitile in the biofilter. Because the fill soils and compaction are so variable, we do not know the actual rate of the infiltration. We will scarify the soils below the basin to improve infiltration.

There are two variances from the rules that are needed for this project. The first one is the need to have the 100 year storm elevation in the basin above the lower level of the church. Section 4.3.3 and section 10 are attached for reference.

1. The district must find that because of unique conditions inherent to this property, undue hardship on the applicant, not mere convenience, will result from strict application of the rule.
 - a. Because much of the parking lot is above the lowest level of the church and the 100 year flood level in the wetland adjacent to the church is a relatively short distance below the lowest level, it is not possible to build a biofilter in accordance with district rules and the MN Stormwater Manual without violating section 4.3.3 of the rules. By building the biofilter as planned, the church will be directing storm water away from the church building that is currently flowing parallel to the exposed church lower level. The overflow for the basin will be towards the wetland and away from the building and there will be a high point between the 100 year elevation of the basin and the lower level of the church. The church has a need to build Sunday School rooms and it would be a great hardship to require the reconstruction of the church in order to meet district rules.
2. The district must find that the hardship was not created by the landowner and is unique to the property.
 - a. The church was built in 1985-1986 prior to any of the current rules being implemented. The best way to meet the current rules for water treatment and minimum volume infiltration is to build the biofilter in the location planned.
3. The district must find that the activity for which the variance is requested will not adversely affect water resources.
 - a. The planned location of the biofilter is situated where we will be able to capture and treat an area of parking lot runoff that is more than 8 times larger than the required area. This will help to greatly exceed the minimum required reduction in P and TSS.

4. The district must find that there is no feasible and prudent alternative to the proposed activity.
 - a. As noted in 1. It is not possible to build a biofilter without the 100 year flood elevation being within 2' of the lowest floor opening. The church is existing and we cannot change the floor elevation. The exterior doorways are required by fire code so we cannot remove doorways either.
5. We have attached a copy of a table from Appendix A which shows that the location of the biofilter will not be detrimental to the church.

The second variance is the width of the buffer as required in Section 3.4.

6. The district must find that because of unique conditions inherent to this property, undue hardship on the applicant, not mere convenience, will result from strict application of the rule.
 - a. The church was built in 1985-86 prior to the rules protecting wetlands and extensive wetlands were filled when the church was built. Therefore the buffers are primarily very narrow; sometimes only 10-15' wide and consist of slopes that were created with fill when the church was built. It would be a hardship to require the church to remove needed parking in order to create the required buffers.
7. The district must find that the hardship was not created by the landowner and is unique to the property.
 - a. The hardship was created with the new rules and is unique to this property.
8. The district must find that the activity for which the variance is requested will not adversely affect water resources.
 - a. The proposed building addition with the proposed biofilter will enhance water quality more than is the project was not built. Building this project and creating this buffer will enhance the protection of the water resource.
9. The district must find that there is no feasible and prudent alternative to the proposed activity.
 - a. There is no feasible way to increase the buffers more than what exists. The church will create buffers between the wetland and the parking lot curb or the property line or the outbuilding to protect the wetland. Creating this buffer will enhance the protection of the water resource.

