AGENDA

ROGERS PLANNING COMMISSION

July 1, 2024 - 7:00 PM

1. CALL TO ORDER AND PLEDGE OF ALLEGIANCE

2. OPEN FORUM

3. APPROVE AGENDA

4. CONSENT AGENDA

4.1 Approve Minutes from June 3rd, 2024 Planning Commission Meeting

5. PUBLIC HEARINGS

5.1 Application by Dean Johnson Homes for Preliminary Plat and Variance for the Hawkins Place Townhome Development

5.2 Application by the City for Preliminary and Final Plat for Rogers CR81 Addition

6. NEW BUSINESS

7. OTHER BUSINESS

8. ADJOURN

Meeting Date: July 1, 2024

REQUEST FOR ACTION
ROGERS PLANNING COMMISSION

Agenda Item: No. 4.1

Subject: Approve Minutes from June 3rd, 2024 Planning Commission Meeting

Prepared By:

ATTACHMENTS:

Description

June 3rd, 2023 Planning Commission Meeting Minutes

MINUTES
ROGERS PLANNING COMMISSION
JUNE 3RD, 2024

CALL TO ORDER
The meeting of the Rogers Planning Commission was held on June 3rd, 2024 at 7:00 p.m. and was called to order with Commissioners Carlson, Fisher, Mullin, Lohr, Sattersten and Stiebinger present. Alternate Planning Commission Member, Cartwright standing in for Commissioner Plansky

Member(s) absent: Commissioner Plansky.

Also present were Community Development Director, Brett Angell; City Planner, Alec Henderson; Council Member Enga; and Alternative Planning Commission Member Kussman.

OPEN FORUM
Chair Carlson closed the open forum.

SET AGENDA
A motion by Stiebinger and a second by Lohr was made to approve the agenda.
On the vote, all members present voted AYE. Motion carried 7-0-0.

CONSENT AGENDA
4.1 Approval of Minutes
Minutes from May 6th, 2024 Planning Commission

Motion by Mullin and Second by Stiebinger to approve the minutes from May 6th, 2024 meeting. On the Vote. Motion Carried 7-0-0.

PUBLIC HEARINGS
5.1 Application by Heidi and Nicholas Kephart to Reguide and Rezone their property with PID 1612023410080 to Low Density Residential and R2 Single-Family Residential for purposes of a Lot Combination
Henderson summarized the item. A request has been received to reguide and rezone the Kephart family property behind their lot at 13672 Superior Court (PID 16-120-23-41-0080) from Mixed Density and R4 to Low Density Residential and R2. The property is .78 acres. The request ultimately is to combine the parcel they acquired from Hassan Sand and Gravel with their single-family home lot. The lot combination can only be complete if the parcels involved are the same guidance and zoning.

Chair Carlson opened the public hearing.
Nicolas Hartlage of 13621 Birch Road came forward and expressed concern with stormwater issues in rear properties nearby.
Carlson noted that while this request does not speak directly to stormwater issues that staff can get in touch.

Henderson confirmed that he would notify Andrew Simmons, Public Works Superintendent of the issues.

Brandon Anderson at 23692 Birch Road (direct neighbor to the subject property) came forward. Anderson brought copies of a letter and images (attached to the Minutes as EXHIBIT A). Anderson has concerns that their proximity to improvements would devalue their property and interrupt their view of adjacent land. Anderson expressed that conditions should be added regarding placement of future improvements.

Motion by Lohr and second by Stiebinger to close the public hearing. On the Vote. Motion Carried 7-0-0.

Commissioner Fisher and Stiebinger note that the question on the table for the commission is the land use amendment and rezoning and not any specific improvements.

Chair Carlson asked for clarification on the ability to request conditions per Mr. Anderson's concerns and requested that Mr. Anderson's documents be placed in the record.

Henderson explained that the place to add conditions would be when we are looking at special use permits for a particular improvement (CUP or IUP or variance) where reasonable conditions can be placed to mitigation specific issues. A land use amendment or rezoning is changing the guide plan and placing property into a different district to apply district standards. Conditions that go beyond what is codified for by right permitted uses (such as single-family homes, or accessory structures) are not permitted since the code establishes reasonable setbacks already.

Motion by Lohr, and Second by Fisher to approve the requested land use amendment and zoning district amendment as presented. On the Vote. Motion Carried 7-0-0.

NEW BUSINESS

6.1 Review Residential Subdivision Concept Plan by Summergate for the Knapp Property

Henderson summarized the item. Summergate has submitted a Concept review request for property owned by the Knapp family with PID 27-120-23-22-0004. The property is zoned R2, single-family residential The concept is directly across the Big Woods development. Two concept plans were submitted. Concept 2a closely matches the R2 straight zoning and is the most straight forward approach proposing 79 lots and two access points to the development. Concept 2b is similar, except the treatment of the northeast quadrant proposed two townhome structures. Townhomes could only be permitted through a planned unit development. Concept 2a proposed 89 units.

Mullin expressed that in concept 2a some of the single family lots seem rather isolated.
Lohr requested some additional information from the applicant about the inclusion of the northeast quadrant and whether it is likely.

Bryan Tucker of Summergate (the applicant) expressed that they were asked to look at the ability to include adjacent property if they are willing sellers. Tucker noted that if the townhome design

gets traction that it could make sense to include with Lennar, but the applicant is leaning toward the 2a concept since it is a straight by right request. Additionally, Tucker noted that they do not have agreements in place with adjacent owners and that will be resolved in future submittals. Wetland delineations and impacts are still under review and some areas will be subject to change.

Chair Carlson asked for information on grades and any large removals.

Tucker noted that there is not a lot of topography and that the cul-de-sac in the northeast part of the site may end up as a stub road if no agreements can be made with adjacent property. Once the plan is engineer they are confident the deficiencies to some of the lots can be resolved.

No other comments or questions were discussed.

OTHER BUSINESS

No Items

ADJOURN

Stiebinger made a motion and Mullin seconded to adjourn the meeting at approximately 7:55 P.M. On the vote, all members voted AYE (7-0-0). Motion carried.

EXHIBIT A

Monday, June 3, 2024

City of Rogers Planning Commission:

Thank you in advance for your consideration on my concern regarding the parcel of land adjacent to our home at 23692 Birch Road. My name is Brandon Anderson. My wife, Nichole Splett, and I purchased our home in 2012. For us, the thing that was most spectacular about this home was the view out the back off the elevated deck and the patio at ground level. We researched the property lines and future development on Superior Court. The lot lines on Superior Court and the small section of land which was a part of the much larger section of land down the hill gave us comfort in knowing the beautiful view would remain unobstructed. Based on this we felt the value of our home was worth the price. Had we not had that comfort, we would not have valued the home at the same amount and likely would not have won the bidding for the house and property. A few years ago we had a pool installed in our backyard. We chose the location of the pool and placed it strategically in a spot where the gorgeous views could be enjoyed from the pool area.

As the property in question was recently split, sold and now being considered for inclusion in one of the aforementioned properties on Superior Court, we are concerned over the potential decrease in value of our home. We are concerned the potential for the construction of new structures on that parcel would certainly de-value our home due to the loss of the most attractive feature of our home, the view out the back.

My wife and I, along with our 3 children, greatly enjoy and appreciate the beauty of watching the sun set over the bluffs in the distance, whether from the deck, patio, pool or the firepit in the backyard. We are not asking for the zoning committee to deny the request of our new neighbors, and we have no desire to see them not be able to utilize this land, however, we do request that the Planning Commission consider a condition to the request which would not allow the construction of a structure that would decrease our property value by impeding the view.

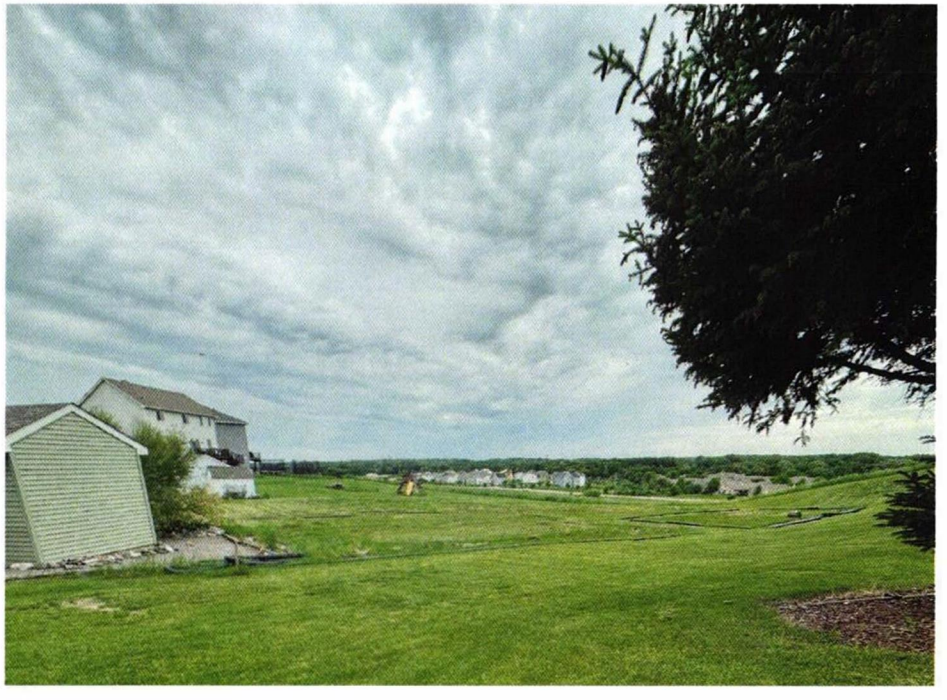
While difficult to define, I believe I may have a solution. Perhaps the condition could be that no structure can be constructed in a location where that structure is closer to our principal structure than it would be to the principal structure at 13672 Superior Court. I believe this type of condition could be easily defined and enforced as well as making a compromise for both properties to be able to retain/increase their value over time.

Thank you again for your time and consideration.

Sincerely,

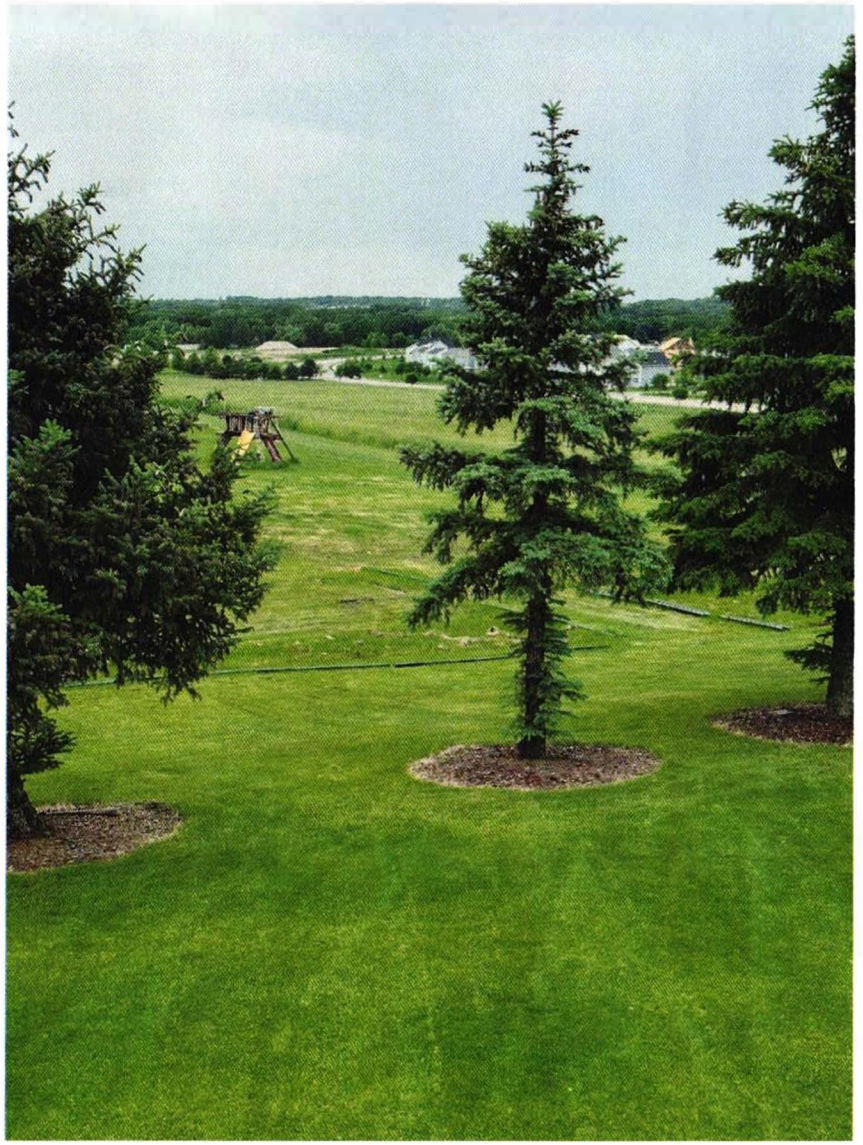
Nichole Splett, Brandon Anderson and Family
23692 Birch Road, Rogers, MN

EXHIBIT A



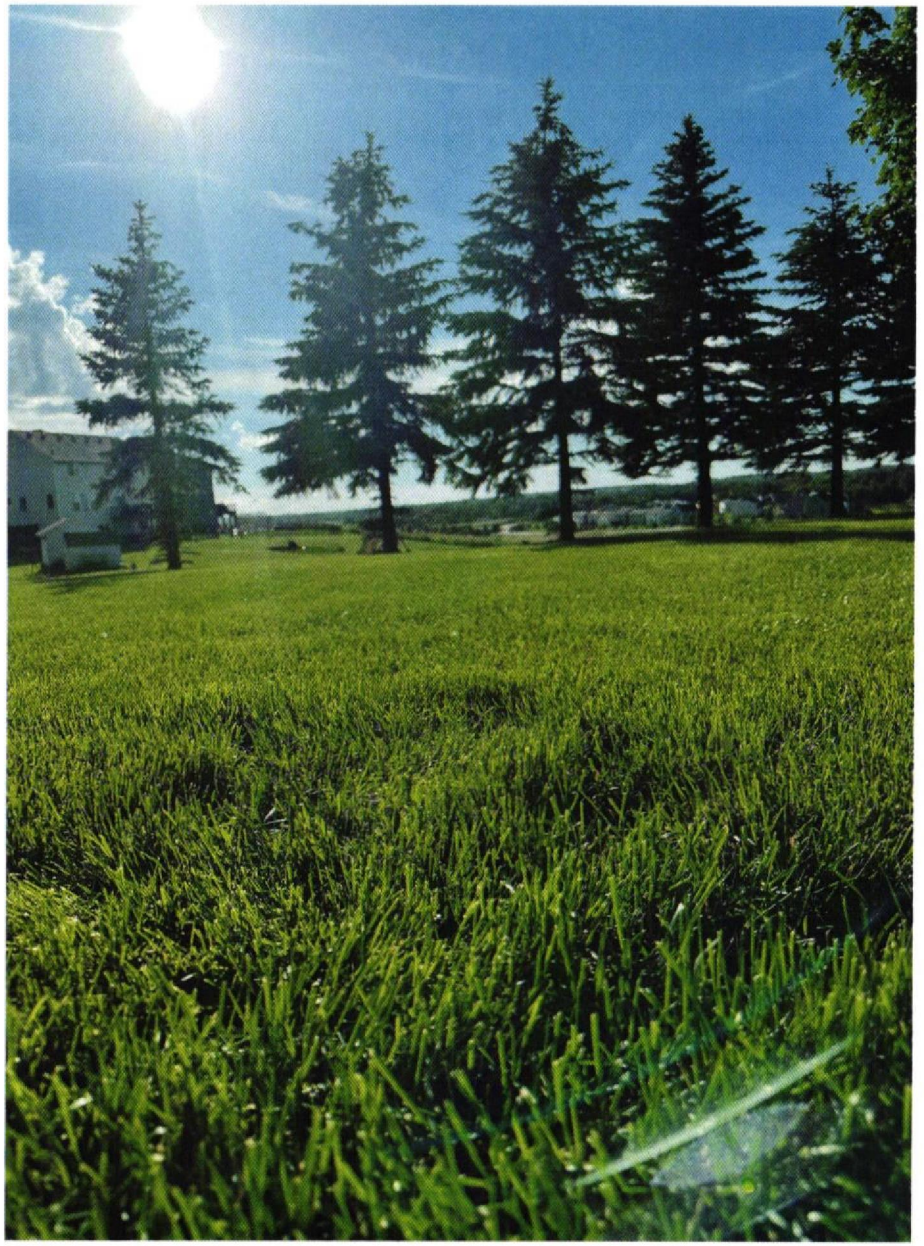
Current view from our tree line, which is approximately 30 feet from the property line

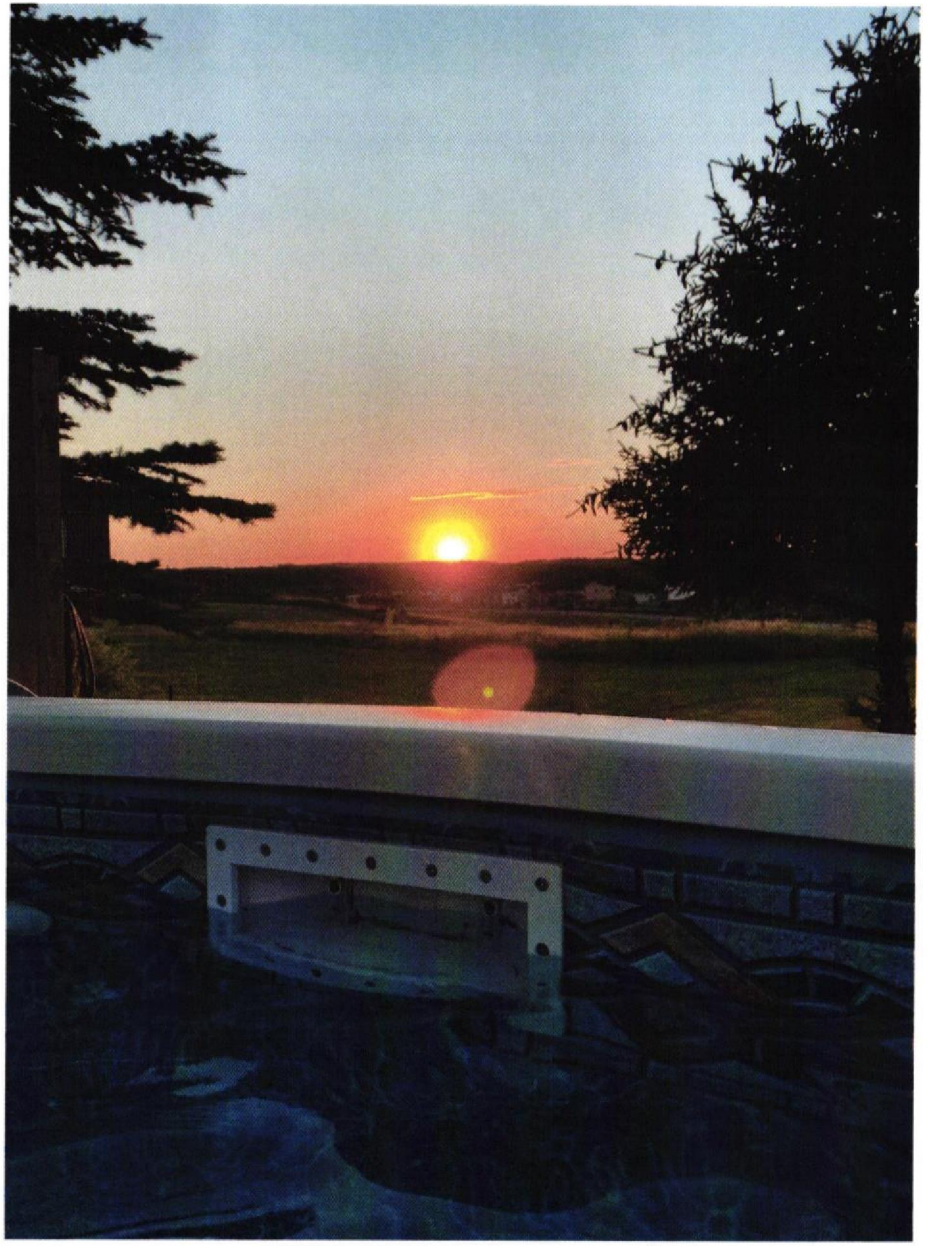
EXHIBIT A



Current view from our deck. We plans to relocate a couple trees in the near future.

