Permit Application Review

Permit #2022-071 and #2022-072
Received complete: August 31, 2022

Commented [LF1]: Consolidated into 2022-071

Applicant:	Todd Simning; Old Vernon Development, LLC.
Consultant:	Josh Rinke; Advance Surveying & Engineering Co.
Project:	Lots 2-6, Block 6: Olde Vernon 3rd Addition
Location:	5829 Vernon Lane, Edina, MN
Applicable Rule(s):	4, 5, 11 and 12
Reviewer(s):	Louise Heffernan and Bob Obermeyer; Barr Engineering Co.

General Background & Comments

The applicant proposes the construction of four single-family townhomes and associated site improvements at Lots 2-6, Block 6, Olde Vernon 3rd Addition located at 5829 Vernon Lane in Edina. Lot 1 is not owned by the applicant and is not the subject of the current permit applications (#2022-071 and #2022-072). Site improvements including landscaping, utilities and four stormwater management facilities are proposed.

The project site information and breakdown of lot specific information is summarized in Tables 1 and 2 below.

Table 1. Project Site Information.

Site Information	Project Area
Total Site Area – Lots 2-6 (square feet)	46,399
Existing Site Impervious Area (square feet)	0
Proposed Site Impervious Area (square feet)	15,048
Increase in Impervious Area (square feet)	15,048 (over 100% increase)
Total Disturbed Area (acres)	46,399

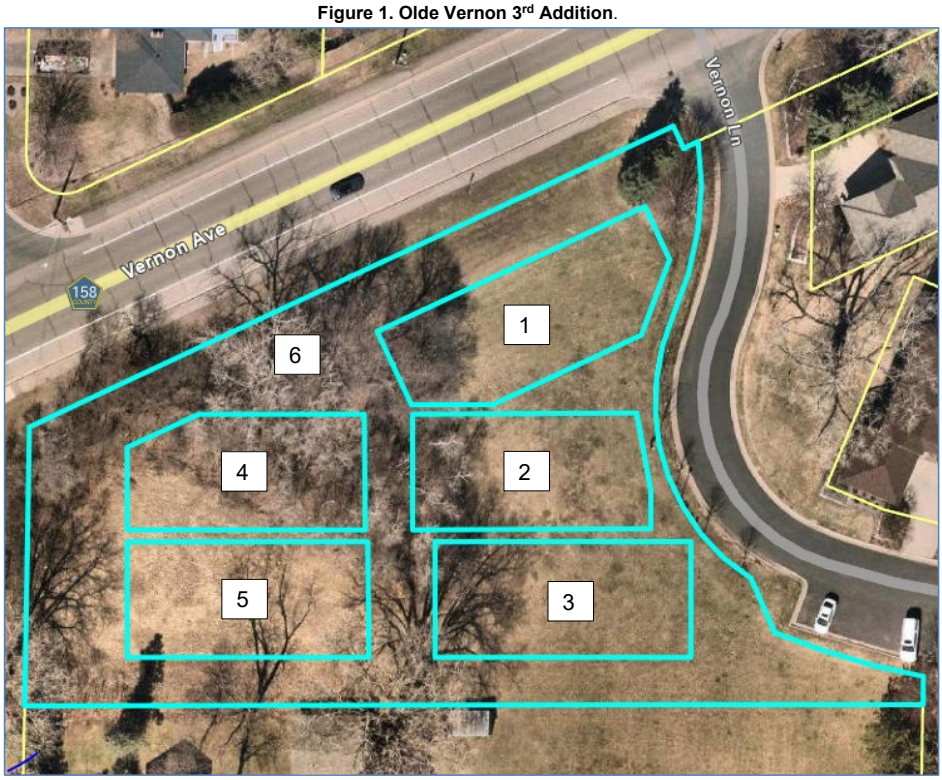
Table 2. Lot Information.

Lot #	Lot Size (square feet)	Proposed Impervious Surface (square feet)
2	4,640	2,929[1]
3	5,088	2,908[1]
4	4,528	2,764[1]
5	4,800	2,911[1]
6	27,343	3,536[2]
Total	**46,399**	**15,048**

[1]Proposed impervious surface includes the proposed residence, patio, sidewalks, and a portion of the lot driveway
[2]Proposed impervious surface includes proposed driveway surface area outside of Lot 2-5 boundaries

The lot locations and Olde Vernon 3rd Addition subdivision, relative to Vernon Avenue and Vernon Lane, is shown on Figure 1 below.