ADDRESS: 5617 ROWLAND ROAD

EASEMENT SKETCH FOR OLD APOSTOLIC LUTHERAN CHURCH

PID: 3511722230013

CONSERVATION EASEMENT DESCRIPTION

An easement for conservation purposes over and across that part of Outlot J, Meadow Lakes Addition, City of Minnetonka, Hennepin County, Minnesota, lying northerly and westerly of the following described lines: Commencing at the most easterly corner of said Outlot J; thence South 49 degrees 30 minutes 56 seconds West, assumed bearing, along the southeasterly line of said Outlot J, a distance of 35.29 feet to the point of beginning of the lines to be described; thence North 51 degrees 58 minutes 08 seconds West, a distance of 42.49 feet; thence North 41 degrees 44 minutes 15 seconds East, a distance of 7.24 feet; thence North 40 degrees 49 minutes 12 seconds West, a distance of 26.87 feet; thence South 43 degrees 07 minutes 08 seconds West, a distance of 12.47 feet; thence North 51 degrees 58 minutes 08 seconds West, a distance of 220.20 feet; thence South 46 degrees 31 minutes 36 seconds West, a distance of 34.33 feet; thence North 45 degrees 59 minutes 21 seconds West, a distance of 14.82 feet; thence South 50 degrees 51 minutes 28 seconds West, a distance of 38.11 feet; thence South 41 degrees 12 minutes 07 seconds East, a distance of 17.35 feet; thence South 46 degrees 34 minutes 06 seconds West, a distance of 58.32 feet; thence South 48 degrees 02 minutes 58 seconds West, a distance of 21.71 feet; thence South 59 degrees 46 minutes 31 seconds West, a distance of 24.08 feet; thence South 58 degrees 11 minutes 29 seconds West, a distance of 84.97 feet; thence North 43 degrees 04 minutes 13 seconds West, a distance of 94.48 feet; thence South 50 degrees 35 minutes 04 seconds West, a distance of 42.07 feet; thence North 46 degrees 58 minutes 13 seconds West, a distance of 35.54 feet; thence South 47 degrees 49 minutes 20 seconds West, a distance of 104.77 feet to the southwesterly line of said Outlot J and there terminating.

CONTAINING 154,007 SF = 3.54 ACRES

I HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA.