EXHIBIT A





Current view from our backyard patio and pool

Meeting Date: July 1, 2024

REQUEST FOR ACTION
ROGERS PLANNING COMMISSION

Agenda Item: No. 5.1

Subject: Application by Dean Johnson Homes for Preliminary Plat and Variance for the Hawkins Place Townhome Development

Prepared By: Alec Henderson, City Planner

Recommended Planning Commission Action

City staff recommends opening the public hearing, accept public comment, and tabling the preliminary plat and variance to wait for further revisions, and/or expansion on the variance request by the applicant. (it is requested that the public hearing not be closed before tabling).

Overview / Background

Dean Johnson Homes (Developer) submitted a Land Use & Zoning Application requesting Preliminary Plat and Variance approval for a proposed 53-unit townhome development on the 10.18-acre parcel of land at 13020 Hawkins Drive called Hawkins Place/Hawkins Drive Townhomes (Development. The development area includes the only the property at the corner of Hawkins Drive and 129th Avenue North with PID 2212023230001; hereafter referred to as the "Subject Property." The development area includes the upgrade of the existing Hawkins Drive to a of the cul-de-sac along the western boundary of the site.

The complete application was received on May 14, 2024. Per Minnesota Statue, the review timeline for Preliminary Plat is a maximum of 120 days, or September 11, 2024. The variance portion of the application is significantly tied to the preliminary plat and follows the same deadline. The Planning Commission public hearing notice for the Preliminary Plat was published for July 1, 2024.

Staff recommends opening the public hearing and tabling the item for further revisions to the site plan or additional variance information.

Primary Issues to Consider

1. Land Use and Zoning
2. Plat Standards
3. Development Overview
4. Variance
5. Project Relationship to the 2040 Plan

Analysis of Primary Issues

1. Land Use and Zoning

As described above, Dean Johnson Homes is proposing a 53-unit townhome residential development on 10.18 total acres. The 2040 Comprehensive Plan (2040 Plan) guides the

property as **Medium Density Residential**; zoning is **Mid-Density Residential (R-3)**. A net residential density of 5.0 to 11.0 units per net acre is required; the proposed net density is 7.35. Townhomes are a permitted use for **R-3**. The Developer is not seeking any special approvals for the unit type nor density. However, a variance request has been submitted to vary from section 125-55(C) related to the 25 ft boundary setback along the public street Hawkins Drive. However, during the course of review, additional setback deficiencies also exist.

The Aster Mill and Towns at Fox Creek Developments were of the first tests of the R3 district standards during their 2021 plat approval processes which Towns as Fox Creek being a fully townhome development and a portion of Aster Mill being townhomes. These previous developments established precedence regarding how we treat front and side yard and boundary setbacks around public right of way through code interpretation. Along private street, the 25 ft front setback is measured to back of curb. Along public road right of way, the 25 ft setback was measured from the site boundary or edge of right of way and the rear building setback a minimum 20 feet to the site boundary adjacent to private property. The setbacks between buildings was a minimum of 20 ft. Hawkins Place is generally utilizing the same setbacks as were approved by right during the Aster Mill and Towns at Fox Creek entitlement processes. However, there are some issues with setbacks on a number of their building pads.

The Hawkins Place development has submitted a variance related 25 ft minimum ROW setback adjacent to Hawkins Drive. The variance requests a deviation from this requirement for units 1 through 3 for a 10 ft encroachment into the setback and approximately a 15 ft encroachment into the 25 ft Hawkins Drive setback for units 4 through 11, unit 35, and units 38 through 46. The request revolves around issues related to the large wetland in the middle of the site and large complex in the northeast part of the site.

The following are deficiencies not currently requested by the variance and found during review:

- Units 52 and 53 are deficient in the private street setback by approximately 5 feet;
- Unit 11 and 38 are deficient from the private street setback by 5 feet; and
- Distance between buildings has been measured at 15 to 18.6 feet rather than the required 20ft.

Some of these setback issues may be included with the variance request due to wetland issues. The site needs circulation of streets, and the wetland does limit how road ways circulate and therefore limits where buildings and streets can be placed on site so some front yard and Hawkins Drive setbacks may need to be encroached to adequately conserve and limit impacts on wetlands.

That being said, the 20 ft minimum setbacks between buildings may simply be an issue of including too many units or issues with not including the actual building footprint on the plan (currently the building pads are the only basis of measurements).

The Land Use and Zoning standards are partially satisfied. However, additional variances or revisions to the site plan are needed to compliance to the standards.

2. Plat Standards

The Subject Property currently is one parcel of record which is proposed to be platted into a townhome development. The Developer is proposing to plat the site for the purpose of the

Development with 53 individual townhome lots across 13 buildings (or 13 blocks) and one parcel (described as lot 54) that is inclusive of the private roadways and ponding areas and wetlands. The proposed plat name is currently known as Hawkins Drive Townhomes. Drainage and utility easements are provided over the common area and a 10 ft wide DU easement within the lots adjacent to Hawkins Drive. The common area will be maintained by the Homeowner's Association and a stormwater maintenance agreement will be required.

Preliminary Plat standards are satisfied provided setback issues identified in the above and provided variance(s) approvals are granted.

3. Development Overview

General Plan

The development proposed upgrading Hawkins Drive with pavement and constructing an offset cul-de-sac within the northwest corner of the site. All internal roads and ponding areas within the development are proposed as private. The private roads would connect to Hawkins Drive. No connection to the existing stub street of 130th Avenue is proposed. A public trail segment is proposed along the west side of Hawkins Drive along the site boundary which generally matches the Parks and Trails Master Plan. The internal roads create a loop street and townhome driveways front the internal street as well as Hawkins Drive.

Lot Coverage

Standard zoning for residential districts establishes a maximum allowable impervious surface area of 75%. With townhome developments we look at lot coverage across the entire development. The Stormwater Management Plan identifies 3.62 acres of impervious surfaces – homes, streets, and sidewalks/trails – resulting in a lot coverage for the Development of 35% of the gross acreage of 10.18 acres or 50% of the 7.21 net acres.

Lot Coverage standards are satisfied.

Home Types & Materials

The Developer is proposing a mix of two to six unit townhome buildings. The City does not currently have residential façade material requirements. The builder has provided proposed elevations for the four unit townhome and the styling is expected to be similar building to building. The townhomes are proposed to be two story and have tuck under two stall garages. No issues are identified with the product type.

Home Type requirements are satisfied.

Landscape Plan & Tree Preservation/Replacement

Developments are required to submit a landscape plan with a subdivision application. The submitted plan includes the planting of 47 trees that are a mixture of evergreen and over story varieties. The majority of the trees are planted along the wetlands, with most attention given to the wetland in the southeast corner of the site along 129th Avenue. All trees meet the planting size

requirements.

It is recommended that additional screening is provided along the existing neighborhoods where grading and wetlands allow.

Landscape requirements are satisfied.

Parking Requirements

City Code §125-86 requires a minimum of two (2) parking spaces per dwelling unit, each of which are enclosed in the attached garages. All roadways through the Development are proposed as private streets. Thus, these will be narrower with no or minimal on-street parking permitted. No off-street parking is proposed.

Parking requirements are satisfied.

Fire Department Review

Fire has reviewed the development and road configurations. Provided all buildings contain fire suppression/are sprinklered, one access from 129th Avenue for the development is adequate. The cul-de-sac proposed in the northwest part of the site is full sized and adequate for fire apparatus turnaround and the internal loop street is of an adequate width for fire response. However, the street may need to be signed for no parking.

Utility & Stormwater Management Design

Review and approval of Elm Creek Watershed Management Commission is pending.

Homeowners Association (HOA)

The development will be managed by a HOA. The Developer will create HOA documents for the purpose of the Development. Those documents will need to be provided to City staff and City Attorney for review at the time of Final Plat and Development Agreement consideration.

4. Variance

Variances are required to meet the Practical Difficulties Test. Section 125-42 regulates variances in Rogers. We are only intended to discuss what is currently identified as potential deviations. We are not requesting any recommended findings or detailed discussions regarding practical difficulties until the public hearing in December.

1. Variances shall only be permitted when they are in harmony with the general purpose and intent of city code and consistent with the comprehensive plan.
2. Variances may only be permitted when the applicant establishes that there are non-economic practical difficulties in complying with the zoning ordinance, meaning the property owner proposes to use the lot or parcel in a reasonable manner not permitted by the zoning code.
3. The plight of the property owner must be due to circumstances that are unique to the lot or parcel and is not created by the property owner.
4. The variances must not alter the essential character of the locality including all zoning district and overlay district provisions.
5. Under the circumstances, the public interest underlying the proposed variance outweighs the public interest underlying the particular regulation for which the variance is granted; and

6. The granting of the variance will not be injurious to other property and will not prevent the orderly subdivision of other property in the area in accordance with these regulations.

The requests are dealt with on its own merits. The Planning Commission should consider if the requests meet the variance criteria listed above. The following should be considered with determining the request. The key factors for approving a variance really come down to: 1. Does the proposal put property to use in a *reasonable manner*? 2. Are there *unique circumstances* to the property not created by the landowner? 3. Will the variance, if granted, alter the *essential character* of the locality? State statute specifically notes that economic considerations **alone** cannot create practical difficulties.

As mentioned, the Developer has requested the variance to the 25 foot setback requirements from the edge of Hawkins Drive ROW. Previously the developer was also requesting a variance to 10 ft wide DU easements along Hawkins but this was resolved in a revision. During review staff also found several other setbacks where the development is deficient. The list of deficiencies is below:

- 25 ft min setback required from Hawkins Drive ROW – proposed 10 ft min/15 ft encroachment. *Variance requested.*
- Unit 11 and Unit 38 Corner lot side setback to private road deficient; 25 ft min required, 20 ft shown as measured from building pad. *Variance not yet requested. Possible revisions or variance needed.*
- Lot 52 and Lot 53 front setbacks to back of private road required to be 25 ft min, 20 ft shown as measured from building pad. *Variance not yet requested. Possible revisions plan or variance needed.*
- Each building is required to have a 10 ft side yard setback (e.g. 20 ft min between buildings). Side yard ranges from 15 to 18.6 ft as measured from building pads. *Variance not yet requested. Possible site plan revision or variance needed.*

It should be noted that the site does suffer from site constraints due to wetlands. Three wetlands encumber the site: one .25 acre wetland along the south site boundary, one .56 acre wetland in the center of the site and one 1.82 acre wetland in the northeast quadrant of the site. Of the approximate 10.18 gross acres (including unplatted 129th Ave ROW), roughly a quarter of the site is wetland. Due to the central wetland, the roads and townhomes loop around the wetland complex to avoid wetland impacts, and the stormwater ponding is set south of the central wetland, and a large basin sits between the northeast wetland and the buildings along Hawkins Drive.

5. Project Relationship to the 2040 Comprehensive Plan

The 2040 Comprehensive Plan (2040 Plan) guides the Subject Property as Medium Density Residential; it was also zoned Mid-Density Residential (R3). Thus, the long-term development vision for this site is as proposed by the Developer. The Development is not only generally consistent with the City's 2040 development vision but also continues to aid the City in diversifying its housing supply by further expanding the residential offering types available in the community.

The 2040 Plan identifies the need to capitalize on infill sites to seize new development opportunities to enhance the continued economic growth and sustainability of Rogers. As a result, the redevelopment of this site is aiding the City in achieving its long-term Housing goals by introducing a residential living option that enables the City to expand its housing options.

Economically-speaking, a critical Economic Competitiveness factor for of Rogers is that very expansion of housing options in a manner that places such living options closer to our business, services and jobs areas, and transportation corridors. The Development is less than 1.5 miles from retail, services and County Road 81 and I-94. The continued diversification of the City's housing stock – whether rental or owner-occupied – will enhance living options for more people desiring to live in Rogers and/or reduce their commute by living closer to work. Thus, this infill development project will create new options for workers to live in the community, thereby enriching the employment base [2040 Plan, Economic Competitiveness Chapter 7, Pages 98-99, 102].

These statements are further supported by the City's Guiding Principles and Strategies [Chapter 3] and Implementation Plan [Chapter 11] as outlined in the 2040 Plan:

Build Neighborhoods and Livability [Chapter 3]

- Supply a range of housing options that promote a diversity of ages, races and incomes.

Foster Economic Opportunity and Prosperity [Chapter 3]

- Enhance the economics of the commercial and employment districts of Rogers by emphasizing smart growth strategies through compact development.
- Enhance housing options that support existing business and workforce employees and enhance economic growth and competitiveness by attracting new employment.

Implementation Plan Actions [Chapter 11]

- Emphasize development of a full complement of lifecycle housing options with an emphasis on both owner-occupied and rental higher density residential products that satisfy the demand for market rate, affordable and senior living products.

Goals Supported: Housing, Economic Competitiveness

While the comprehensive Land Use Plan, and other policies in the 2040 plan support the development of this site as Mid-Density, some site plan issues and variance information is still needed.

Staff Recommendation

City staff recommends opening the public hearing, accept public comment, and tabling the preliminary plat and variance to wait for further revisions, and/or expansion on the variance request by the applicant. (it is requested that the public hearing not be closed before tabling).

ATTACHMENTS:

Description

Preliminary Plat Plans
Stormwater Management Plan
Townhome Floor Plan
Townhome Elevations
Variance Application
CD_Markup of Site Plan
Gooley Public Comment Email
Gooley Email_Staff Response
Ness Family Public Comment Email

Ness Family Email_Staff Response
Rosemeier Public Comment Email
Rosemeier Email_Staff Response
Additional Applicant Variance Narrative 7-1-24

PRELIMINARY PLAT SET

PRELIMINARY PLANS FOR

HAWKINS DRIVE TOWNHOMES

ROGERS, MN

MARCH 2024

VICINITY MAP

PROJECT TITLE

CONTACTS

OWNER:
Dean Johnson Homes
Loretto, MN
Attn: Dean Johnson
Ph: 763.479.4820
djohnson@deanjohnsonhomes.com

SURVEY:
Acre Land Surveying, Inc.
9140 Baltimore St NE Ste 100
Blaine, MN 55449
Attn: Josh Schneider
Ph: 763.238.6278
js.acrelandsurvey@gmail.com

CIVIL:
Civil Methods, Inc.
PO Box 28038
St. Paul, MN 55128
Attn: Dave Poggi, PE
Ph: 763.210.5713
dave.poggi@civilmethods.com

CITY / TOWNSHIP:
City of Rogers
22350 S Diamond Lake Rd
Rogers, MN 55374
Attn: Doran Cote, Public Works Director
Ph: 763.428.8580

WATERSHED DISTRICT:
Elm Creek WMC
3235 Fernbrook Ln
Plymouth, MN 55447
Attn:
Ph: 651.792.7950

INDEX

SHEET NO.	DESCRIPTION
C001	COVER SHEET
	EXISTING CONDITIONS (BY OTHERS)
	PRELIMINARY PLAT (BY OTHERS)
	SITE PLAN (BY OTHERS)
C300	COMPOSITE UTILITIES
C301	SANITARY AND WATER MAIN - HAWKINS DR
C302	SANITARY AND WATER MAIN - STREET A
C303	SANITARY AND WATER MAIN - STREET B
C401	STREET & STORM SEWER - HAWKINS DR
C402	STREET & STORM SEWER - STREET A
C403	STREET & STORM SEWER - STREET B & STORM PROFILES
C501	GRADING PLAN
C601	EROSION & SEDIMENT CONTROL PLAN
C602	SWPPP NARRATIVE
C701-7XX	DETAILS
C801	LANDSCAPING PLAN

LEGEND:

- PROPERTY LINE
- SETBACK
- EASEMENT
- WETLAND
- CONTOUR
- SPOT ELEVATION
- DRAINAGE DIRECTION
- BITUMINOUS SURFACE
- BITUMINOUS SURFACE, HEAVY
- CONCRETE SURFACE
- LIGHT POST
- CURB & GUTTER
- STORM SEWER / CULVERT
- DRAINTILE
- SANITARY SEWER
- WATERMAIN
- CLEANOUT
- SANITARY MANHOLE
- WETLAND BUFFER
- INFILTRATION/FILTRATION BASIN
- ROCK INFILTRATION TRENCH
- TREE LINE
- STORMWATER POND
- ROCK RIPRAP, RANDOM CRUSHED
- EROSION CONTROL BLANKET
- TURF REINFORCEMENT MAT
- GEOGRID OR ARTICULATED CONCRETE
- STABILIZED CONST. ENTRANCE
- SILT FENCE
- SEDIMENT CONTROL LOG
- INLET PROTECTION
- FENCE
- RETAINING WALL

NOTES

THE EXISTING UTILITY INFORMATION SHOWN IN THIS PLAN HAS BEEN SURVEYED BY OTHERS; THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY 811 OR GOPHER STATE ONE CALL (1.800.252.1166).

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38–02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

PLAN REFERENCES:
1. CITY OF ROGERS ENGINEERING DESIGN STANDARDS
2. MINNESOTA DEPT. OF TRANSPORTATION – STANDARD SPECIFICATIONS FOR CONSTRUCTION, LATEST EDITION.
3. CITY ENGINEERS ASSOCIATION OF MINNESOTA STANDARD SPECIFICATIONS, LATEST EDITION.
4. UNREINFORCED CONCRETE PER ACI 330R–08 AND ACI 330.1–03.

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

CIVIL METHODS, INC.
P.O. Box 28038
St. Paul, MN 55128
o:763.210.5713 | www.civilmethods.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.

DAVID M. POGGI
DATE: 06-11-2024
LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
03-18-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

COVER

SHEET NO:
C001

Print Date: 6/11/2024 9:03 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7 Projects\23\028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C001_COVER.dwg

EXISTING CONDITIONS

~for~ HAWKINS DRIVE TOWNHOMES
PROPERTY ADDRESS: 13020 HAWKINS DRIVE, ROGERS, MN 55374

NOTES

- BEARING'S SHOWN ARE BASED ON "HENNEPIN COUNTY COORDINATE SYSTEM".
- ELEVATIONS SHOWN ARE BASED ON NAVD88 DATUM.
- LEGAL DESCRIPTION TAKEN FROM TITLE COMMITMENT NO. 23-87622, PREPARED BY EDGEWATER TITLE GROUP, LLC, DATED OCTOBER 31, 2023
- TOTAL AREA: ±443,250 SF (±10.18 ACRES)

BENCHMARK

- MNDOT HARN POINT "MEMORIAL" NAVD88 ELEVATION=964.07

ZONING:

- R-3 (MIXED DENSITY RESIDENTIAL)

LEGAL DESCRIPTION

The West 450 feet of the South 985 feet of the Southwest 1/4 of the Northwest 1/4 of Section 22, Township 120 North, Range 23 West, Hennepin County, Minnesota.
Abstract Property
PID# 22-120-23-23-0001

LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES UTILITY POLE
- DENOTES TELEPHONE BOX
- DENOTES SANITARY SEWER MANHOLE
- DENOTES STORM SEWER MANHOLE
- DENOTES CATCH BASIN
- DENOTES GATE VALVE
- DENOTES FIRE HYDRANT
- DENOTES EXISTING CONTOUR
- DENOTES UNDERGROUND ELECTRIC
- DENOTES UNDERGROUND GAS
- DENOTES OVERHEAD WIRE
- DENOTES WATERMAIN
- DENOTES SANITARY SEWER
- DENOTES STORM SEWER
- DENOTES EDGE OF WETLAND
- ×1011.2 DENOTES EXISTING ELEVATION
- DENOTES CONCRETE
- DENOTES BITUMINOUS
- DENOTES COUNTY MONUMENT

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

I hereby certify that this plan, survey or report 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.