Figure 1. Olde Vernon 3rd Addition.



Exhibits Reviewed:

1. Permit Applications dated May 10, 2022, received May 17, 2022. Email correspondence dated June 8, 2022, identifying nine items required to complete the application. Email correspondence dated July 14, 2022, outlining the nine items required to complete the application.
2. Plans dated May 5, 2022, with revisions dated May 26, 2022, June 8, 2022, June 22, 2022, July 22, 2022 and August 18, 2022, prepared by Advance Surveying & Engineering Co., with approved plans dated August 18, 2022 (received August 31, 2022).
3. Geotechnical Evaluation Report dated May 2, 2022, prepared by Haugo GeoTechnical Services.
4. Stormwater Management Narrative received July 25, 2022 and August 9, 2022, prepared by Advance Surveying & Engineering Co.

5. Electronic HydroCAD models received on June 22, 2022, July 25, 2022, August 9, 2022, August 18, 2022 and August 31, 2022.
6. MIDS Calculator models received on June 22, 2022 and August 18, 2022.

The application with the submittal items above is complete.

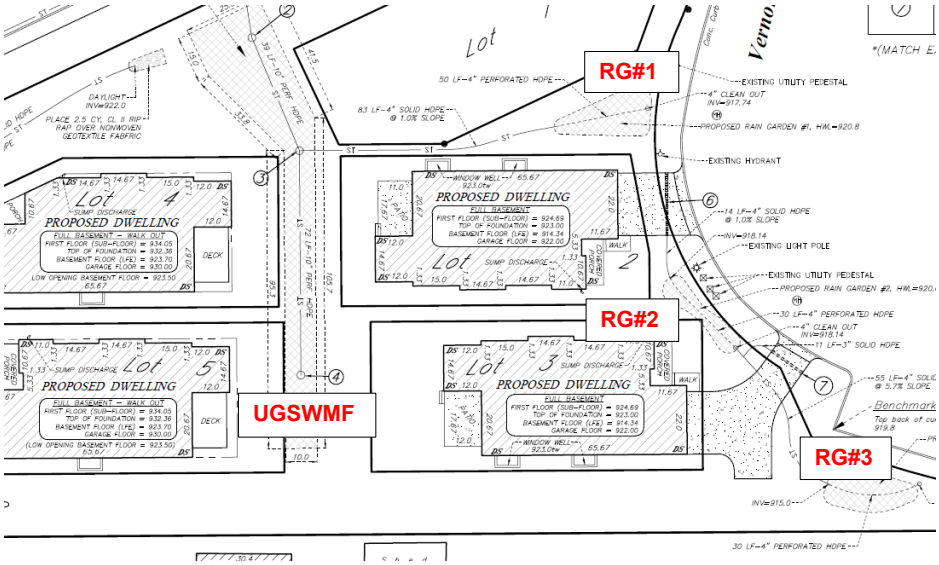
4.0 Stormwater Management

The District's requirements for stormwater management apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 4.2.1a and b.

The NMCWD's Rule for Redevelopment, Rule 4.2.3, states, if a proposed activity will disturb more than 50% of the existing impervious surface on the site or will increase the imperviousness of the site by more than 50%, stormwater management will apply to the entire project site. Otherwise, the stormwater requirements will apply only to the disturbed, replaced and net additional impervious surface on the project site. Since the project will increase the imperviousness of the site by more than 50% (over 100% increase proposed), the district's stormwater management criteria are required for the entire site, including the 0.35 acres (15,048 square feet) of proposed impervious surface.

Stormwater management for compliance with subsection 4.3.1 will be provided by four best management practices (BMP's), including one underground stormwater management facility (UGSWMF) infiltration trench, and three rain gardens to provide rate control, volume retention and water quality management for the site. The BMP locations, relative to the lots, are shown on Figure 2 below.