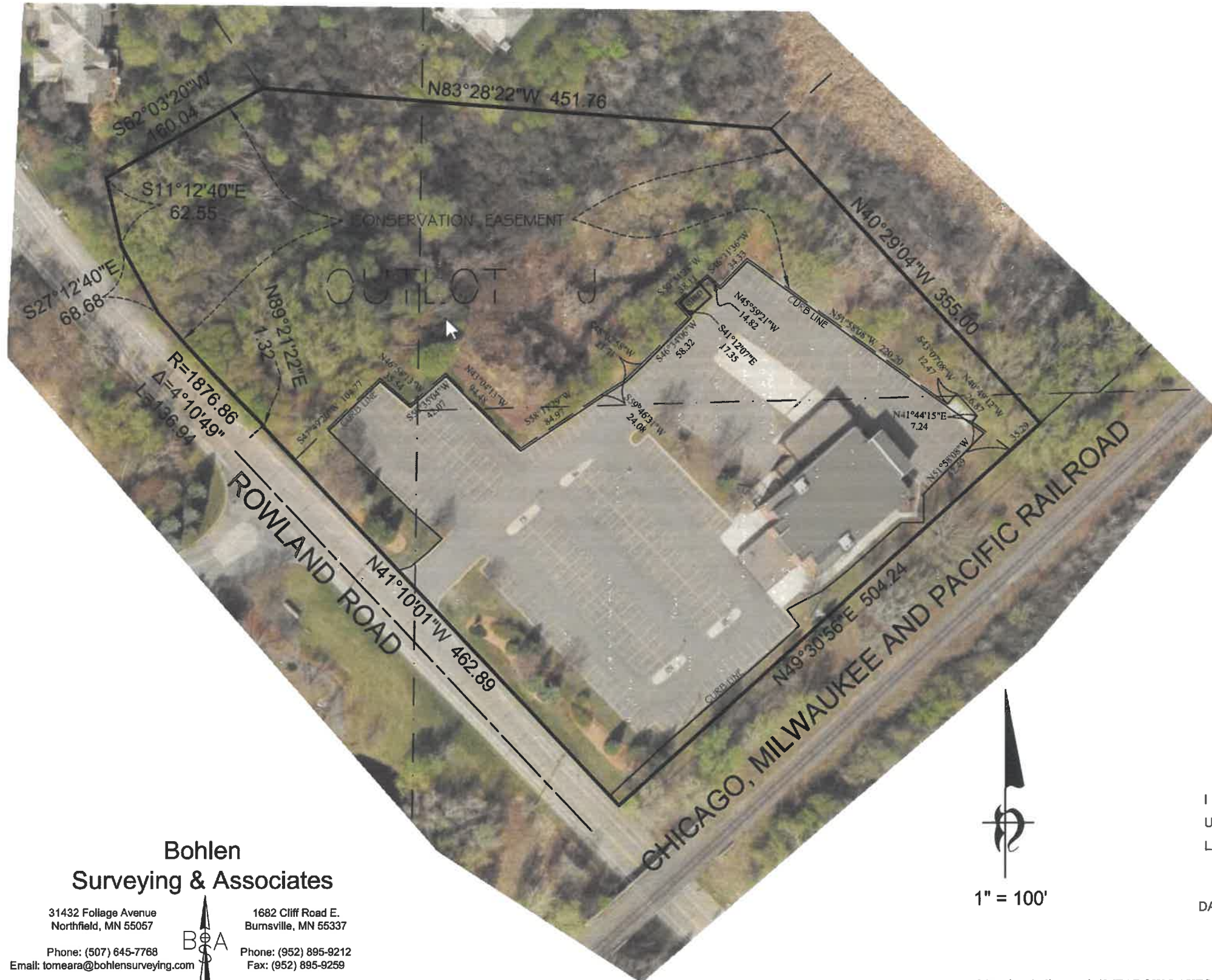
DATE: 2-12-2019

Thomas J. O'Meara
THOMAS J. O'MEARA, LAND SURVEYOR
MINNESOTA LICENSE NO. 46167

1" = 100'



S:\Projects\Minnetonka\MEADOW-LAKES-ADDITION\dwg\church-ease.dwg



**Bohlen
Surveying & Associates**

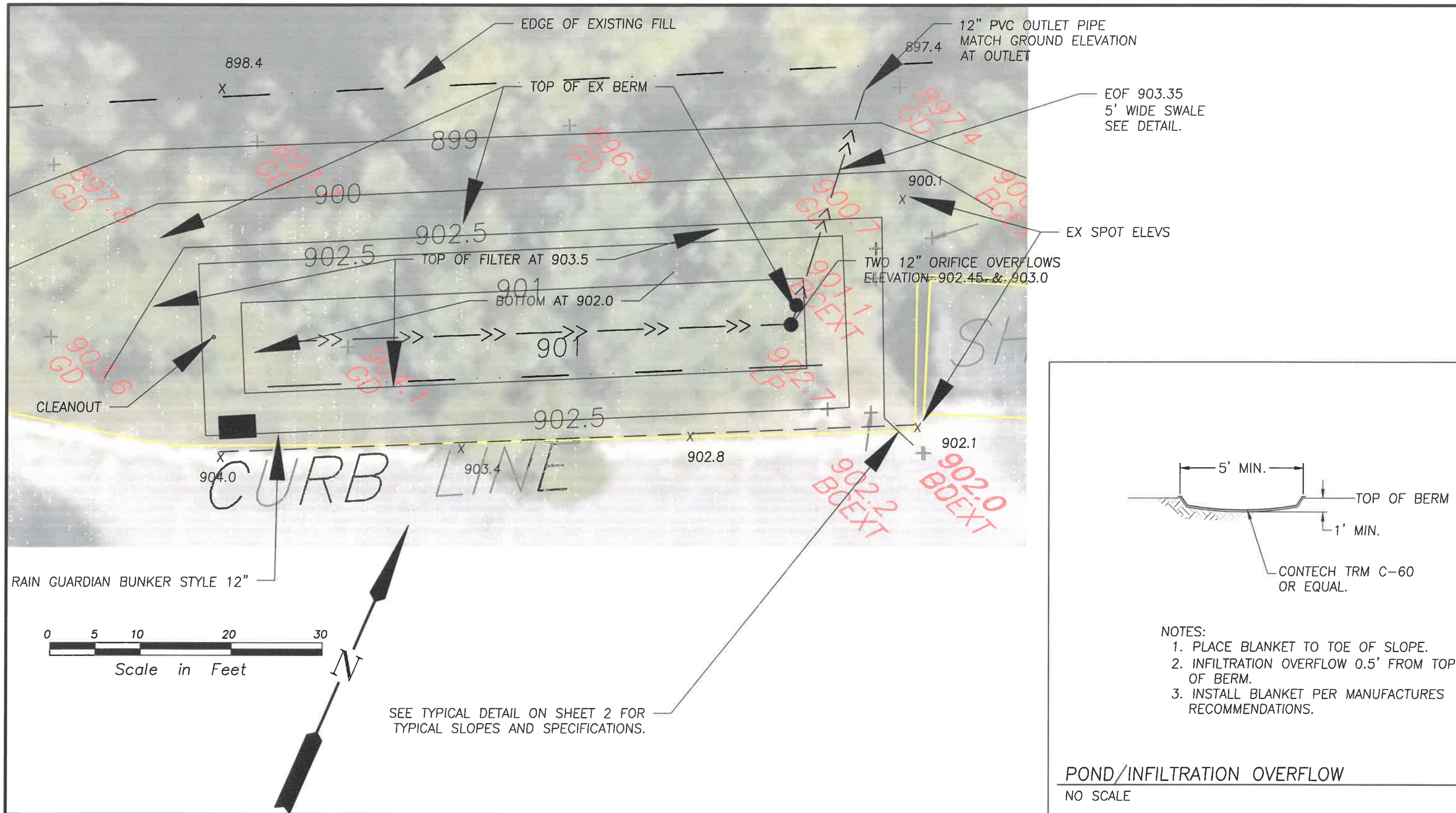
31432 Follage Avenue
Northfield, MN 55057