JOSHUA P. SCHNEIDER

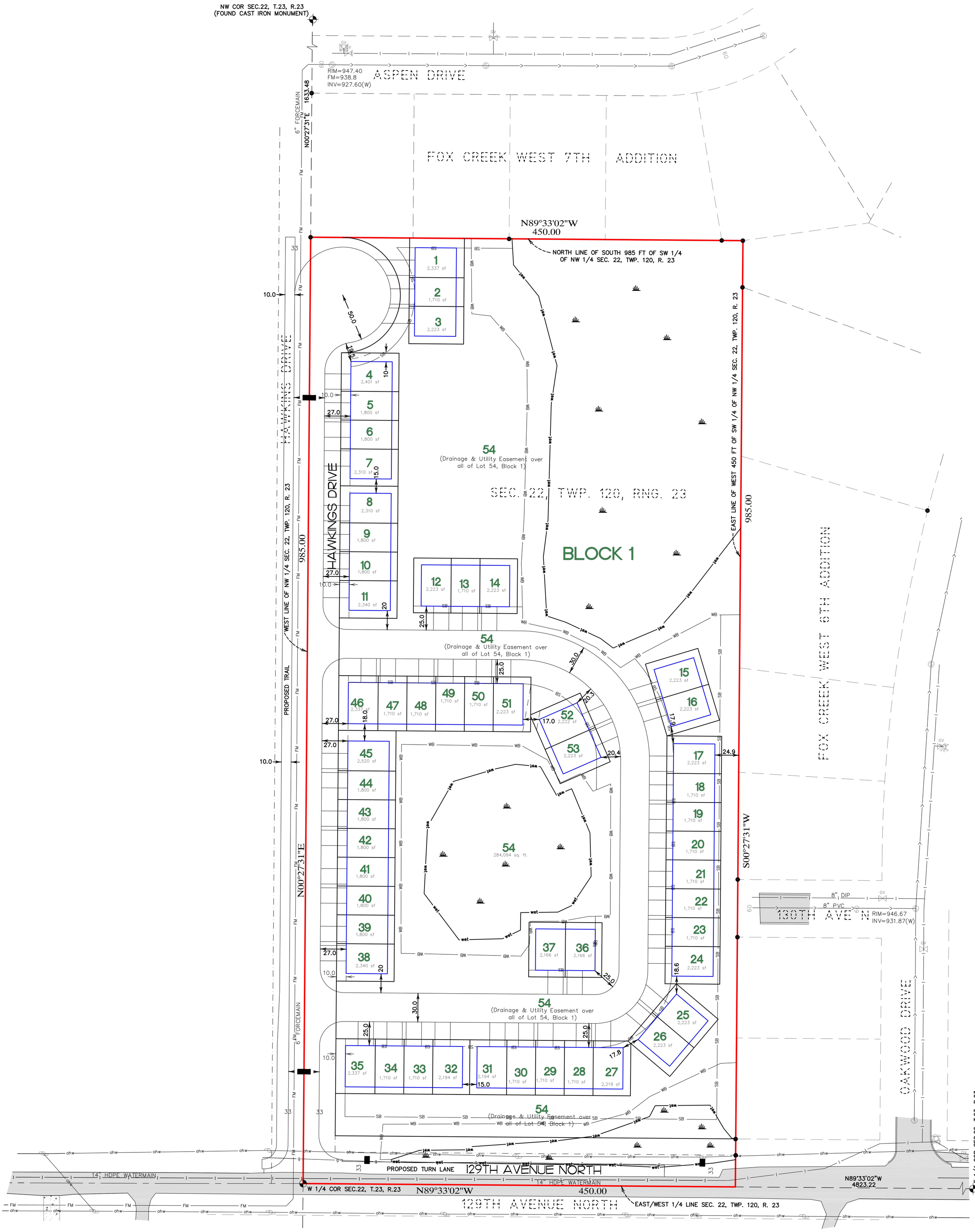
Revised: 2-5-24
Date: 1-2-2024 Reg. No. 44655

ACRE LAND SURVEYING
9140 Baltimore Street NE
Suite 100, Blaine, MN
763-238-6278 js.acrelandsurvey@gmail.com

JOB #23120

SITE PLAN

~for~ HAWKINS DRIVE TOWNHOMES
PROPERTY ADDRESS: 13020 HAWKINS DRIVE, ROGERS, MN 55374



NOTES

- BEARING'S SHOWN ARE BASED ON "HENNEPIN COUNTY COORDINATE SYSTEM".
- ELEVATIONS SHOWN ARE BASED ON NAVD88 DATUM.
- LEGAL DESCRIPTION TAKEN FROM TITLE COMMITMENT NO. 23-87622, PREPARED BY EDGEWATER TITLE GROUP, LLC, DATED OCTOBER 31, 2023
- TOTAL AREA: ±443,250 SF (±10.18 ACRES)
- FRONT AND SIDE SETBACKS MEASURED FROM TOP/BACK OF PROPOSED CURB.
- CITY WOULD NEED TO APPROVE SETBACKS, BUILDING PLACEMENT.
- PROPOSED FORCEMAIN & WATERMAIN SCALED FROM PLANS FOR "BIG WOODS".
- VARIENCE NEEDED TO REDUCE THE DRAINAGE AND UTILITY EASEMENT ALONG HAWKINS DRIVE FROM 10 FEET TO 7 FEET.
- VARIENCE NEEDED TO REDUCE THE FRONT YARD SETBACK ALONG HAWKINS DRIVE.

BENCHMARK

- MNDOT HARN POINT "MEMORIAL" NAVD88 ELEVATION=964.07

ZONING:

- R-3 (MIXED DENSITY RESIDENTIAL)

LEGAL DESCRIPTION

The West 450 feet of the South 985 feet of the Southwest 1/4 of the Northwest 1/4 of Section 22, Township 120 North, Range 23 West, Hennepin County, Minnesota.
Abstract Property
PID# 22-120-23-23-0001

SITE DATA:

TOTAL PROPERTY AREA: ±443,250 sf (±10.18 acres)
EXISTING HARD SURFACE: ±4,730 sf
PROPOSED HARD SURFACE: ±151,582 sf
PROPOSED HARD SURFACE PERCENTAGE: ±34.2%
PROPOSED NUMBER OF UNITS: 53 UNITS
UNITS PER ACRE: 5.2

ZONING: R-3
MAXIMUM HARD SURFACE: 75%
SETBACK, FRONT: 25 FT
SETBACK, REAR: 20 FT
SETBACK, SIDE: 10 FT
LOT WIDTH (MIN): 110 FT (DUPLEX, TRIPLEX, QUAD)

LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES UTILITY POLE
- DENOTES TELEPHONE BOX
- DENOTES SANITARY SEWER MANHOLE
- DENOTES STORM SEWER MANHOLE
- DENOTES CATCH BASIN
- DENOTES GATE VALVE
- DENOTES FIRE HYDRANT
- DENOTES EXISTING CONTOUR
- DENOTES UNDERGROUND ELECTRIC
- DENOTES UNDERGROUND GAS
- DENOTES OVERHEAD WIRE
- DENOTES WATERMAIN
- DENOTES SANITARY SEWER
- DENOTES STORM SEWER
- DENOTES EDGE OF WETLAND
- DENOTES WETLAND BUFFER
- ×1011.2 DENOTES EXISTING ELEVATION
- DENOTES CONCRETE
- DENOTES BITUMINOUS
- DENOTES COUNTY MONUMENT
- DENOTES PROPOSED BUILDING
- DENOTES BOUNDARY LINE
- DENOTES PROPOSED SETBACK

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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JOSHUA P. SCHNEIDER

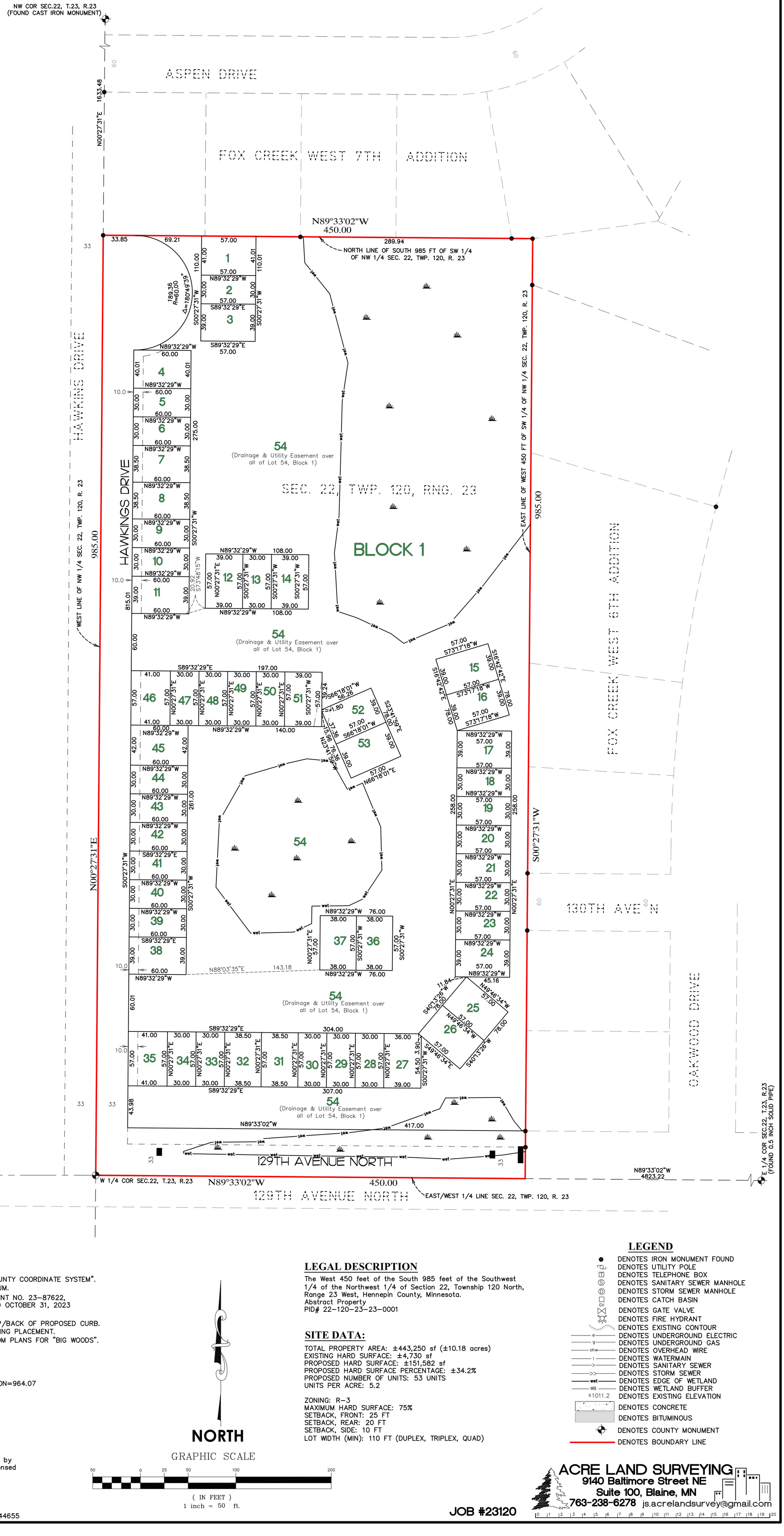
Revised: 6-7-24
Revised: 5-3-24
Revised: 2-13-24 (utilities)
Date: 2-5-24 Reg. No. 44655

ACRE LAND SURVEYING
9140 Baltimore Street NE
Suite 100, Blaine, MN
763-238-6278 js.acrelandsurvey@gmail.com

JOB #23120

PRELIMINARY PLAT

~for~ HAWKINS DRIVE TOWNHOMES
PROPERTY ADDRESS: 13020 HAWKINS DRIVE, ROGERS, MN 55374



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BENCHMARK

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ZONING:

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- DENOTES CATCH BASIN
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- g DENOTES UNDERGROUND GAS
- ohw DENOTES OVERHEAD WIRE
- w DENOTES WATERMAIN
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- wet DENOTES EDGE OF WETLAND
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JOSHUA P. SCHNEIDER

Revised: 6-7-24
Revised: 5-3-24
Date: 2-5-24 Reg. No. 44655

JOB #23120

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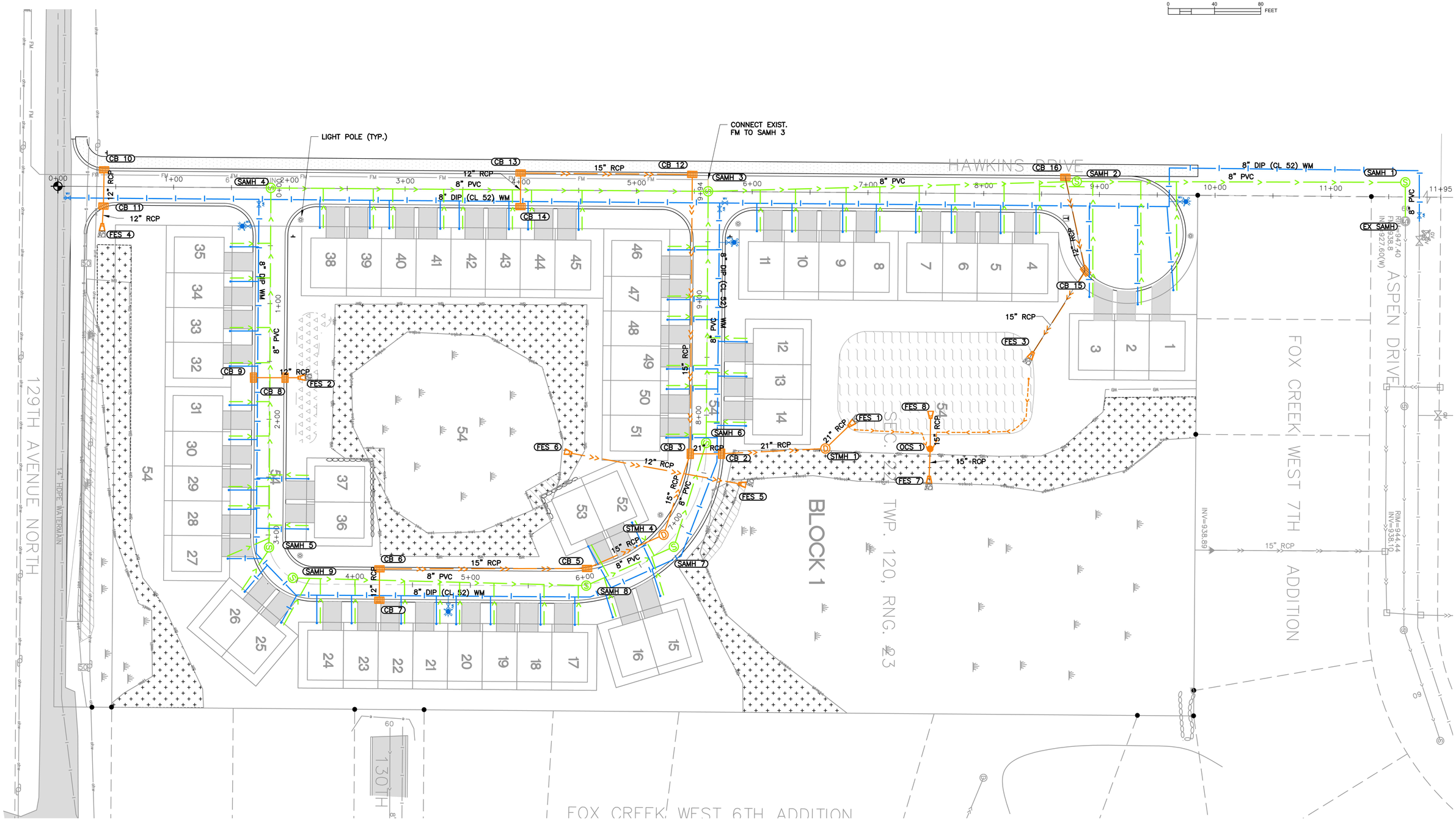
9140 Baltimore Street NE
Suite 100, Blaine, MN
763-238-6278 js.acrelandsurvey@gmail.com

BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07



CIVIL METHODS, INC.
P.O. Box 28038
St. Paul, MN 55128
o:763.210.5713 | www.civilmethods.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.

DAVID M. POGGI

DATE: 06-11-2024

LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
03-18-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

COMPOSITE UTILITY PLAN

SHEET NO:
C300

Print Date: 6/11/2024 9:21 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7. Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C301_UTILITY OVERALL.dwg

SANITARY & WATERMAIN NOTES:

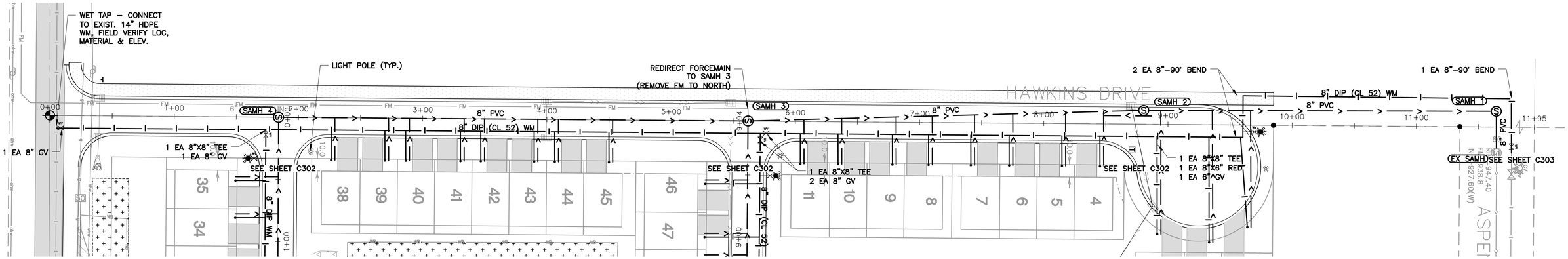
1. The subsurface utility location information in this plan is utility quality level D. This utility quality level was determined according to the guidelines of CI/ASCE 38–02, titled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data." Engineer does not guarantee the accuracy of utility locations, sizes or materials shown, or that all existing utilities are shown; Contractor is responsible for locating utilities prior to digging.
2. Contractor shall coordinate utility connections, removals and street disturbance with City; traffic control requirements as directed by City.
3. Protect light poles and other existing utilities, signs, trees, etc. Relocation of any private utilities not directed on these plans shall be coordinated with the utility owner.
4. Damaged items or property shall be repaired or replaced at Contractor's expense.
5. Watermain pipe and fittings shall be DIP, Cl. 52.
6. Watermain shall have a bury depth of 7.5' (min.).
7. Water service pipe shall be 1" copper, Type K, with curb stop.
8. Hydrants shall be type Waterous Pacer WB–67–250.
9. Sanitary sewer shall be PVC (SDR 35) unless noted otherwise.
10. Sanitary service laterals shall be PVC (Sch40) extended as indicated, plugged with a gasketed plug, and marked with a steel post with top 2' painted green.
11. Sanitary 4" PVC services shall not be laid flatter than 2.0%.
12. Sanitary and water mains to be tested per City requirements.

N

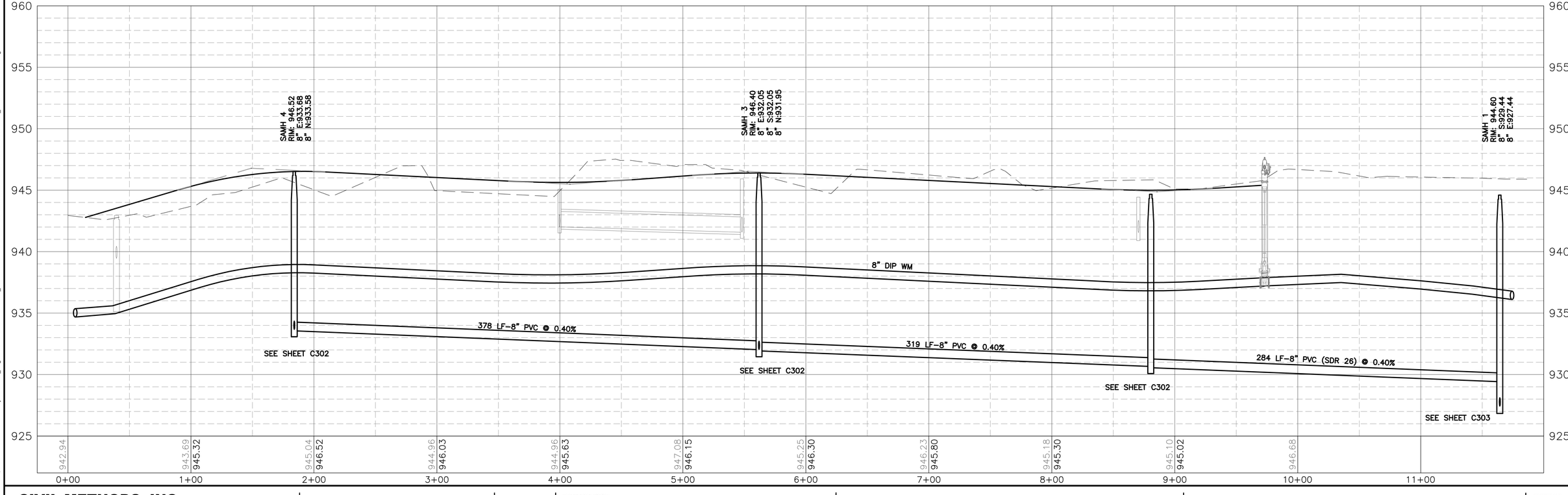
0 40 80 FEET

0 4 8 FEET (VERT.)

BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07



HAWKINS DRIVE



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DAVID M. POGGI
DATE: 06-11-2024
LIC. NO.: 44573

DESIGNED: DMP
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CHECKED: KEB

DATE / REVISION:
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06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

SANITARY AND WATER MAIN HAWKINS DRIVE

SHEET NO:
C301

Print Date: 6/11/2024 9:21 AM
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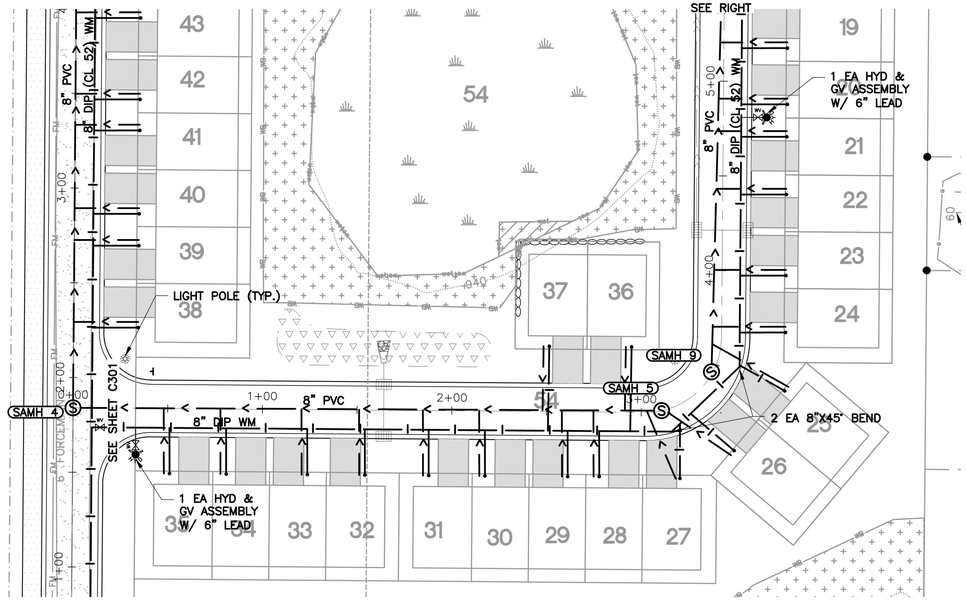
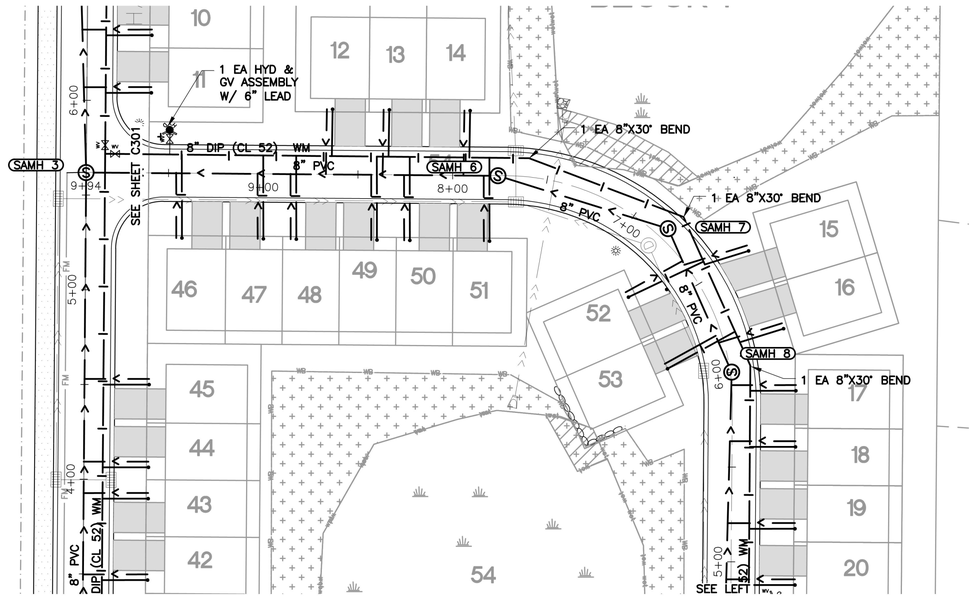
BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07



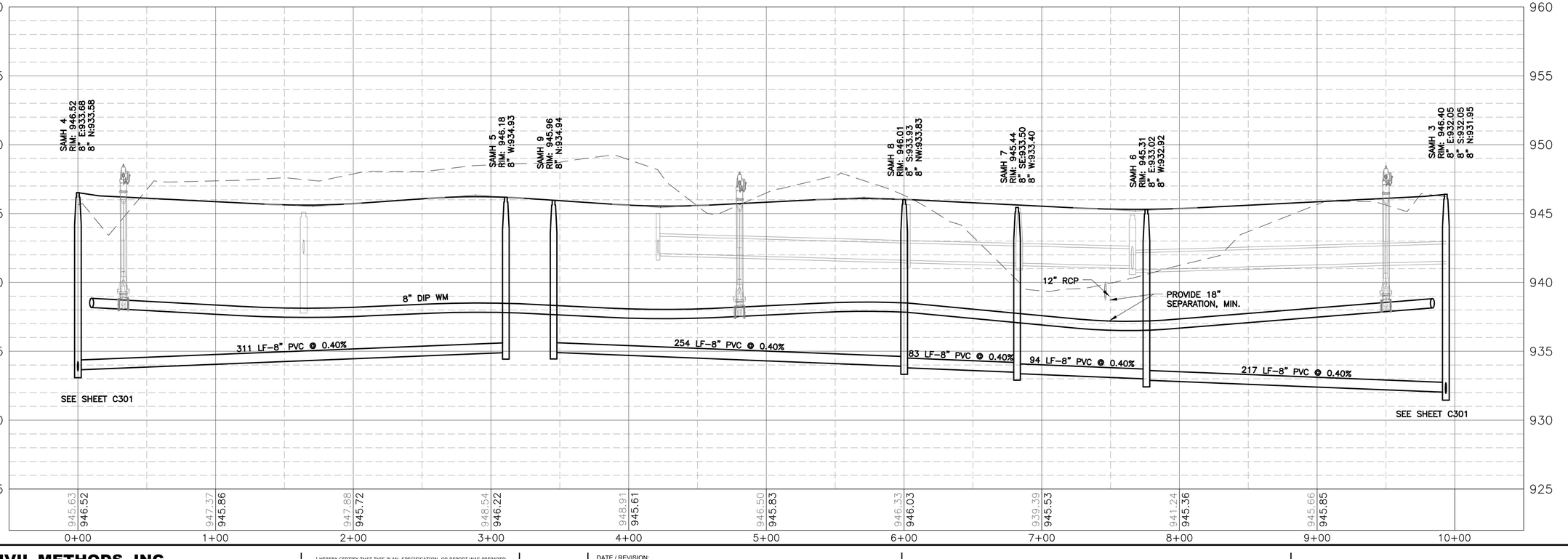


N

0 40 80 Feet

0 4 8 Feet (Vert.)

STREET A



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HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

SANITARY AND WATER MAIN STREET A

SHEET NO:
C302

Print Date: 6/11/2024 9:21 AM
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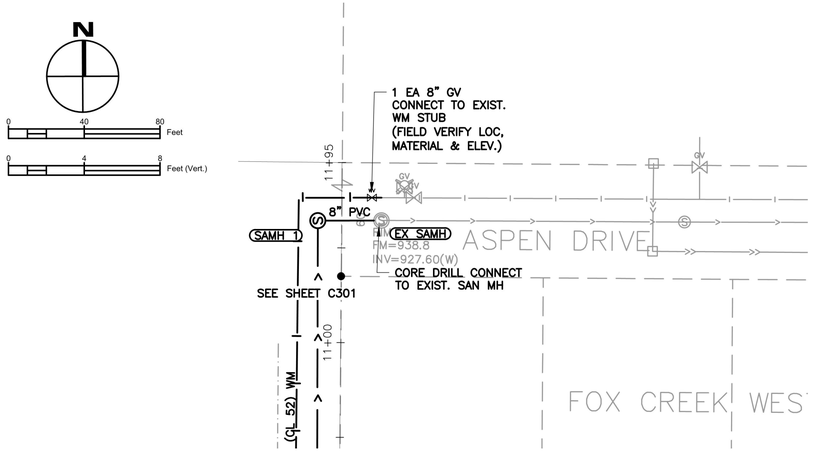
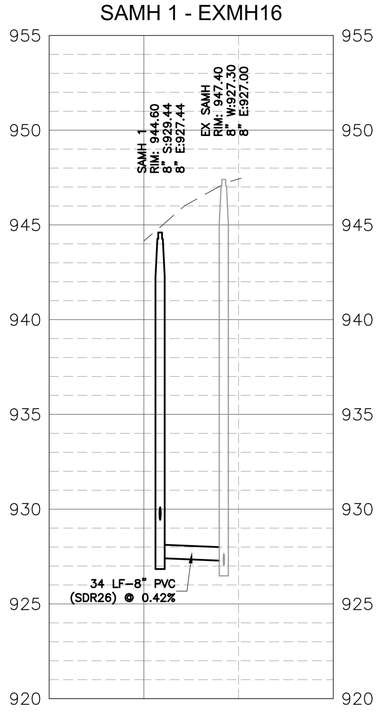
BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07





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DATE / REVISION:
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05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

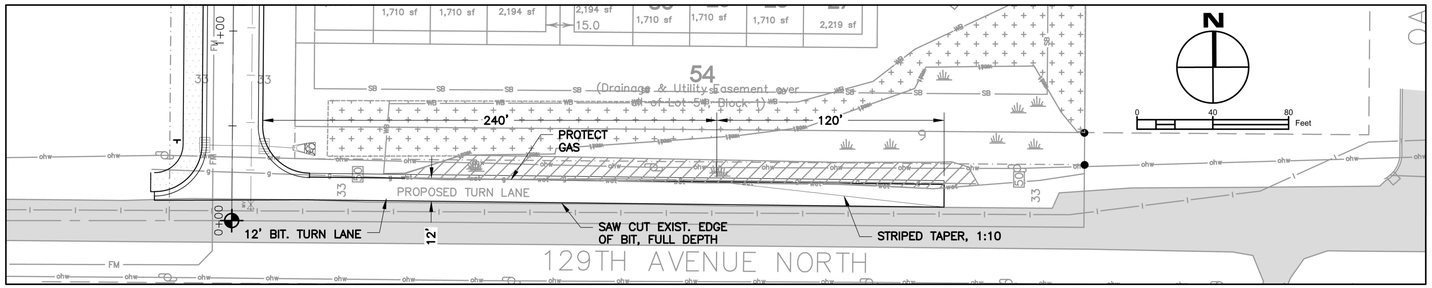
HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

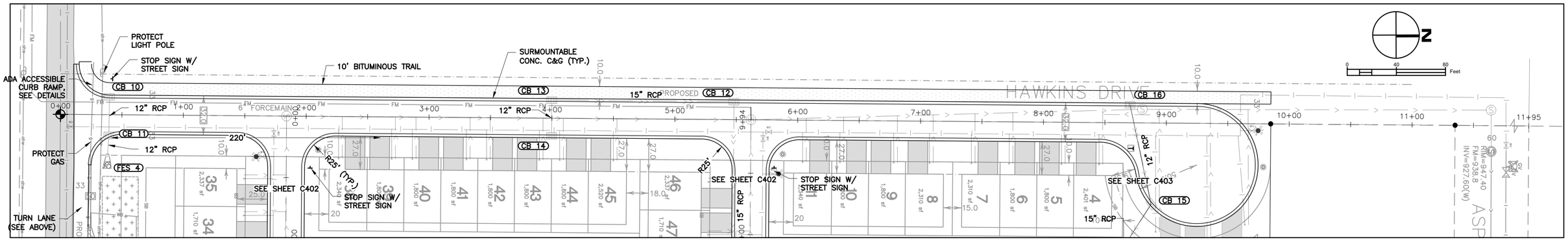
SANITARY AND WATER MAIN STREET B

SHEET NO:
C303

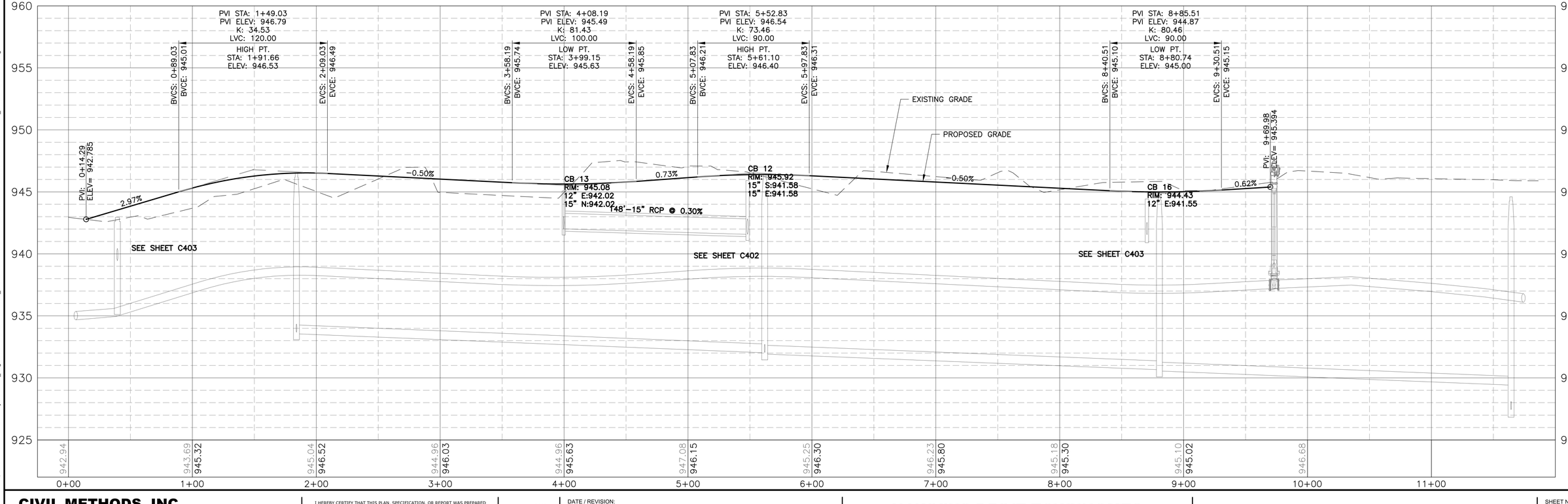
Print Date: 6/11/2024 9:21 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7 Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C301_UTILITY OVERALL.dwg

BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07





HAWKINS DRIVE



0 4 8 Feet (Vert.)

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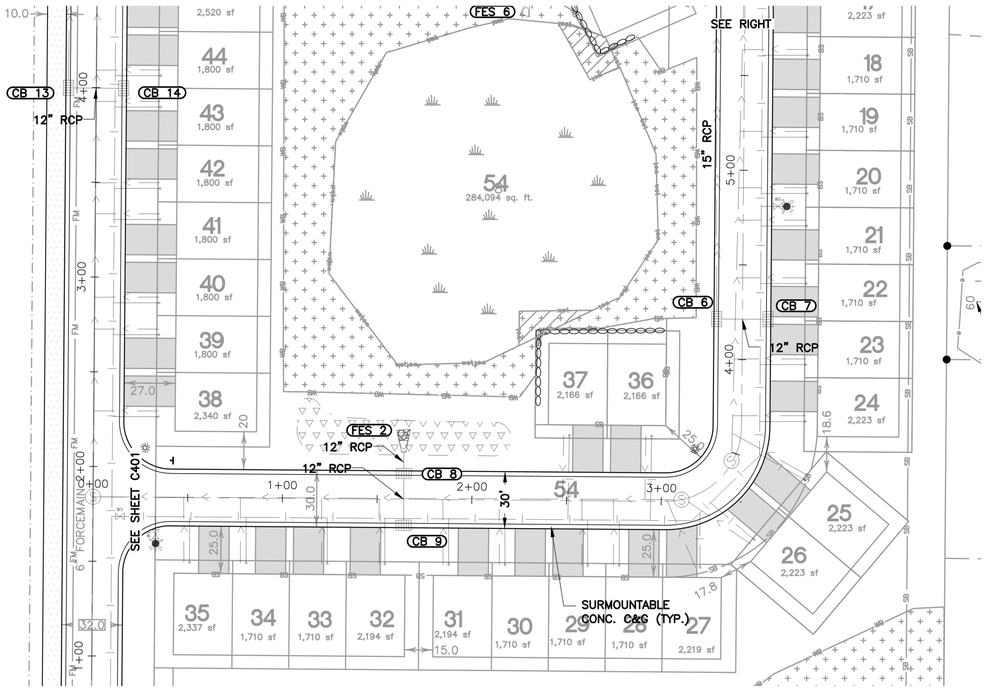
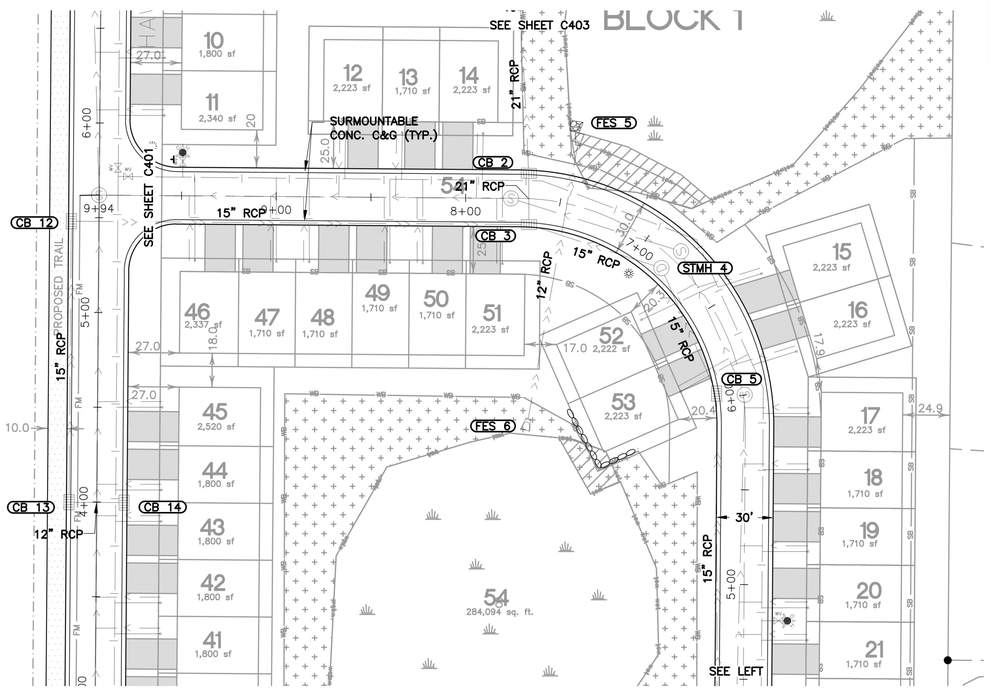
HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

STREET & STORM SEWER HAWKINS DRIVE

SHEET NO:
C401

Print Date: 6/11/2024 9:22 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7. Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C401_STREET & STORM.dwg





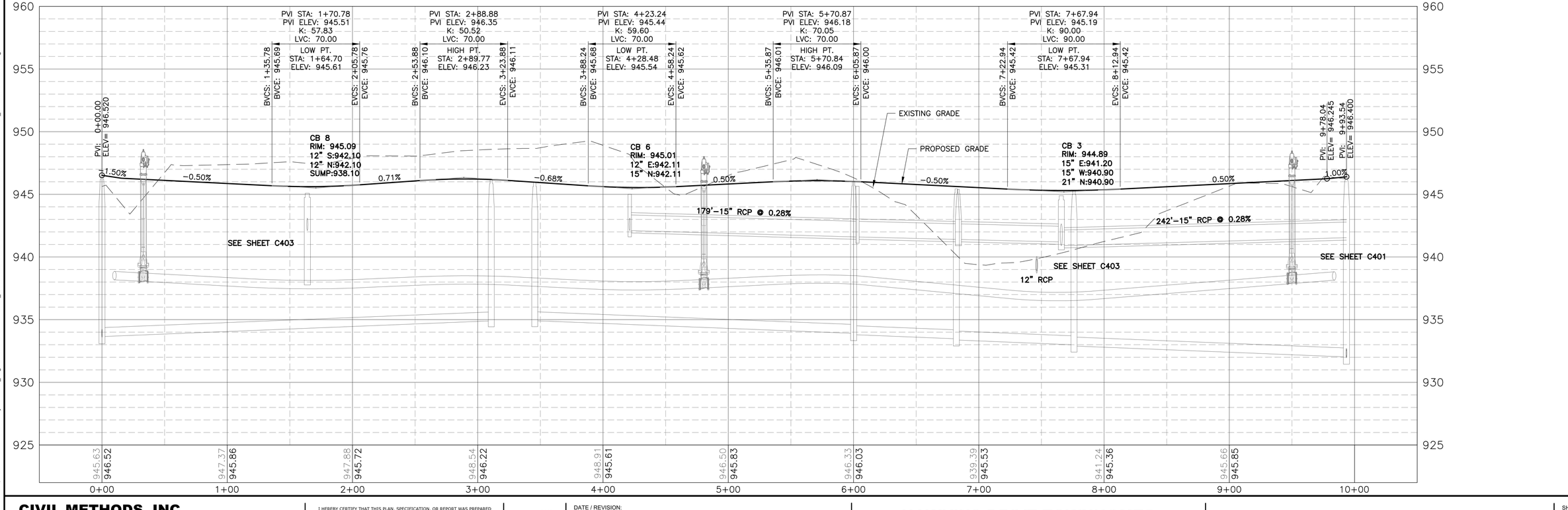
BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07

N

0 40 80 Feet

0 4 8 Feet (Vert.)