Figure 2. Stormwater Management Facility Locations



Rule 4.3.1b requires the 2-, 10-, and 100-year post development peak runoff rates be equal to or less than the existing discharge rates for all collection points where stormwater leaves the site. The applicant used a HydroCAD hydrologic model to simulate runoff rates at the two collection points where stormwater discharge leaves the site. The existing and proposed 2-, 10- and 100-year frequency discharge rates from the site are summarized in the tables below.

Existing Conditions			
Drainage Area	**2- year (c.f.s.)**	**10- year (c.f.s.)**	**100- year (c.f.s.)**
To North: Vernon Avenue	1.6	3.2	6.4
To East: Vernon Lane	<1	1.3	2.5
Total	2.2	4.5	8.9

Proposed Conditions			
Drainage Area	**2- year (c.f.s.)**	**10- year (c.f.s.)**	**100- year (c.f.s.)**
To North: Vernon Avenue	<1	<1	2.1
To East: Vernon Lane	<1	<1	2.1
Total	<1	<1	4.2

The proposed stormwater management plan provides rate control in compliance with the NMCWD requirements for the 2-, 10-, and 100-year events. Rule 4.3.1b is met.

The Haugo GeoTechnical evaluation identifies clayey sand (SC) soils to a depth of 7.5 feet, approximately elevation 916.9 M.S.L., underlain by silty sand (SM) to a depth of 11 feet in the three soil borings completed. The plans indicate the underlying soil in the area of the UGSWMF and rain garden #3 adjacent to lot 3 will be excavated to the depth of the silty sand soils, removed, and backfilled with material suitable for infiltration. A design infiltration rate of 0.45 inches per hour has been used for the UGSWMF and rain garden #3, conforming with infiltration rates identified in the Minnesota Storm Water Manual. The underlying soil in the area of rain gardens #1 and #2 will be underlain by the clayey sand layer, and a design infiltration rate of 0.06 inches per hour has been used, conforming with infiltration rates identified in the Minnesota Stormwater Manual.

A retention volume of 1,379 cubic feet is required from the 15,048 square feet of proposed site impervious area. A retention volume of 2,452 cubic feet is proposed to be provided (1,379 cubic feet required) with an infiltration area of 2,825 square feet. The table below summarizes the volume retention achieved for the proposed stormwater management facilities. The project is in conformance with subsection 4.3.1a.

Volume Retention Summary

Stormwater Management Facility	Provided Footprint (square feet)	Provided Volume (cubic feet)	Maximum Infiltration Depth Allowable (feet)	Provided Volume Retention Depth (feet)
Underground Stormwater Management Facility (infiltration trench with underdrain)	1,955	1,468	4.5[1]	1.80
Rain Garden #1 (with underdrain)	340	33	0.6[2]	0.24
Rain Garden #2 (with underdrain)	200	19	0.6[2]	0.24
Rain Garden #3 (without underdrain)	330	932	1.8	1.50
Total	2,825	2,452	-	-

[1]Maximum depth allowable for facility to draw down within 48 hours for HSG Type B soils with 40% rock voids
[2]Maximum depth allowable for facility to draw down within 48 hours for HSG Type D soils with 40% rock voids

With the infiltration areas shown above and an allowable infiltration depth achieved for the stormwater management facilities, the volume retention is drawn down within the required 48-hours within each system, complying with Rule 4.3.1a (ii).

Rule 4.5.4d (i) requires three feet of separation between the bottom of an infiltration facility and groundwater. Three soil borings were completed by Haugo GeoTechnical Services onsite near the locations of the proposed stormwater management facilities and groundwater was not encountered in the three borings. SB-3 did not encounter groundwater to a depth of 11 feet, elevation 909 M.S.L. The following table provides a comparison of the bottom elevation of the infiltration facilities relative to the lowest elevation where groundwater was not encountered (as identified by boring SB-3).

Stormwater Management Facility	Bottom Elevation of Facility M.S.L.	Groundwater Elevation M.S.L.	Separation Provided (feet)
UGSWMF	916.5	909.0	7.5
Rain Garden #1 (SE of Lot #1)	917.9	909.0	8.9
Rain Garden #2 (SE of Lot #2)	917.9	909.0	8.9
Rain Garden #3 (SE of Lot #3)	913.0	909.0	4.0

The required three (3) feet of separation is provided between the bottom of the infiltration area and groundwater.