1682 Cliff Road E.
Burnsville, MN 55337

Phone: (507) 645-7768
Email: tomeara@bohlenurveying.com



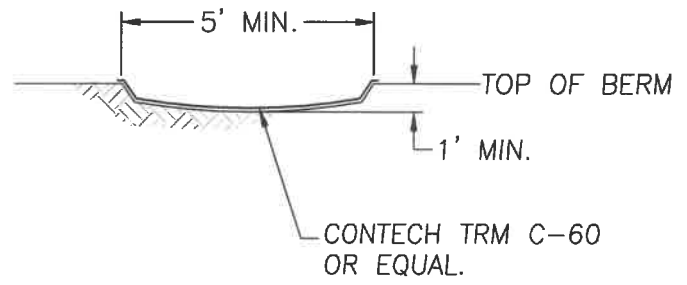
Phone: (952) 895-9212
Fax: (952) 895-9259



EOF 903.35
5' WIDE SWALE
SEE DETAIL.

EX SPOT ELEVS

TWO 12" ORIFICE OVERFLOWS
ELEVATION 902.45 & 903.0

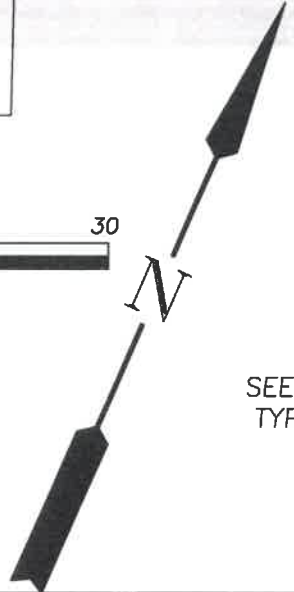
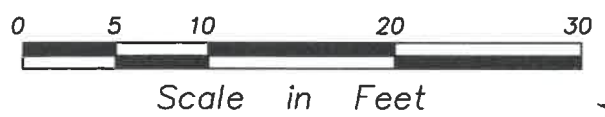


- NOTES:
1. PLACE BLANKET TO TOE OF SLOPE.
 2. INFILTRATION OVERFLOW 0.5' FROM TOP OF BERM.
 3. INSTALL BLANKET PER MANUFACTURES RECOMMENDATIONS.

POND/INFILTRATION OVERFLOW
NO SCALE

SEE TYPICAL DETAIL ON SHEET 2 FOR TYPICAL SLOPES AND SPECIFICATIONS.

RAIN GUARDIAN BUNKER STYLE 12"



I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of Minnesota.