STREET A



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DATE / REVISION:
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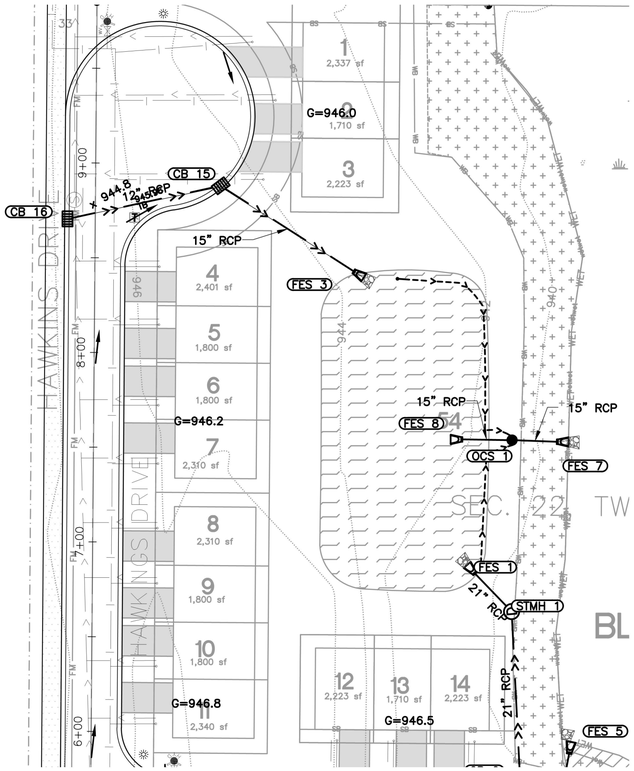
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

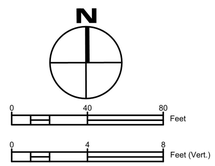
STREET & STORM SEWER
STREET A

SHEET NO:
C402

Print Date: 6/11/2024 9:22 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7. Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C401_STREET & STORM.dwg



BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07



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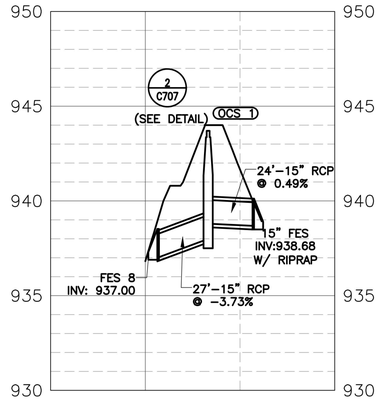
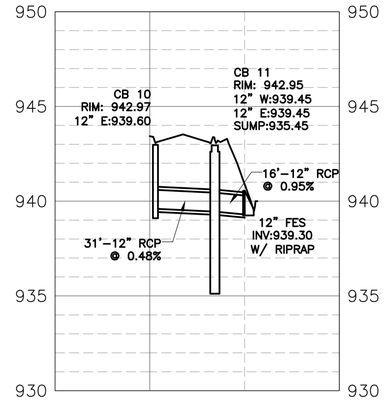
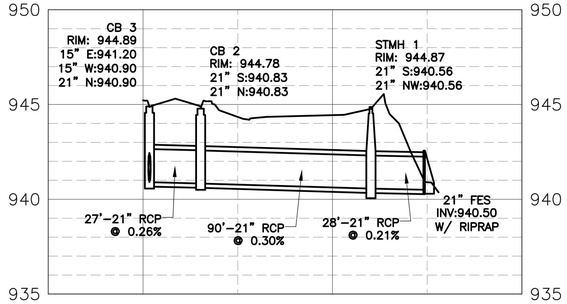


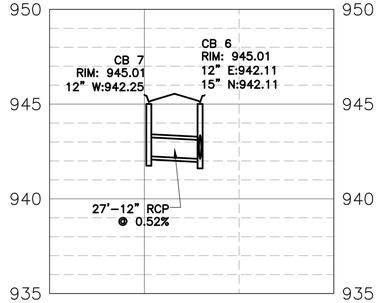
CB 10 - FES 4



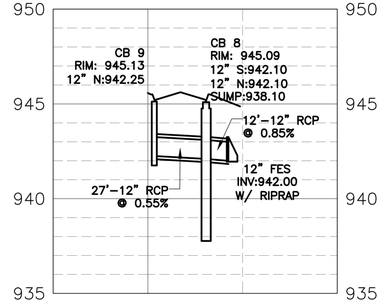
CB 3 - FES 18



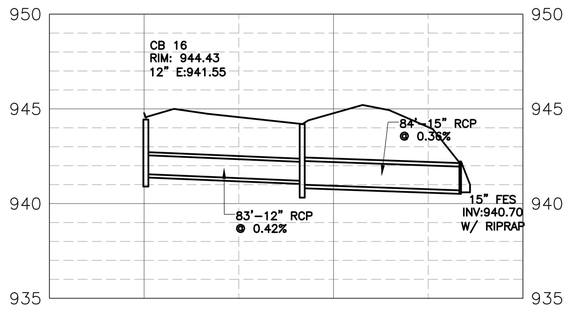
CB 7 - CB 6



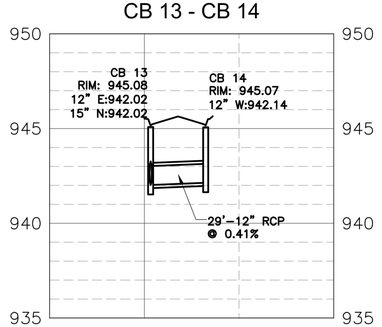
CB 9 - FES 2



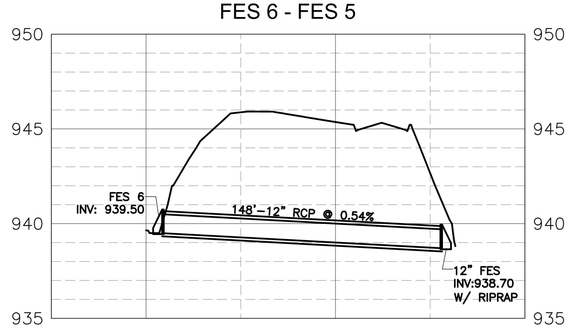
CB 15 - FES 3



CB 13 - CB 14



FES 6 - FES 5



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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.

DAVID M. POGGI
DATE: 06-11-2024
LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
03-18-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

STREET & STORM SEWER
STREET B & PROFILES

SHEET NO:
C403

Print Date: 6/11/2024 9:23 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7 Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C401_STREET & STORM.dwg

IRON-ENHANCED SAND FILTER SHELF NOTES:

1. Iron filings shall be Type ETI-CC-1004 (-8+50) as supplied by Connelly-GPM, Inc. or approved equal.
2. Sand shall be Fine Filter Aggregate (Mn/DOT 3149.2.I.2)
3. Contractor shall mix sand and iron thoroughly; mixing process shall achieve 5% iron by weight distributed uniformly throughout.
4. Excavate IESF trench areas per detail after pond as been rough graded.
5. Install 6" perforated PVC, no sock. See detail.
6. Install sediment control log around shelf once installed.

GENERAL NOTES:

1. See erosion control plan and SWPPP for required controls to be installed prior to site disturbance.
2. Contours shown are to final grade.
3. Curb point elevations are at flow line, unless noted otherwise.
4. Basin shall include 10' wide bench at slope of 10:1 from elevation 940.0 to 941.0. Maximum side slopes to be 4:1 (H:V) above NWL, 3:1 elsewhere.
5. Maximum grading slope in mowed areas to be 4:1.
6. Swales between lots shall be 2.0% (min.)
7. Low floor elevations shall be a minimum of 2.0' above basin HWL and 1.0' above EOF.
8. Driveway grades shown indicate grade from garage to top back of curb when no sidewalk present.
9. See details and note sheets for additional specifications.

WETLAND DATA:

AVERAGE BUFFER WIDTH:	25 FT (10 FT MIN.)
IMPACT AREA (SITE):	±2,250 SF
MITIGATION REQ'D (SITE):	4,500 SF
IMPACT AREA (TURN LANE):	±3,498 SF
MITIGATION REQ'D (TURN LN):	6,996 SF
TOTAL MITIGATION REQ'D:	11,496 SF

WETLAND SE: BUFFER REQ'D:	9,996 SF	PROVIDED: 10,150 SF
WETLAND CENT: BUFFER REQ'D:	16,486 SF	PROVIDED: 17,411 SF
WETLAND NE: BUFFER REQ'D:	18,362 SF	PROVIDED: 18,550 SF

NOTES:

1. Wetland delineated by Jacobson Environmental, PLLC (2021).
2. Wetland delineation pending Boundary Determination

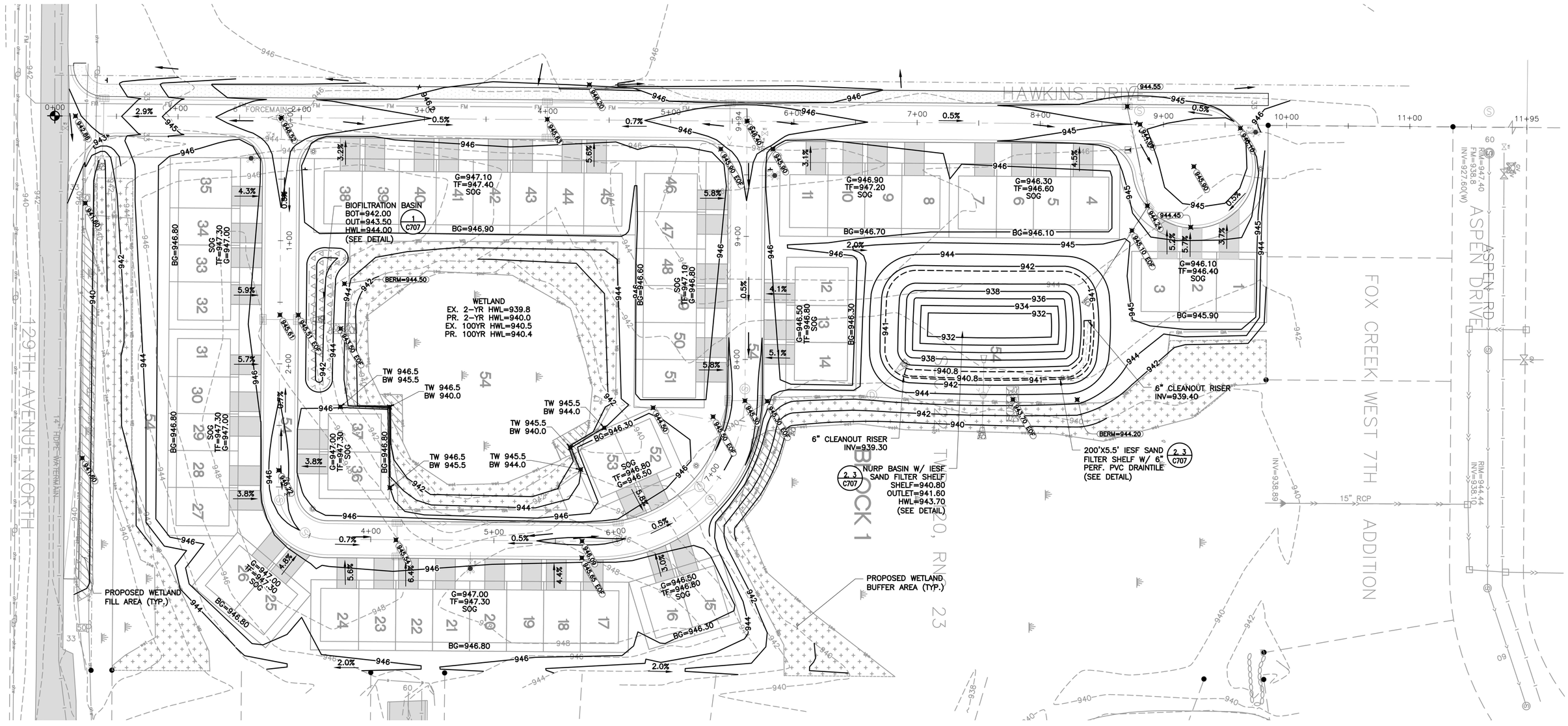
N

0 40 80 Feet

BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07

LEGEND:

- PROPERTY LINE
- WETLAND BOUNDARY — WET —
- CONTOUR
- RETAINING WALL
- BITUMINOUS ASPHALT
- WETLAND IMPACT AREA
- WETLAND BUFFER AREA



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HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

GRADING

SHEET NO:
C501

Print Date: 6/11/2024 9:23 AM
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SEDIMENT CONTROL & TURF RESTORATION NOTES:

1. Topsoil, vegetation, and erosion control items installed and maintained per Mn/DOT 2571–2575.
2. Perimeter sediment controls shall be installed as indicated prior to site disturbance, and shall be installed to allow for high–flow bypass or overflow to prevent failure during significant rainfall.
3. In addition to this sheet, Contractor must be familiar with the SWPPP plan sheet. SWPPP shall remain onsite at all times, as noted in "Record Retention" section of SWPPP.
4. Silt fence shall be of type indicated on the plan (Mn/DOT 3886).
5. Contractor is responsible for keeping sediment from leaving the property, including vehicle tracking. Should sediment be tracked offsite onto adjacent street, Contractor shall sweep Within 24 hours.
6. Install silt fence or sediment control log around any soil stockpiles that will be present for more than 7 days (if no perimeter controls in place to prevent sediment transport).
7. Inlet protection shall be in place on inlets throughout construction; type shall be suitable for each phase of construction.
8. Install sediment control logs in basin areas as indicated immediately after final grading is complete, leave in place until construction has ended and site is stabilized with vegetation.
9. Sediment control logs shall be minimum 8" diameter wood or straw (Mn/DOT 3897).
10. Devices shall be inspected weekly and after all rainfall events exceeding $\frac{1}{2}$", and maintained as necessary to keep the intended functional condition.
11. Accumulated sediment shall be removed from sediment control devices when $\frac{1}{3}$ of device height has been reached.
12. After rough grading is completed, and topsoil spread, areas shall be seeded and blanketed (or sodded) within 7 days. Areas not being actively worked must be covered with temporary seed within 14 days.
13. Random crushed riprap per Mn/DOT 3601 shall be of class and quantity as indicated, and shall include geotextile fabric (3733).
14. Seed in mowed areas shall be Mn/DOT Mix 25–151 (3876) residential turf or approved equal.
15. ROW area along Hawkins Drive shall be seeded with low–maintenance turf Mix 25–131.
16. Seed biofiltration basin with Mn/DOT Mix 33–261 or plant with wet–tolerant "rain garden" plant plugs.
17. Seed pond edge and/or disturbed wetland buffer areas with native wet & dry–tolerant seed, Mn/DOT Mix 33–261 or 33–262.
18. Biofiltration basin shall be covered with hydraulic mulch matrix (3884) or Cat.10 blanket (3885).
19. Ditch bottoms shall include erosion control blanket, Cat.25 (3885).
20. All other seeded areas shall be seeded and covered with hydraulic mulch matrix (3884.B2), blanket (Cat.10 or 15), or straw mulch, Type 1 (no straw in basins).
21. Turf shall be installed by a qualified professional and/or per the Mn/DOT Seeding Manual (latest edition), at rates indicated in the manual.
22. Perimeter sediment controls shall remain in place until vegetation is growing / established in all disturbed areas.
23. Erosion during construction shall be repaired by the Contractor within 24 hours of discovery.

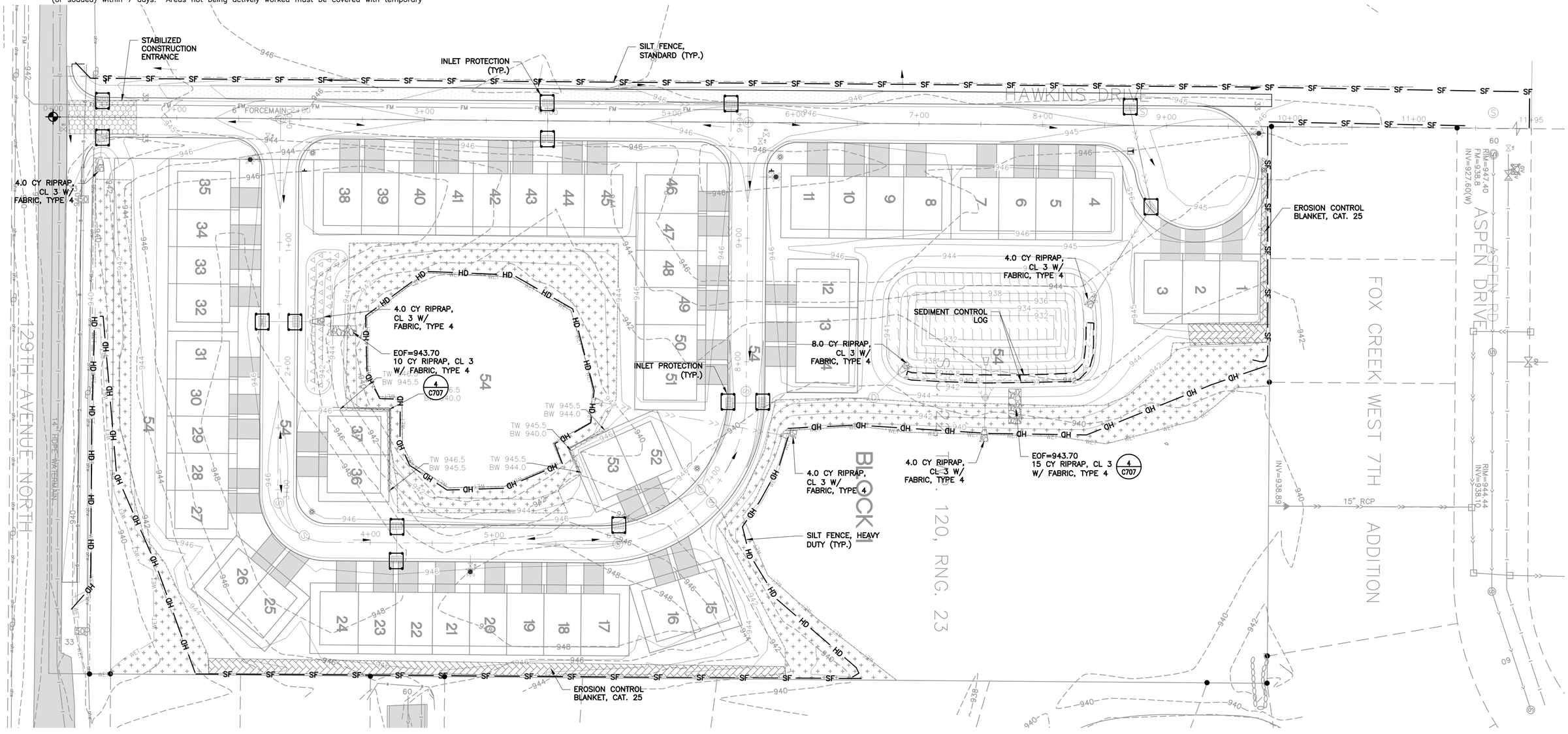
LEGEND:

- PROPERTY LINE
- SETBACK
- EASEMENT
- WETLAND
- CONTOUR
- SILT FENCE, MS — SF —
- SILT FENCE, HEAVY DUTY — HD —
- SEDIMENT CONTROL LOG
- INLET PROTECTION
- WETLAND BUFFER SEEDING
- RAIN GARDEN SEED/PLANTINGS
- ROCK RIPRAP, RANDOM CRUSHED
- EROSION CONTROL BLANKET, CAT 0, OR HYDRAULIC MULCH MATRIX
- EROSION CONTROL BLANKET
- STABILIZED CONST. ENTRANCE

N

0 40 80 Feet

BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07



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HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

EROSION & SEDIMENT CONTROL

SHEET NO: **C601**

Print Date: 6/11/2024 9:23 AM
File Loc: C:\CM\Civil Methods, Inc\CM - Documents\7 Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C601_EROSION.dwg

ALL CONSTRUCTION ACTIVITIES MUST MEET THE REQUIREMENTS OF THE MPCA'S **GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NPDES/SDS PROGRAM (MNR100001)**. All sheets of this planset, as well as the related Project SWMP, are hereby referenced as part of this SWPPP; any related pages shall be revised as appropriate for differing site conditions. Specific reference permit sections included in parentheses throughout.