The District's water quality criterion requires 60% annual removal efficiency for TP and 90% annual removal efficiency for TSS from site runoff. Four BMP's will be provided to achieve the required TP and TSS removals, including three rain gardens and one UGSWMF. A MIDS model was used to evaluate the BMP's annual removal efficiencies. The results of this modeling are summarized in table below showing the annual TSS and TP removal requirements are achieved. The engineer agrees with the modeling results and the project is in conformance with Rule 4.3.1c criteria.

Annual TSS and TP Removal Summary

Pollutant of Interest	Regulated Site Loading (lbs./year)	Required Load Removal (lbs./year)	Provided Load Reduction (lbs./year)
Total Suspended Solids (TSS)	171	154 (90%)	165 (96%)
Total Phosphorus (TP)	0.9	0.5 (60%)	0.9 (100%)

Rule 4.3.3 states that 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. Additionally, Rule 4.3.3 states that all new and reconstructed buildings must be constructed such that no opening where surface flow can enter the structure is less than two feet above the 100-year high-water elevation of an adjacent facility. Rule 4.3.3 also states, a stormwater management facility must be constructed at an elevation that ensures no adjacent habitable building will be brought into noncompliance with a standard in subsection 4.3.3. The low floor and low opening elevations of the proposed buildings in relation to the proposed stormwater management facilities' 100-year high-water elevations is summarized in the tables below. Appendix 4a analysis was used to meet subsection 4.3.3 criteria with regard to the proposed low floor elevations at Lots 2-5, as shown below.

Low Floor Analysis

Building (Lot)	Low Floor Elevation of Building (M.S.L.)	Stormwater Management Facility	100-year Event Flood Elevation of Facility (M.S.L.)	Freeboard to 100-year Flood Elevation of Adjacent Facility (ft)	Distance from Building to Adjacent Facility (ft)	Water Table Elevation[1] (M.S.L.)	Minimum Permissible Depth to Water Table (ft)	Provided Depth from Low Floor Elevation to Water Table (ft)
2	914.3	UGSWMF	921.6	-7.3	18.8	909.0	3.2	5.3
	914.3	Rain Garden #1	920.8	-6.5	10.0	909.0	3.5	5.3
	914.3	Rain Garden #2	920.0	-5.7	20.6	909.0	3.1	5.3
3	914.3	UGSWMF	921.6	-7.3	41.0	909.0	2.4	5.3
	914.3	Rain Garden #2	920.0	-5.7	10.5	909.0	3.5	5.3
	914.3	Rain Garden #3	920.0	-5.7	45.0	909.0	2.2	5.3
4	923.7	UGSWMF	921.6	1.9	17.0	909.0	3.2	14.7
5	923.7	UGSWMF	921.6	1.9	17.0	909.0	3.2	14.7

[1]Lowest elevation where groundwater was **not** encountered in SB-3

Low Opening Analysis

Building (Lot)	Adjacent Stormwater Management Facility	100-year Event Flood Elevation of Facility (M.S.L.)	Adjacent Low Opening Elevation of Building (M.S.L.)	Freeboard to 100-year Event (ft)
2	UGSWMF	921.6	924.7	3.1
	Rain Garden #1	920.8	922.0	1.2*
	Rain Garden #2	920.0	922.0	2.0
3	UGSWMF	921.6	924.7	3.1
	Rain Garden #2	920.0	922.0	2.0
	Rain Garden #3	920.0	922.0	2.0
4	UGSWMF	921.6	923.7	2.1
5	UGSWMF	921.6	923.7	2.1

*The plans indicate a retaining wall will be installed between Rain Garden #1 and the low opening garage entrance to provide at least two feet of separation. Additionally, the emergency overflow will direct Rain Garden #1 overflow to Vernon Lane. The top of the retaining wall is elevation 923.0 M.S.L., providing a separation of 2.2 feet, in compliance with subsection 4.3.3 criteria.

As shown in the low opening analysis table above, the proposed buildings are to be constructed such that no opening where surface flow can enter the structure is less than two feet above the 100-year high-water elevation of an adjacent facility, in compliance with subsection 4.3.3 criteria.