Date 12/26/18 Registration No. 12783

Gregory R. Haley

Issued	
NMCWSD PERMIT APPLICATION	12/26/18
ADDRESS CITY & WSD COMMENTS	2/9/19
ADD EOF, DETAIL	2/12/19

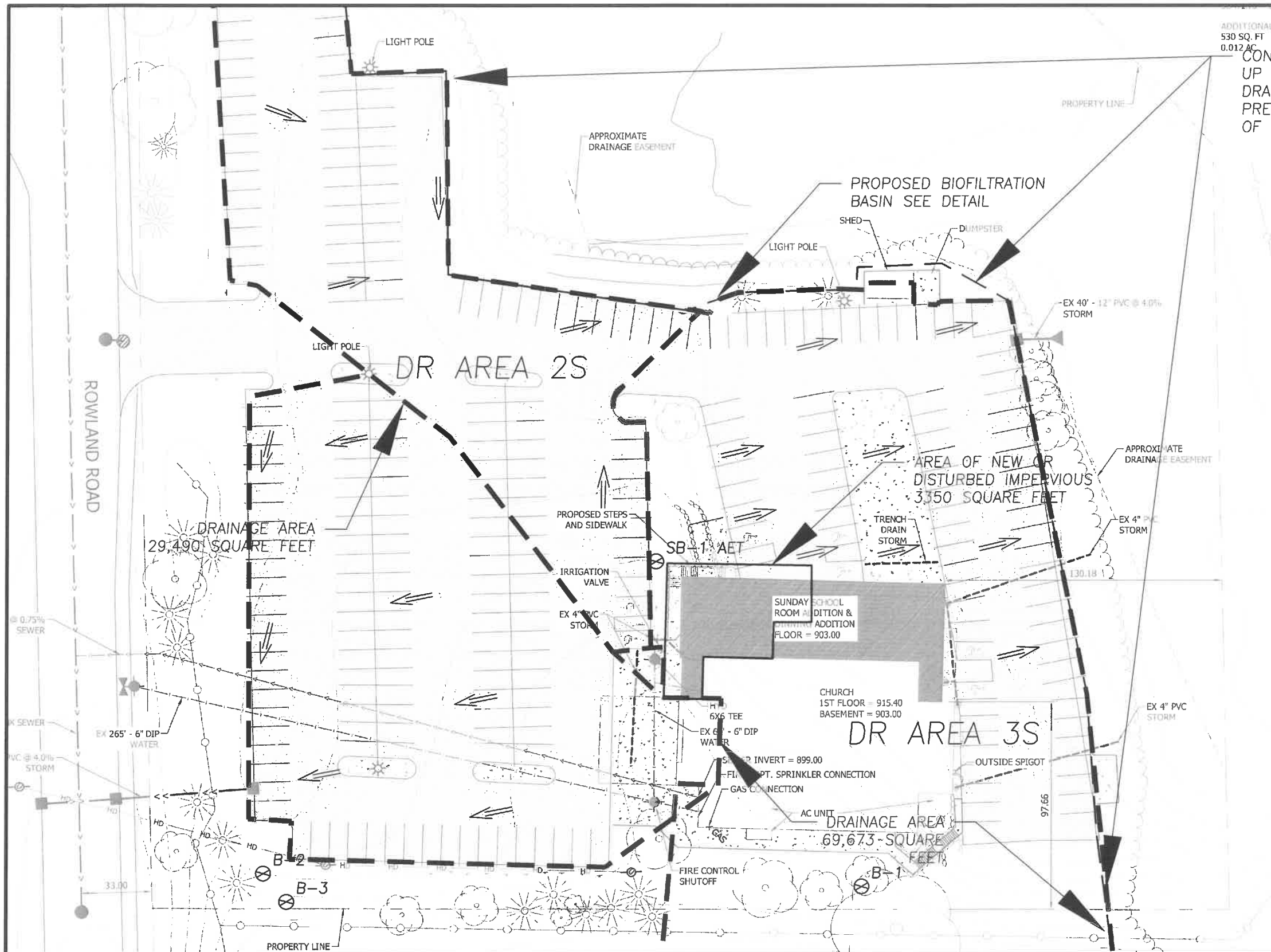
Halling Engineering, Inc.
CIVIL ENGINEERS