SITE AND CONSTRUCTION DESCRIPTION:

This project includes site grading for a new residential townhome subdivision in Rogers, MN (Lat: 45.190020, Long: −93.582580).

The site work will include disturbance of approximately 8.5 acres of the 10.2 acre parcel and adjacent easement area for the construction of the proposed roads, utilities, house pad grading and stormwater management infrastructure. Approximately 10,000 CY of material will be excavated and relocated on−site, and all areas will be stabilized and restored as indicated in the plans. Riprap will be installed at all storm sewer and culvert pipe outlets.

The existing site is a natural area and no groundwater or soil contamination is anticipated (16.15).

The Contractor shall sign the MPCA NPDES Construction Stormwater Permit application as "Operator" and be solely responsible for meeting the erosion and sediment control requirements of the permit.

Disturbed Area: 8.5 acres
Pre−Construction Impervious Area: 0.53 acres
Post−Construction Impervious Area: 3.54 acres
Newly Created Impervious Area: 3.01 acres
Permanent Stormwater Treatment Required (If >1.0 acre): YES

PERMANENT STORMWATER MANAGEMENT:

Permanent stormwater management is required by the MPCA, Elm Creek WMC, and the City of Rogers, and is described in detail in the project Stormwater Management Plan (SWMP) document. In summary, the site has been designed to treat a WQV of 1.1" from the site impervious area in a biofiltration basin and a IESF shelf on a NURP pond. Pretreatment is provided by sump manholes and the NURP basin. Discharge rates from the site have not been increased from the existing condition.

Soils at the site are primarily silty clay loams with poor potential for true infiltration. Soil borings have confirmed the general soil nature as mapped, consisting of HSG Type C and D soils. Therefore, alternative measures are proposed to meet WQV treatment requirements.

Site drainage is primarily split in three directions, with the northern portion draining to the NE wetland, the central portion draining to the central wetland, and the southern end draining to a small wetland in the SE corner of the property. The central wetland overflows to the northeast wetland, which is outletted by an existing 15" storm sewer to the north. The general site drainage patterns will remain similar to existing after construction.

The project site does not discharge to an Impaired Water within 1 mile, as defined by the State's Impaired Waters List.

EROSION & SEDIMENT CONTROL

1. The contractor shall use phased construction whenever practical to minimize disturbed area at any one time. Disturbed area shall not exceed that which can be effectively inspected and maintained.
2. A temporary sediment settling basin is required when more than 5 acres of disturbed area will drain to a common location.
3. A 50' natural buffer shall be preserved within surface waters adjacent to construction. If not feasible, redundant (double) perimeter sediment controls separated by 5.0' are required. Special Waters require 100' buffer.
4. All exposed soil areas, including stockpiles, must be stabilized as soon as possible to limit soil erosion but in no case later than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
5. The following shall be installed within 24 hours of connection to surface water or property edge:
   5.1. Energy dissipation (riprap) at all outlet aprons
   5.2. Stabilization of temporary or permanent drainage swales within 200' of property boundary or connection to surface water (e.g., storm sewer inlet, drainage swale, etc.)
6. A vehicle tracking BMP must be installed at the site entrance where haul vehicles are entering and exiting the site, including: rock pad, slash mulch, wash rack, etc. Streets must be swept within 24 hours of discovery of offsite tracking.
7. Temporary stockpiles must have silt fence or other applicable sediment control device around the base of the pile.
8. The Contractor shall be responsible to control sediment−laden surface water from leaving site. All mobilized sediment that has left the construction zone shall be collected by the contractor and properly disposed of at no additional cost to the owner.
9. Any fines levied due to inadequate erosion or sediment control practices, sediment discharging from the site, etc., shall be the responsibility of the Contractor.
10. Inlets shall be protected from sediment at all times, with appropriate protection installed for each phase of development.
11. Infiltration / filtration basins shall not be excavated to final grade until contributing drainage area has been fully stabilized, unless rigorous measures are incorporated to keep sediment from draining to the basins (16.4).
12. When excavating to within 3' of final grade of infiltration / filtration system, areas shall be staked to ensure vehicles and equipment do not compact the soil.
13. Adjacent roads must be inspected and kept clear of sediment; roads to be swept within 24 hours of tracked sediment discovery.
14. Additional temporary BMPs may be required to reduce the potential for sediment transport during construction. If deemed necessary by onsite personnel, Engineer or Owner shall be contacted immediately for approval or guidance, if available. Otherwise best judgment shall be used to provide rapid stabilization or sediment controls as necessary to minimize potential pollutant discharge.

CONSTRUCTION IMPLEMENTATION SCHEDULE & PHASING

1. Install perimeter silt fence / sediment logs, and construction entrance as shown prior to site disturbance.
2. Complete soil stripping and rough grading of site, including pond rough grading.
3. Install pipes
4. Install street pavement and curbing as indicated.
5. Complete final grading of filtration basins and shelves, protect with sediment control logs
6. Replace topsoil and establish vegetative cover.
7. Complete site restoration and final stabilization measures (remove temporary controls after construction acitivity has ceased and vegetation is established).
8. Submit Notice of Termination (NOT) to MPCA within 30 days.

DEWATERING & BASIN DRAINING

1. Dewatering water, if necessary, must be discharged to a sediment control device (e.g., sediment basin or trap, filter bag, etc.) to prevent sediment−laden water with visual turbidity from discharging downstream. To the extent feasible, use well−vegetated upland areas of the site to infiltrate dewatering water before discharge. Contractor must visually check and photograph the discharge at the beginning and at least once every 24 hours of operation.
2. If nuisance conditions result from the discharge (e.g., cloudy or opaque water, oil film, erosion, etc.), Contractor must cease dewatering and correct the situation immediately.
3. If discharge water contains oil or grease, an oil−water separation or filtration device shall be used prior to discharge.
4. Use appropriate energy dissipation measures on all discharges to prevent erosion at discharge outlet. Discharge must not cause nuisance or erosive conditions to downstream properties or receiving channels. Excessive inundation of downstream wetlands is not permitted (if applicable).
5. If filters with backwash water are used, all backwash water must be hauled offsite for disposal, returned to the beginning of the treatment process, or incorporated into the site in a manner not causing erosion.

INSPECTIONS & MAINTENANCE

1. The contractor must routinely inspect the construction site and areas adjacent to the project once every 7 days during construction, and within 24 hrs of receiving more than ½" of rain in 24 hrs. Rainfall amounts must be measured by a properly installed rain gage onsite, or from a weather station within 1 mile of the project, or from a weather reporting system with site specific radar rainfall summaries (11.11).
2. All inspections and rainfalls > ½" must be recorded and retained onsite with the SWPPP. Inspections shall include: date/time, name of individual, date & amount of rainfall, findings, corrective actions, observed discharge/location/description, any proposed SWPPP amendments.
3. Inspections may be suspended when work is stopped due to frozen conditions. The Contractor's inspector must resume inspections within 24 hours after runoff occurs at the site or prior to resuming construction, whichever comes first.
4. Silt fence (or related perimeter control device) must be maintained when accumulated sediment reaches ½ the height of the device, or if device becomes ineffective (by the end of the next business day following discovery).
5. Permanent and temporary sediment basins, if applicable, shall be drained and cleaned when sediment depth reaches ½ of original storage volume; complete within 72 hrs of discovery. Must be cleaned prior to project completion.
6. Non−functional BMPs must be repaired or replaced by the end of the next business day following discovery.
7. Inspect downstream ditch / drainage system for signs of erosion or sediment buildup during each inspection; stabilize within 7 days.
8. Contractor shall inspect and photograph dewatering discharges at the beginning and every 24 hours during operation.
9. Inspect vehicle exit locations and adjacent streets; remove sediment from surfaces within 1 day.

POLLUTION PREVENTION

1. All solid waste generated at the site must be disposed of in accordance with all applicable federal and state regulations.
2. All hazardous materials must be properly stored/contained to prevent spills or leaks; materials must be properly disposed of perapplicable regulations, including Minn. Rule Ch. 7045. Restricted access storage areas must be provided to prevent vandalism.
3. Vehicle or equipment washing must be confined to a defined area (minimum of 100' from pond or drainage ditch); runoff containing any hazardous materials must be collected and properly disposed of. Defined area must be delineated with heavy−duty silt fence (incidental); no engine degreasing is allowed on−site.
4. Pesticides, herbicides, insecticides, fertilizers, treatment chemicals, and landscape materials must be under cover to prevent pollutant discharge, or protected by similar means to minimize potential contact with stormwater.
5. Concrete and other washout waste must be effectively contained − solid and liquid washout waste must not contact ground and must be disposed of properly in compliance with MPCA rules. A sign must be installed at washout area requiring personnel to utilize the proper facilities for disposal of concrete and other wastes.
6. The contractor is solely responsible for monitoring air pollution and ensuring that it does not exceed levels set by any agency or LGU. This includes dust created by work performed at the site; air pollution and dust control measures are incidental to the contract. The engineer may require additional dust control measures to be implemented, as necessary.
7. Adequate temporary restroom facilities shall be present onsite in a stable and secure location during construction operations, and shall be maintained in an adequate functioning condition.

FINAL STABILIZATION & NOTICE OF TERMINATION (NOT)

1. The Contractor must ensure final site stabilization meets the Permit requirements, and submit the NOT within 30 days.
2. Final stabilization includes uniform perennial vegetative cover of at least 70% of the expected final growth density over the entire pervious surface area, or other equivalent cover to prevent soil erosion.
3. All temporary synthetic and structural BMPs must be removed as part of final stabilization.
4. Ground or aerial photographs shall be taken and submitted with the NOT, confirming final stabilization measures.

SWPPP UPDATES & RECORD RETENTION

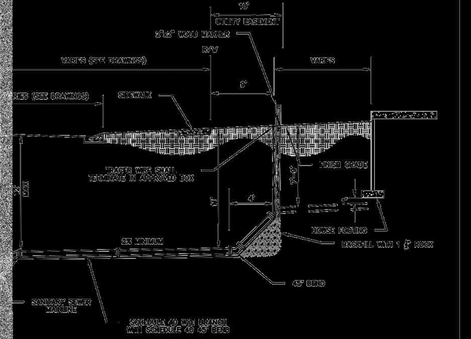
1. The SWPPP, all revisions to it, and inspection & maintenance records are the responsibility of the Contractor and must remain at the site during construction hours. The materials may be kept in a field office, onsite vehicle, or "SWPPP Mailbox", or be otherwise electronically available on−site.
2. This SWPPP shall be updated within 7 days to include additional or modified designs when there is a change in design having significant effect on the discharge of pollutants to surface waters or groundwater.
3. Training documentation shall be provided by Contractor as outlined below and required.
4. The SWPPP, project permits, inspection/maintenance logs, stormwater maintenance agreements, and stormwater management design calculations must be retained for 3 years after submittal of permit NOT. Contractor shall provide Owner or Engineer copies of inspection and maintenance logs prior to final payment.

TRAINING REQUIREMENTS

1. The permittees must comply with the training requirements as outlined in Section 21 of the Permit. The Contractor shall have a trained individual performing BMP installations and inspections, as required.
2. Training table (below) to be completed prior to construction, as appropriate.

SOILS MAP

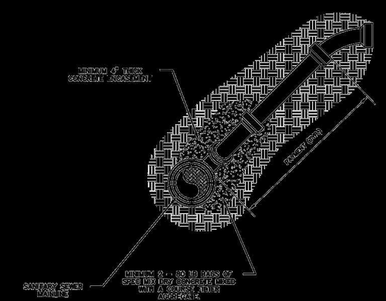
LSB
LSB
LSB



NOTES:

1. ALL GRAVEL PIPE BEDDING TO BE 4" IN 6" AS STANDARD
2. MINIMUM TRENCH WIDTH AS SHOWN, IF PVC PIPE
3. PVC PIPE SHALL BE BEDDED IN GRANULAR CLASS I SAND OR GRAVEL FILTER AGGREGATE SOIL
4. 45° BENDS SHALL BE 4" TO 6" ABOVE THE TOP OF BARREL AND END WALL OR A MINIMUM OF 12" WHEN USED IN CONJUNCTION WITH A MANHOLE. ADDITIONAL BENDS NECESSARY ARE SHALL BE CONSIDERED INCIDENTAL TO THE WATER SERVICE.

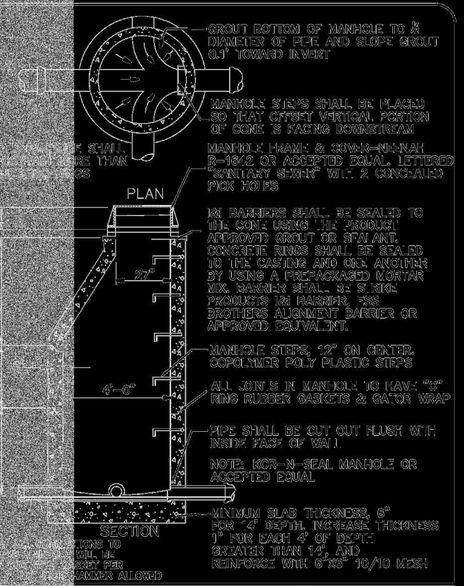
CITY OF ROGERS	SANITARY SEWER SERVICE	Standard Details Date: SEPTEMBER, 2020 Revised: APR., 2021 SAN-1



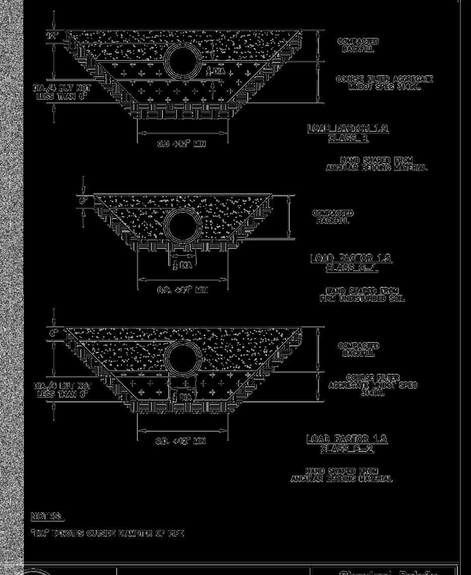
NOTES:

1. SERVICE CONNECTION TO BE AT 90° OR MORE TO THE MAINLINE UNLESS APPROVED BY THE CITY.
2. 4" OR 6" SANITARY SEWER SERVICE PIPE SHALL BE SDR 26 OR SCHEDULE 40 PVC SERVICE

CITY OF ROGERS	SANITARY SEWER SERVICE DEPTH	Standard Details Date: SEPTEMBER, 2020 Revised: SAN-2



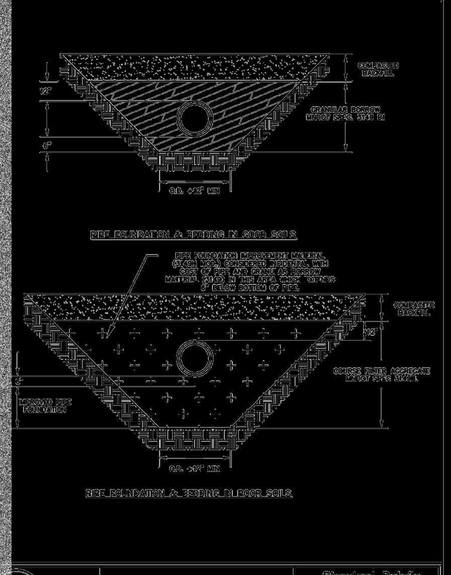
CITY OF ROGERS	STANDARD SANITARY MANHOLE	Standard Details Date: SEPTEMBER, 2020 Revised: SAN-4



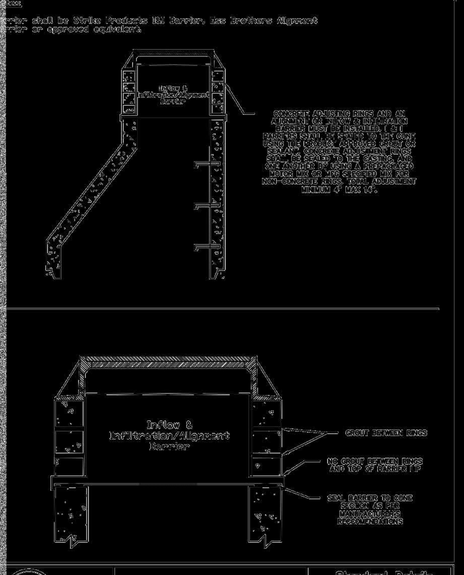
NOTES:

1. "MIN" DENOTES CLOSEST MINIMUM OR MORE

CITY OF ROGERS	PIPE BEDDING METHODS FOR RCP OR DIP	Standard Details Date: SEPTEMBER, 2020 Revised: SAN-11



CITY OF ROGERS	PIPE BEDDING METHODS FOR PVC	Standard Details Date: SEPTEMBER, 2020 Revised: SAN-12



CITY OF ROGERS	PIPE TO NEW MANHOLE CONNECTION	Standard Details Date: SEPTEMBER, 2020 Revised: SAN-14

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LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
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05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
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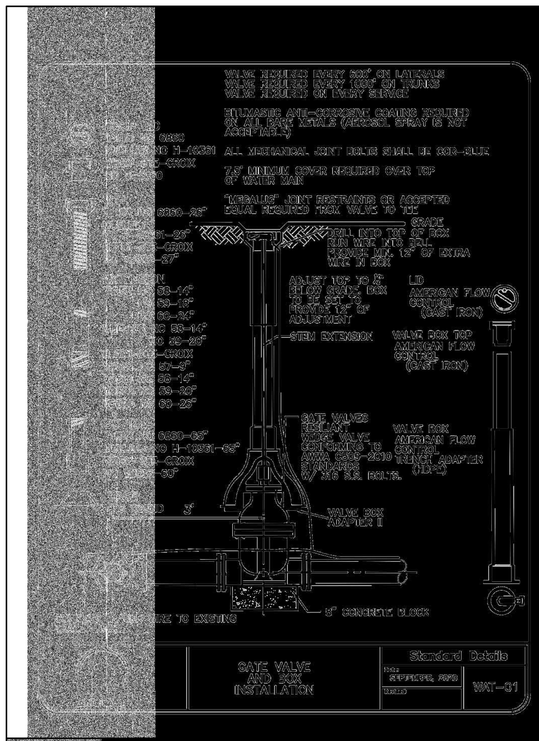
HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

DETAILS

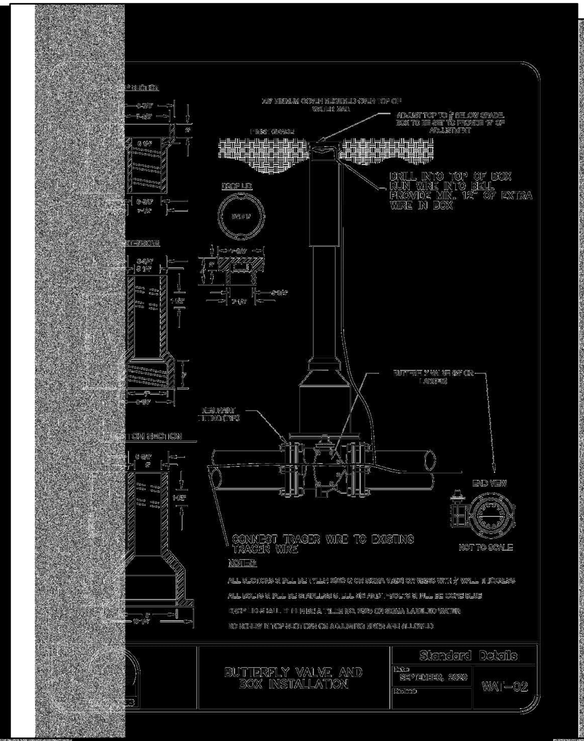
SHEET NO:
C701

Print Date: 6/11/2024 9:24 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7. Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3D Sheets\PRELIMINARY\C701_DETAILS.dwg