In accordance with Rule 4.3.1a (i), where infiltration or filtration facilities, practices or systems are proposed, pre-treatment of runoff must be provided. Sump manholes and vegetative filter strips will provide the required pretreatment of runoff, complying with Rule 4.3.1a (i).

Subsection 4.3.5 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. The applicant must provide a receipt showing recordation of a maintenance declaration for the operation and maintenance of the stormwater management facilities.

5.0 Erosion and Sediment Control

The District's requirements for erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 5.2.1a and b.

The erosion control plan prepared by Advance Surveying & Engineering Co. includes installation of perimeter control (silt fence and sediment control logs) and a stabilized rock construction entrance.

The contractor for the project will need to designate a contact who will remain liable to the district for performance under the District's Erosion and Sediment Control Rule 5.0 from the time the permitted activities commence until vegetative cover is established, in accordance with subsection 5.4.1e. NMCWD must be notified if the responsible individual changes during the permit term.

11.0 Fees

Fees for the project are:

Rules 4.0 and 5.0 $300

12.0 Financial Assurances

Financial Assurances for the project are:

Rules 5: Perimeter Control: 1,500 L.F. x $2.50/L.F. = ... $3,750

Site Restoration: 1.1 acres x $2,500/acre =..... $2,750

Rule 4: Stormwater Management Facilities: 2,825 S.F. X $12/S.F.=..... $33,900

Contingency and Administration $17,400

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project will conform to Rules 4 and 5 with the fulfilment of the conditions identified below.
3. The proposed stormwater management facilities will provide volume retention, rate control, and water quality management in accordance with subsections 4.3.1a-b criteria.
4. In accordance with NMCWD Rule 4.3.5, the applicant must provide a maintenance and inspection plan that identifies and protects the design, capacity and functionality of the stormwater management facilities, and record the plan in a declaration on the property title.

Recommendation

Approval, contingent upon:

Compliance with the General Provisions (attached).

Financial Assurance in the amount of $57,800 for stormwater management, erosion control, and site restoration.

The applicant providing a name and contact information for the individual responsible for the erosion and sediment control at the site. NMCWD must be notified if the responsible individual changes during the permit term.

Per Rule 4.3.5, a receipt showing recordation of a maintenance declaration for the operation and maintenance of the stormwater management facilities. A draft of the declaration must be approved by the District prior to recordation.

Submission of written authorization from the Lot 1 property owner authorizing grading work to be completed on Lot 1.

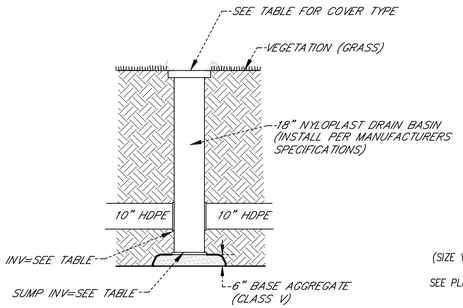
By accepting the permit, when issued, the applicant agrees to the following stipulations for closeout of the permit and release of the financial assurance after the project:

Per Rule 4.5.8, an as-built drawing of the stormwater management facilities conforming to the design specifications is required to be provided, including stage volume relationships in tabular form.

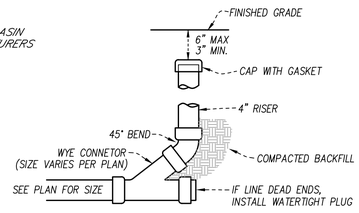
The work for the Olde Vernon 3rd Addition Lots 2-6 development under the terms of Permits 2022-071 and 2022-072 must have an impervious surface area and configuration materially consistent with the approved plans at each lot. Design that differs materially from the approved plans will need to be the subject of a request for a permit modification or new permit, which will be subject to review for compliance with all applicable regulatory requirements.

Per Rule 12.4.1b, demonstration and confirmation that the underground stormwater management facility and three rain gardens for volume retention has been constructed or installed and are functioning as designed and permitted. Verification, through daily observation logs and photographs, must be provided showing the stormwater management facilities used for volume retention have drawn down within 48 hours from the completion of two 1.0-inch (approximate) separate rainfall events for the underground infiltration trench and rain garden #3, and two 0.55-inch (approximate) separate rainfall events for rain gardens #1 and #2.