3727 East 255TH Street • Webster, Minnesota 55088
Phone 952.440.1680 • Fax 952.461.3308

PROJECT NO.: _____ DRAWING FILE: **BIOFILTER.DWG**

BIOFILTER DETAIL 1
OLD APOSTOLIC LUTHERAN CHURCH
5617 ROWLAND ROAD, MNTKAPPA

SHEET 2 of 4



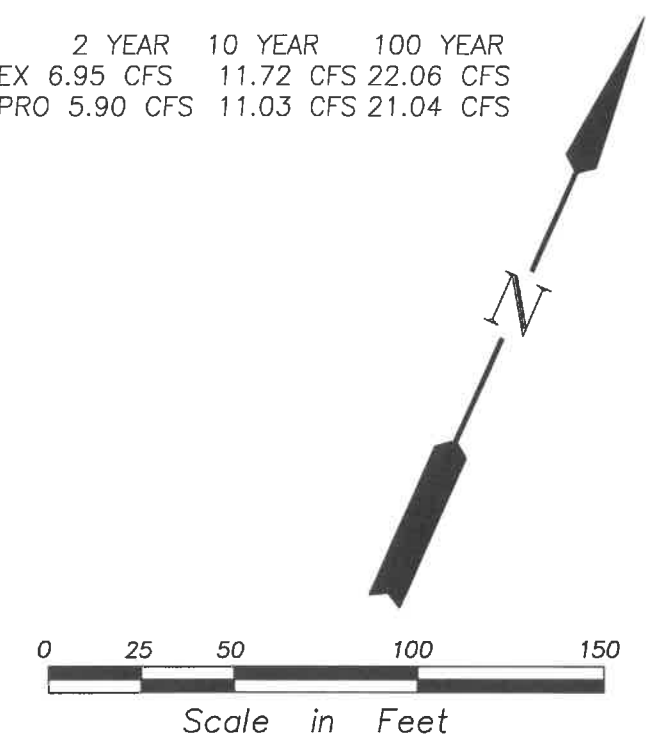
ADDITIONAL
530 SQ. FT
0.012 AC

CONSERVATION EASEMENT IS PROPOSED TO EXTEND UP TO THE CURB LINE EXCEPT AS NOTED IN THIS DRAWING. A DETAILED SURVEY IS BEING PREPARED TO WRITE AN ACCURATE DESCRIPTION OF THIS EASEMENT.

REQUIRED INFILTRATION OR BIOFILTRATION
 $3,350 \times 0.55/12 = 154$ CUBIC FEET

THE AREAS AROUND THIS SITE ARE ALL FILLED. A BORING WAS DONE BETWEEN THE RR TRACKS AND THE CHURCH AND IT WAS ALL FILL DOWN TO 11' WHERE THE BORING WAS TERMINATED. ALL OF THE GOOD GRANUL MATERIAL WAS CUT OFF THE ORIGINAL HILL AND FILLED INTO THE WETLAND AREAS. THEN THE AREAS AROUND THE CHURCH WERE BACKFILLED UP TO FINAL GRADE. THE FILL MATERIAL IS VERY COMPACTED AND NOT SUITABLE FOR INFILTRATION BASINS. THEREFORE A BIOFILTER HAS BEEN PROPOSED AS NOTED ON THIS DRAWING WITH A DRAINAGE AREA THAT IS 8 TIMES AS LARGE AS THE AREA IMPACTED BY THIS PROJECT. INFILTRATION BELOW THE DRAINTILE OF THE BIOFILTER HAS THE MINIMUM REQUIRED VOLUME OF 154 CUBIC F

2 YEAR	10 YEAR	100 YEAR
EX 6.95 CFS	11.72 CFS	22.06 CFS
PRO 5.90 CFS	11.03 CFS	21.04 CFS



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Date 12/26/18 Registration No. 12783

Gregory R. Haley

Issued	
NMCWSD PERMIT APPLICATION	12/26/18
AMEND CALCS. ADD DR ARROWS	2/12/19

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PROJECT NO.: _____ DRAWING FILE: BIOFILTER.DWG

DRAINAGE MAP
 OLD APOSTOLIC LUTHERAN CHURCH
 5617 ROWLAND ROAD, MNTK
 SHEET 4 of 4