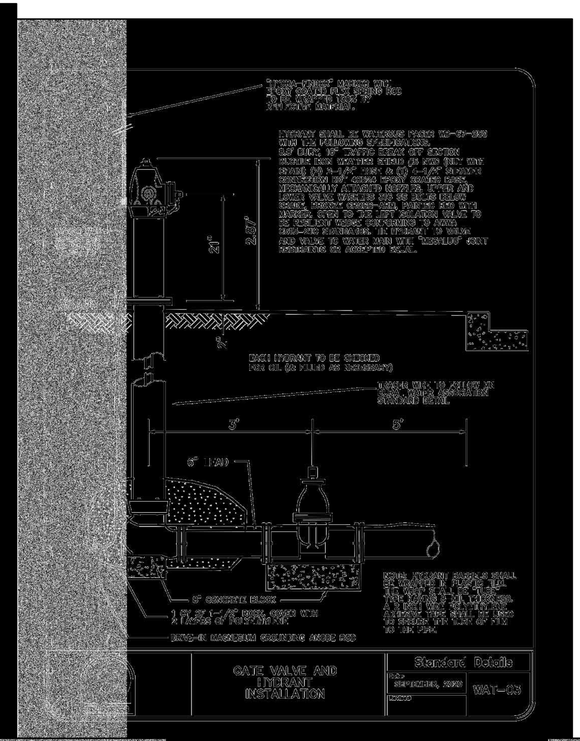
GATE VALVE AND BOX INSTALLATION

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-01



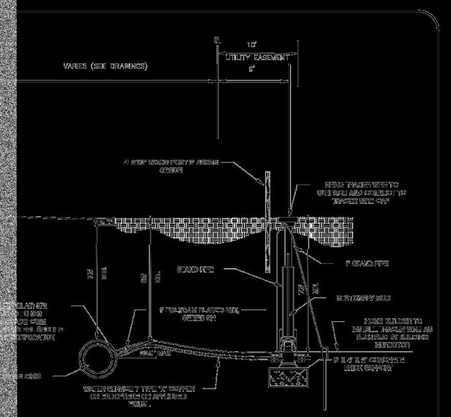
BUTTERFLY VALVE AND BOX INSTALLATION

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-02



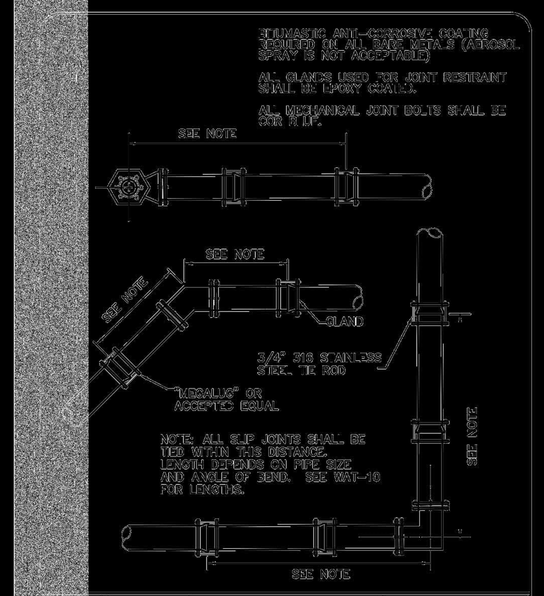
GATE VALVE AND HYDRANT INSTALLATION

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-03



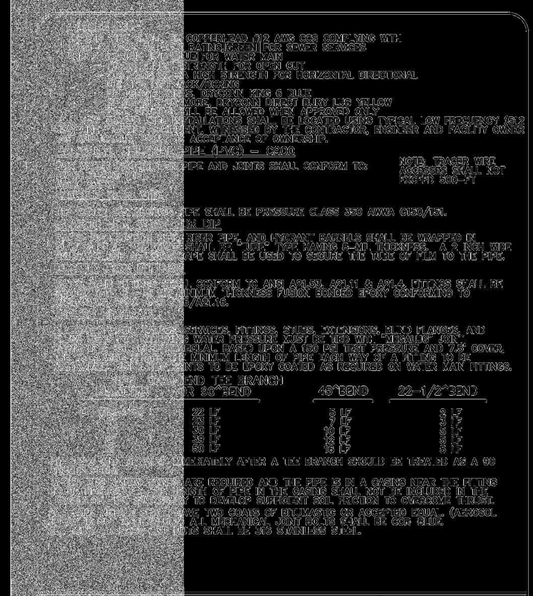
1" WATER SERVICE WITH PVC WATERMAN

Standard Details
DATE: JUNE, 2020
REVISED:
CHANGE, 2020
WAT-05



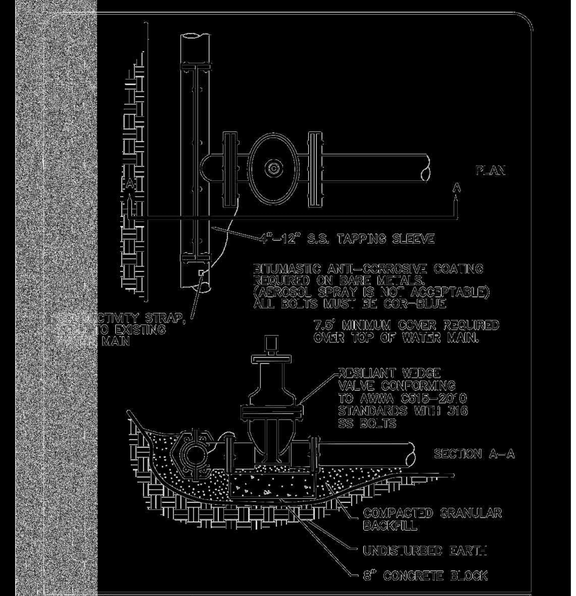
WATERMAN TYING DETAIL

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-06



WATER MAIN DETAILS AND TIE SCHEDULE TABLE

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-10



WATERMAIN WET TAP

Standard Details
DATE: SEPTEMBER, 2020
REVISED:
WAT-11

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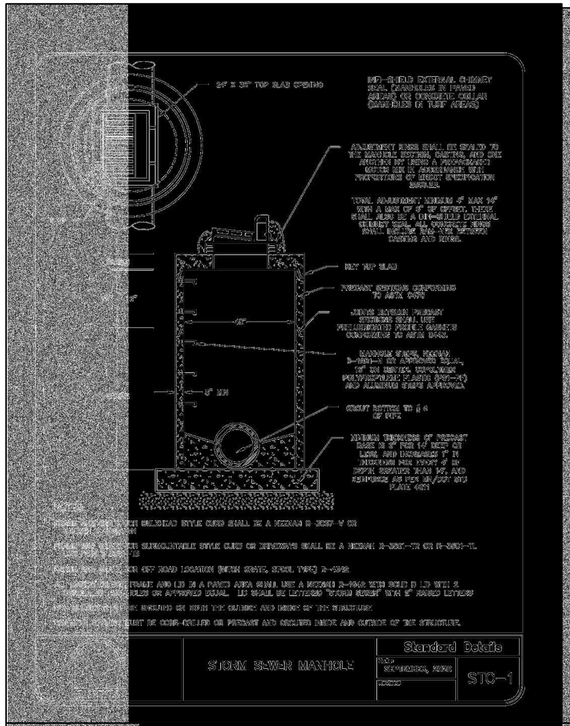
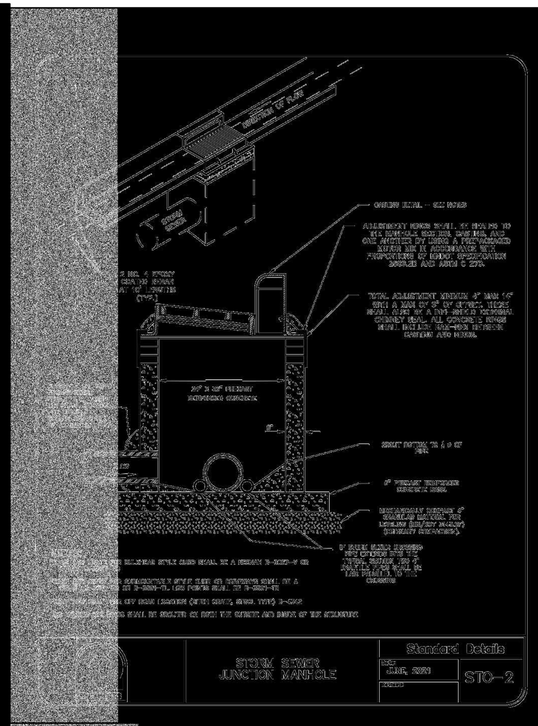
HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

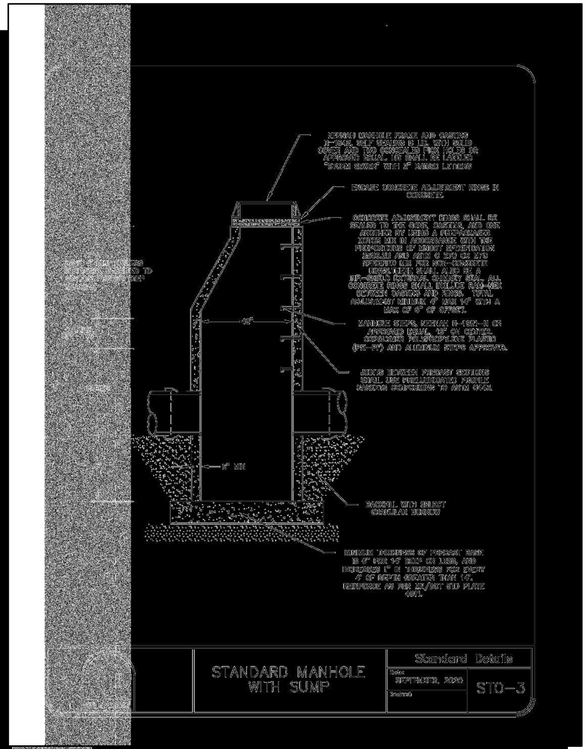
DETAILS

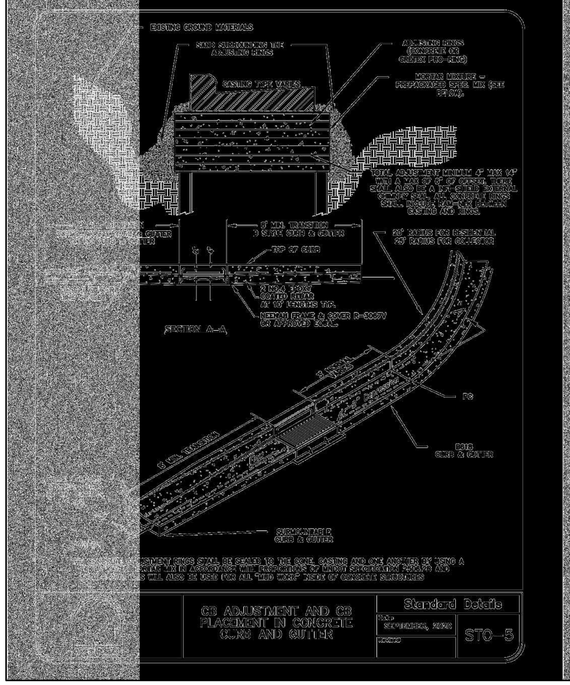
SHEET NO:
C702

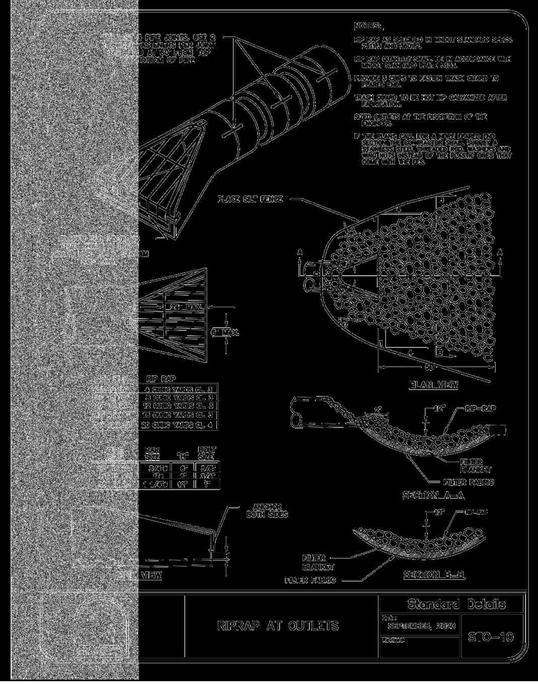
Print Date: 6/11/2024 9:24 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7 Projects\23028_Rogers Hawkins Townhomes\09_DRAWINGS AND SPECIFICATIONS\C3D\Sheets\PRELIMINARY\C701_DETAILS.dwg

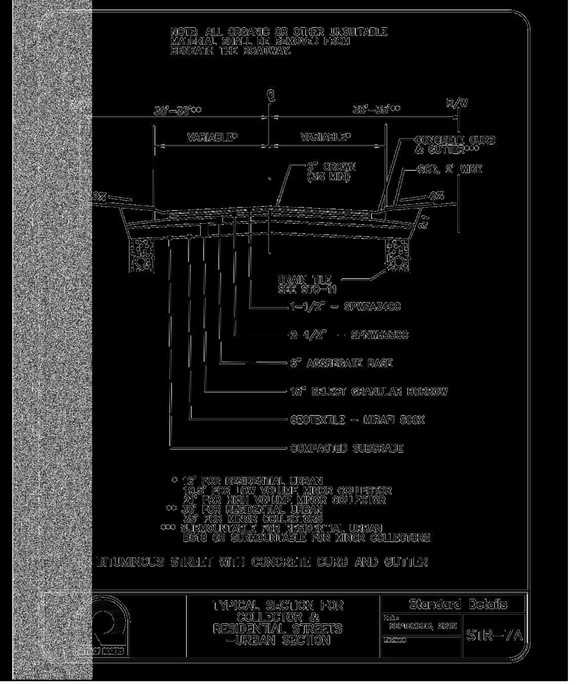












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C703

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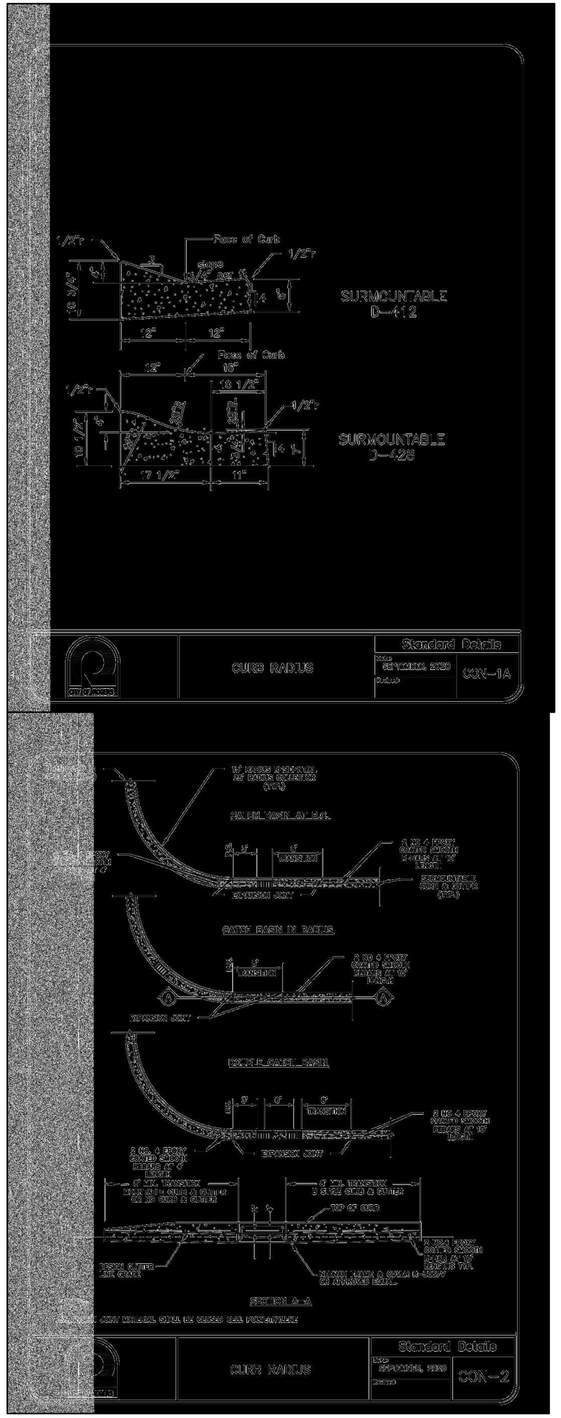