LEGAL DESCRIPTION:
Lots 1-6, Block 6, OLDE VERNON 3RD ADDITION, Hennepin County, Minnesota.



NYLOPLAST CBMH DETAIL
NO SCALE



CLEAN OUT DETAIL
NO SCALE

STORM SEWER STRUCTURE TABLE

ID#	TYPE	RIM	INVERT
①	48" DIA. CATCH BASIN MANHOLE (SEE DETAIL)	*923.5±	917.43± (E,W) 917.9 (S)
②	18" NYLOPLAST CATCH BASIN (SEE DETAIL)	920.80 (GRATE)	918.30 (N) 917.30 (S) 916.80 (SUMP)
③	18" NYLOPLAST CATCH BASIN (SEE DETAIL)	920.80 (GRATE)	917.30 (N,S) 916.80 (SUMP)
④	18" NYLOPLAST CATCH BASIN (SEE DETAIL)	920.80 (GRATE)	917.30 (N,S) 916.80 (SUMP)
⑤	12" NDS TRENCH DRAIN (PRO SERIES)	927.30	DEEP PROFILE CHANNEL DRAIN
⑥	5" NDS TRENCH DRAIN (PRO SERIES)	920.90	DEEP PROFILE CHANNEL DRAIN
⑦	5" NDS TRENCH DRAIN (PRO SERIES)	919.95	DEEP PROFILE CHANNEL DRAIN

*(MATCH EXISTING FLOW LINE IN GUTTER)

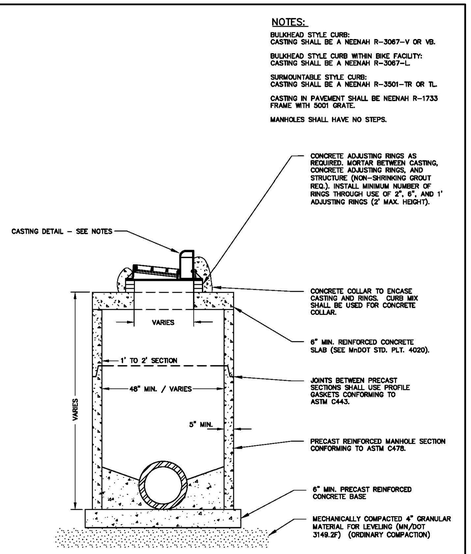
NOTES:
BULKHEAD STYLE CURB:
CASTING SHALL BE A NEENAH R-3067-V OR VB.

BULKHEAD STYLE CURB WITHIN ERIC FACILITY:
CASTING SHALL BE A NEENAH R-3067-L.

SURMOUNTABLE STYLE CURB:
CASTING SHALL BE A NEENAH R-3501-TR OR TL.

CASTING IN PAVEMENT SHALL BE NEENAH R-1733 FRAME WITH 8001 GRATE.

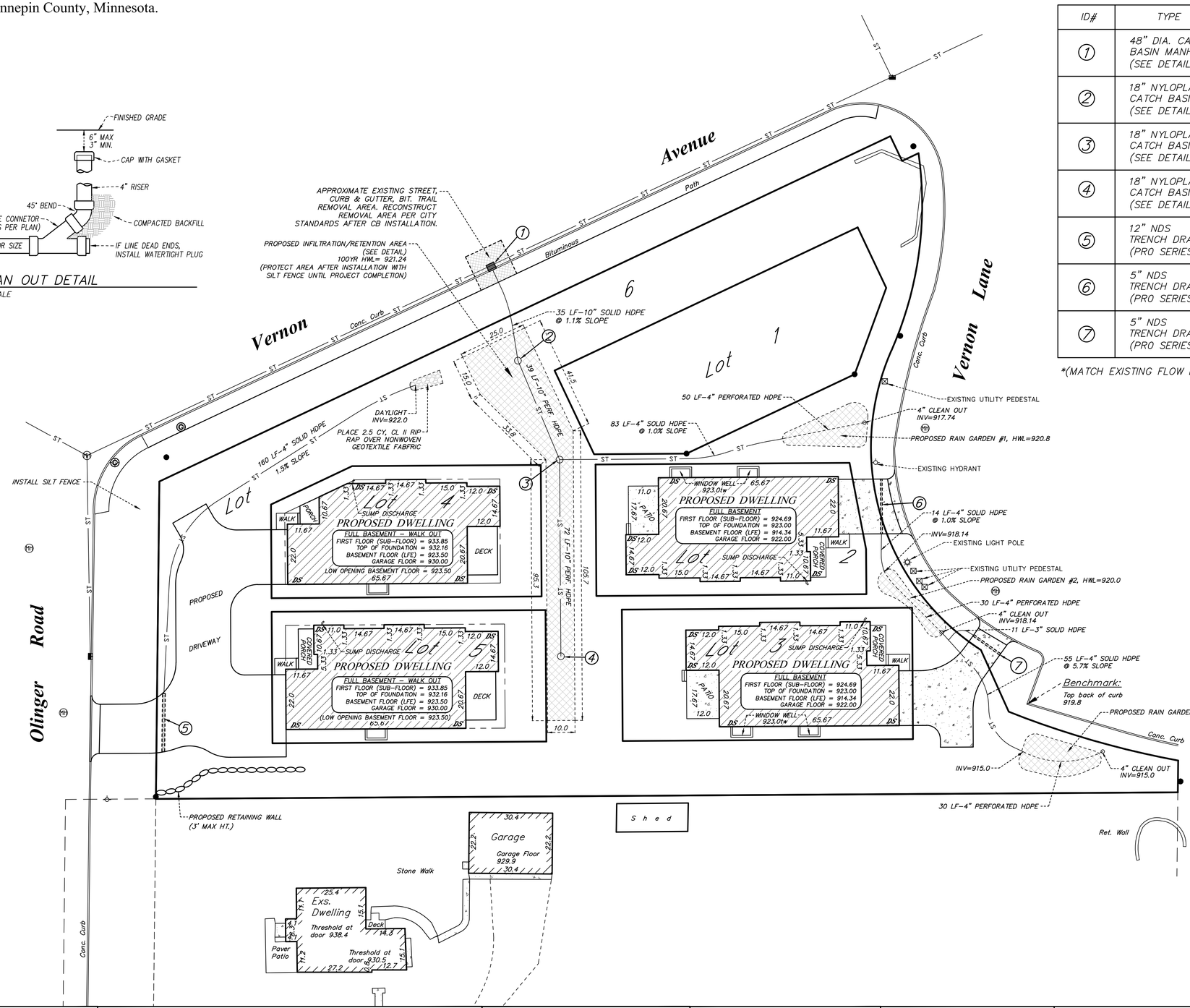
MANHOLES SHALL HAVE NO STEPS.



CITY OF EDINA ENGINEERING & PUBLIC WORKS DEPTS.

TYPE "CC"
CATCH BASIN MANHOLE
APPROVED: CITY ENGINEER

REVISED: 01-22
STANDARD PLATE 230



LEGEND

EXISTING CONTOUR	930
EXISTING SPOT ELEVATION	X 930.5
PROPOSED CONTOUR	930
DRAINAGE ARROW – FLOW	⟹
SILT FENCE/BIO ROLL	SF
PROPOSED DRAINAGE AREA ID	P1
DOWNSPOUT LOCATIONS	ds

DATE	REVISION DESCRIPTION

DRAWING ORIENTATION & SCALE
N
SCALE - 1" = 20'
0 20 40

CLIENT NAME / JOB ADDRESS
TSML PROPERTIES, LLC
5829 VERNON LANE
EDINA, MN

Advance
Surveying & Engineering, Co.
17917 Highway 7
Minnetonka, Minnesota 55345
Phone (952) 474-7964
Web: www.advsur.com

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.
Joshua S. Rinke
52716
LICENSE NO.
MAY 5, 2022
DATE

DATE SURVEYED: AUG. 9, 2021
SURVEYED BY:
THOMAS M. BLOOM, PLS. #42379
ADVANCE SURVEYING. & ENG., CO.
DATE DRAFTED: MAY 5, 2022

SHEET TITLE
PROPOSED STORM SEWER PLAN
DRAWING NUMBER
216166 JR

SHEET SIZE 22 X 34
SHEET NO.
D3
SHEET 3 OF 3