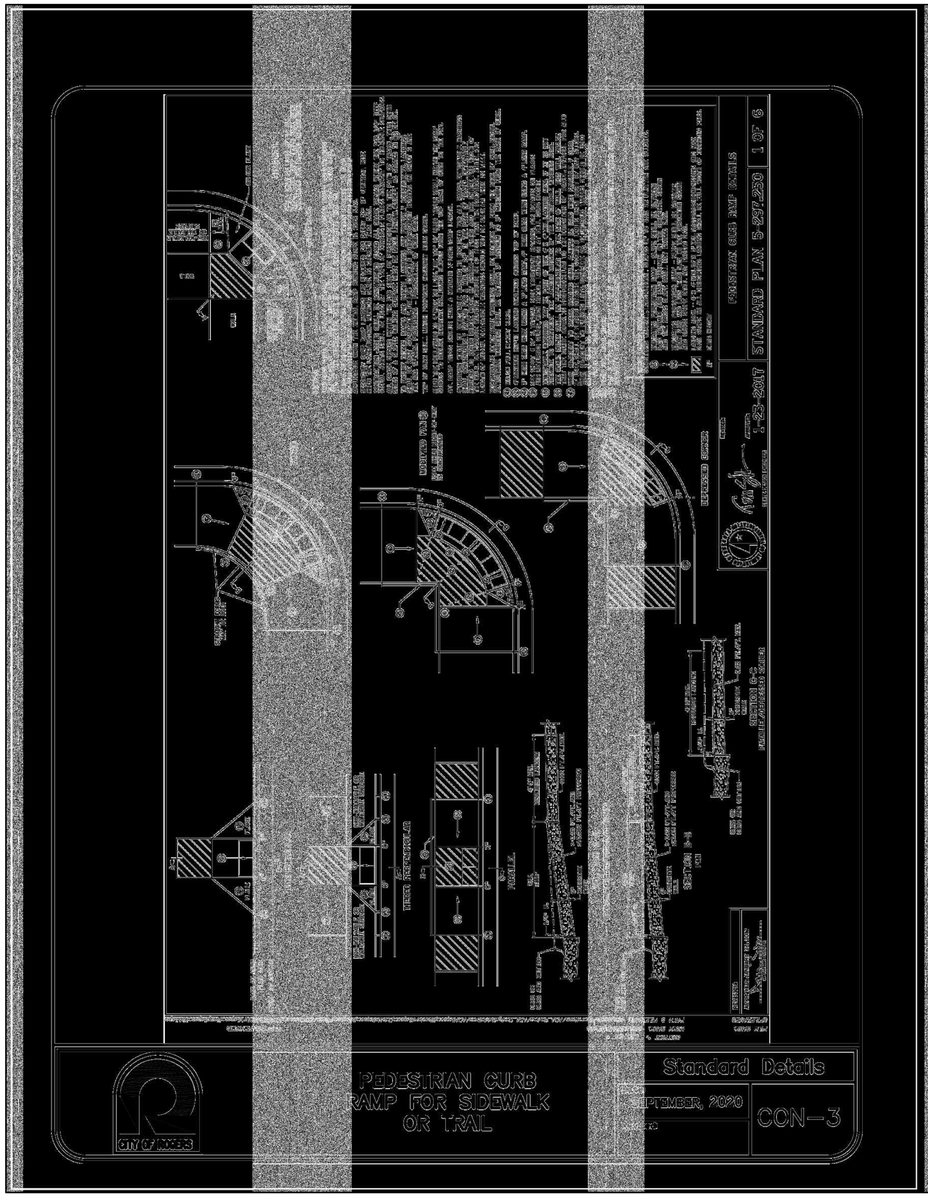

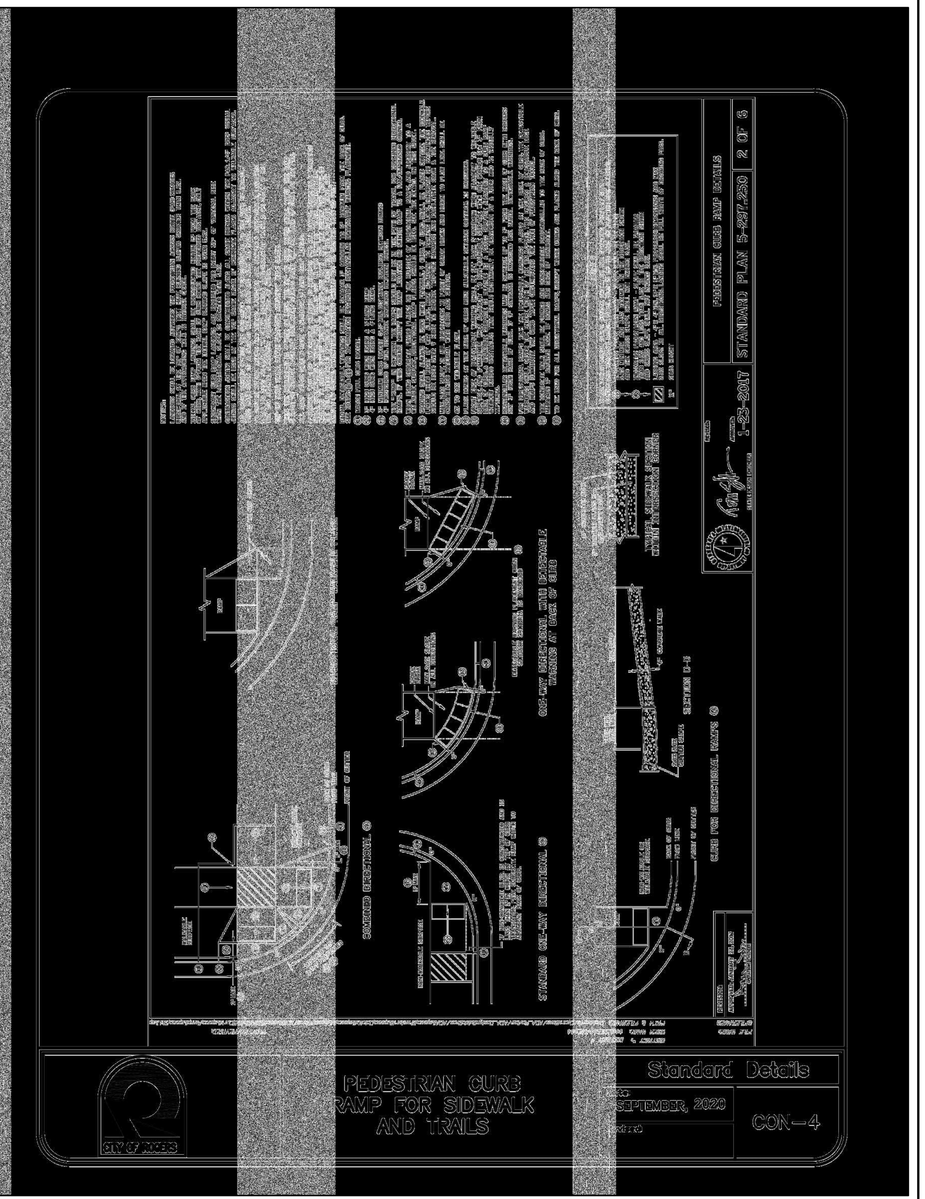

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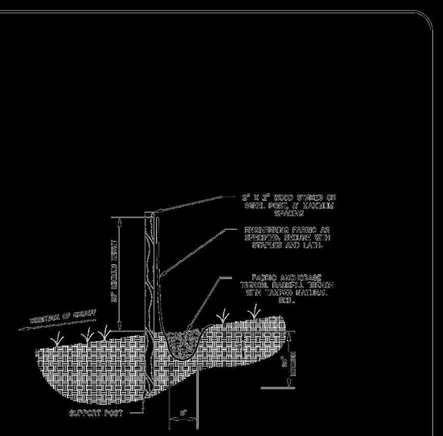
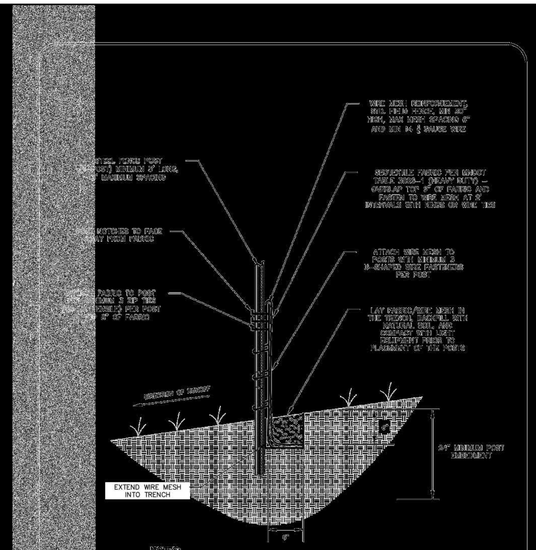


DOUBLE SILT FENCE TO BE REQUIRED NEAR WETLANDS

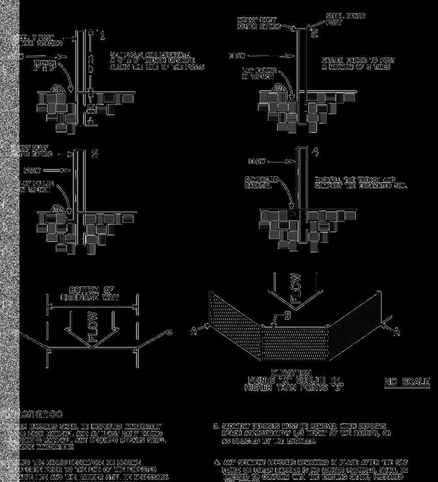
CITY NOTES	STANDARD SILT FENCE	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-1



NOTES:

HEAVY DUTY SILT FENCE IS TO BE USE AT GRADE BREAKS WHERE AN EXIST. TO A 24 FT OR LESS AND AT TOE OF SLOPES OR BERMS

CITY NOTES	HEAVY DUTY SILT FENCE	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-2



NOTES:

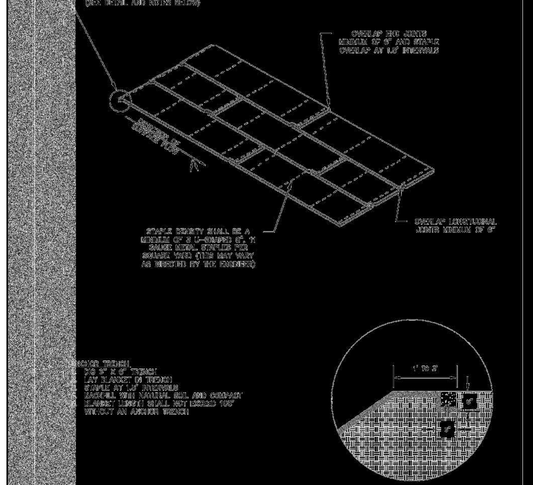
1. SILT FENCE SHALL BE INSTALLED IMMEDIATELY ALONG CONTOUR, AND AS CLOSE AND PARALLEL TO SOURCE AS POSSIBLE.

2. SILT FENCE SHALL BE INSPECTED AFTER EVERY RAIN AND REPAIRED IMMEDIATELY AS NEEDED.

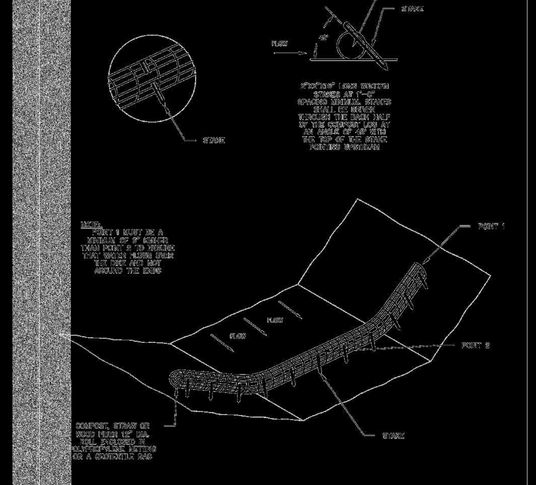
3. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE GRADED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

4. ALL REMOVED OR REPLACED MATERIALS SHALL BE DISPOSED OF IN AN APPROVED MANNER.

CITY NOTES	SILT FENCE ALONG WETLAND	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-4



CITY NOTES	EROSION CONTROL BLANKET INSTALLATION	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-5



NOTES:

POINT 1 MUST BE A MINIMUM OF 8" HIGHER THAN POINT 2 TO ENSURE THAT WATER FLOWS OVER THE BLANKET AND NOT AROUND THE END

CITY NOTES	BIOLOG DITCH CHECK	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-6

NOTES:

1. WATER THERE SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH MATERIAL.

2. ROCK SHALL BE PLACED IN A CONFIGURATION THAT WILL PREVENT TRACKING OF MUDDY SOIL ONTO PAVED ROADS OR OTHER PUBLIC AREAS. THE ROCK SHALL BE PLACED THE ENTIRE WIDTH AND LENGTH OF THE ENTRANCE.

3. ROCK SHALL BE CLEANED PRIOR TO ENTRANCE AND PLACED ROCK-OF-WAY.

4. ROCK IS REQUIRED IF SOIL IS DRY OR AS ADD SUFFICIENT WITH MOISTURE CANNOT BE USED TO REMOVE SEDIMENT AND OR DEBRIS.

5. ANY CONTAINED SEDIMENT LADEN WATER IS CAUSED TO LEAVE THE SITE OR CONSTRUCTION ACCESS ENTRANCE SHALL BE IMMEDIATELY & FULLY REMOVED THROUGH ALL METHODS.

6. ALL ROCK SHALL MEET MNDOT CLASS 3A OR 3B AND PLACED ACCORDING TO SPECIFIED AREA TO A DEPTH OF NOT LESS THAN 6 INCHES.

CITY NOTES	CONSTRUCTION ROCK ENTRANCE	Standard Details: STATE SPECIFICATIONS, 2021	FENCE-10

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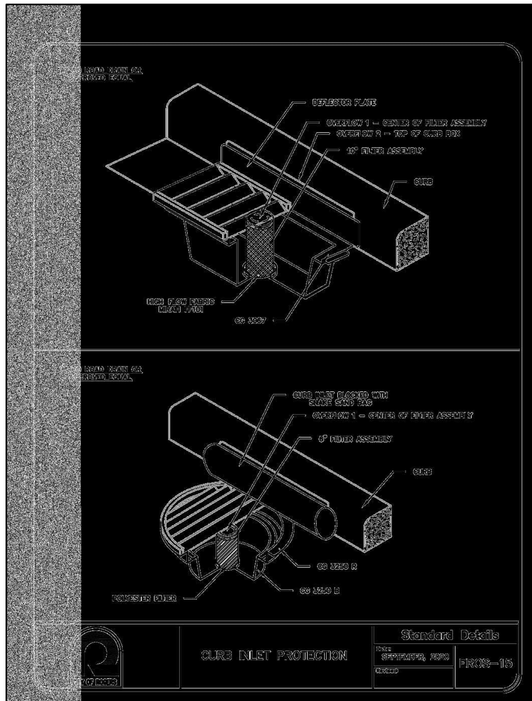

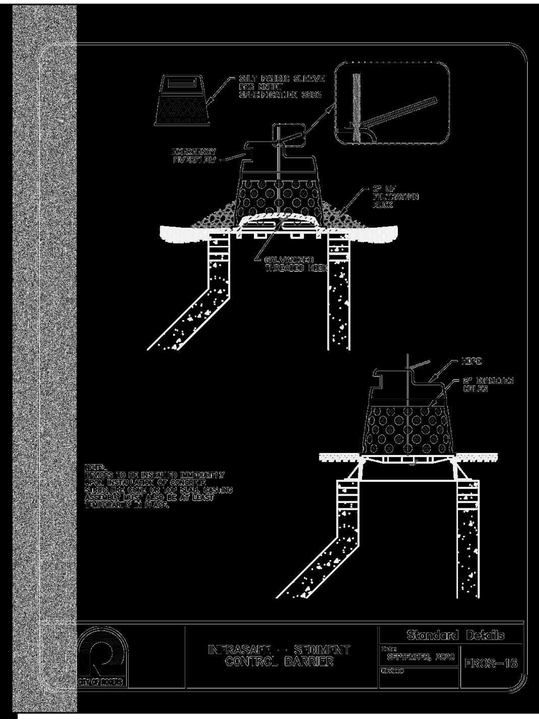

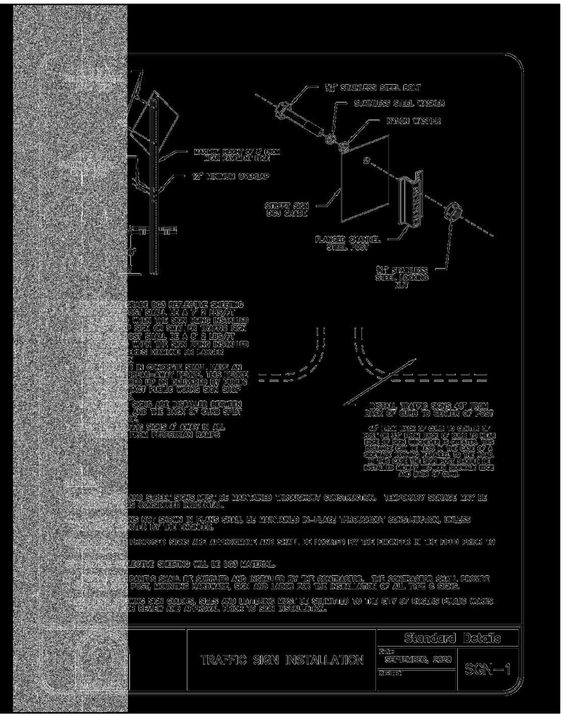

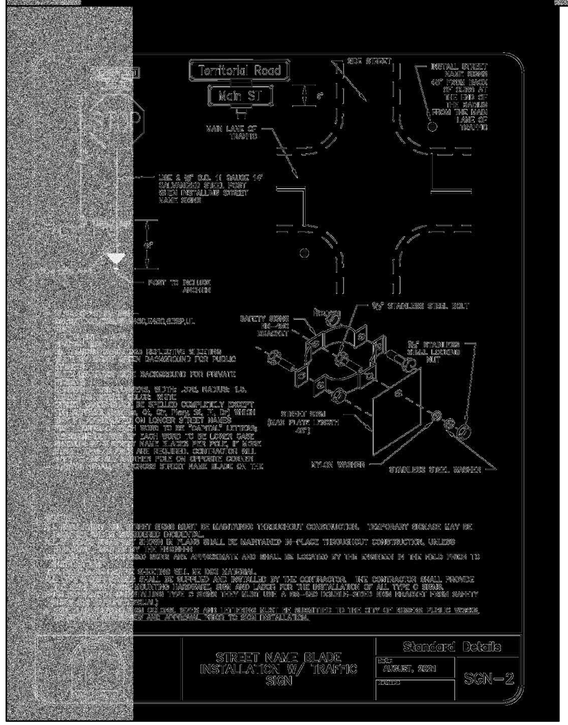

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DETAILS

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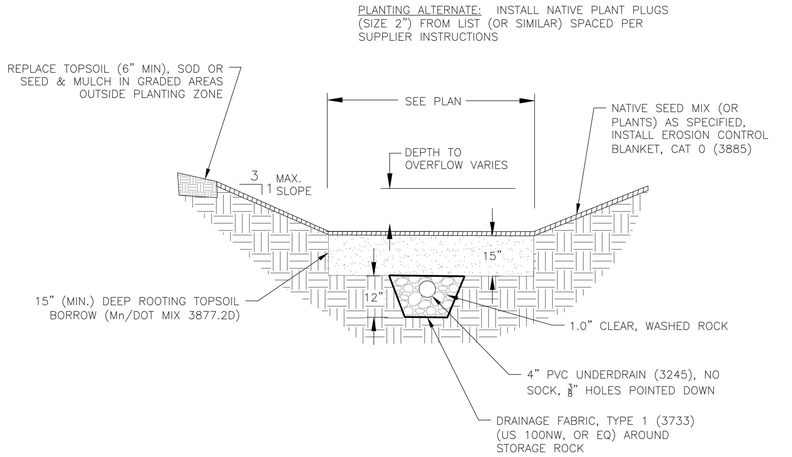
C706



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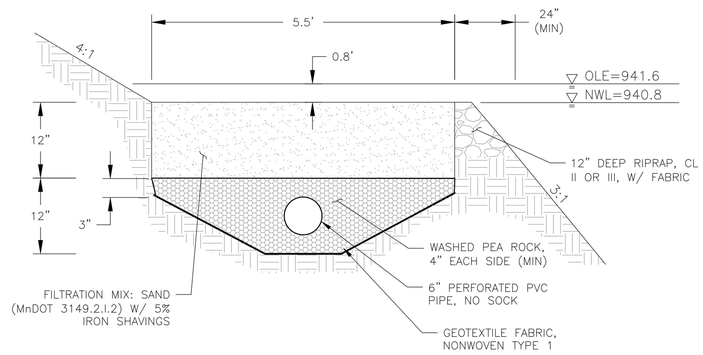
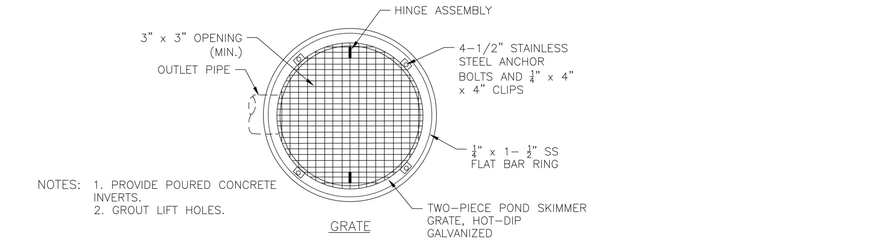
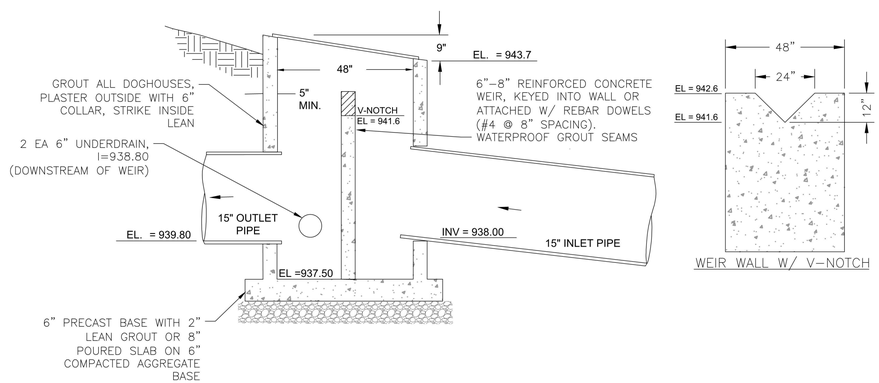


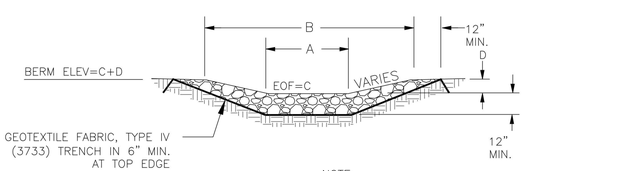
2 IRON-ENHANCED SAND FILTRATION SHELF





3 NURP BASIN OCS W/ INTERNAL WEIR

	A	B	C	D
NURP POND	5.0'	8.0'	943.7	0.5'
BIOFILTER	4.0'	6.0'	943.5	0.5'



NOTE:
RIPRAP TO BE PLACED TO PROVIDE A DEFINED WEIR AREA, TRENCHED IN A MIN. OF 12", WITH DOWNSTREAM SIDE BOWLED SLIGHTLY FOR ENERGY DISSIPATION

4 REINFORCED BASIN OVERFLOW

DETAILS ARE NOT TO SCALE

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DAVID M. POGGI
DATE: 06-11-2024
LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
03-18-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

DETAILS

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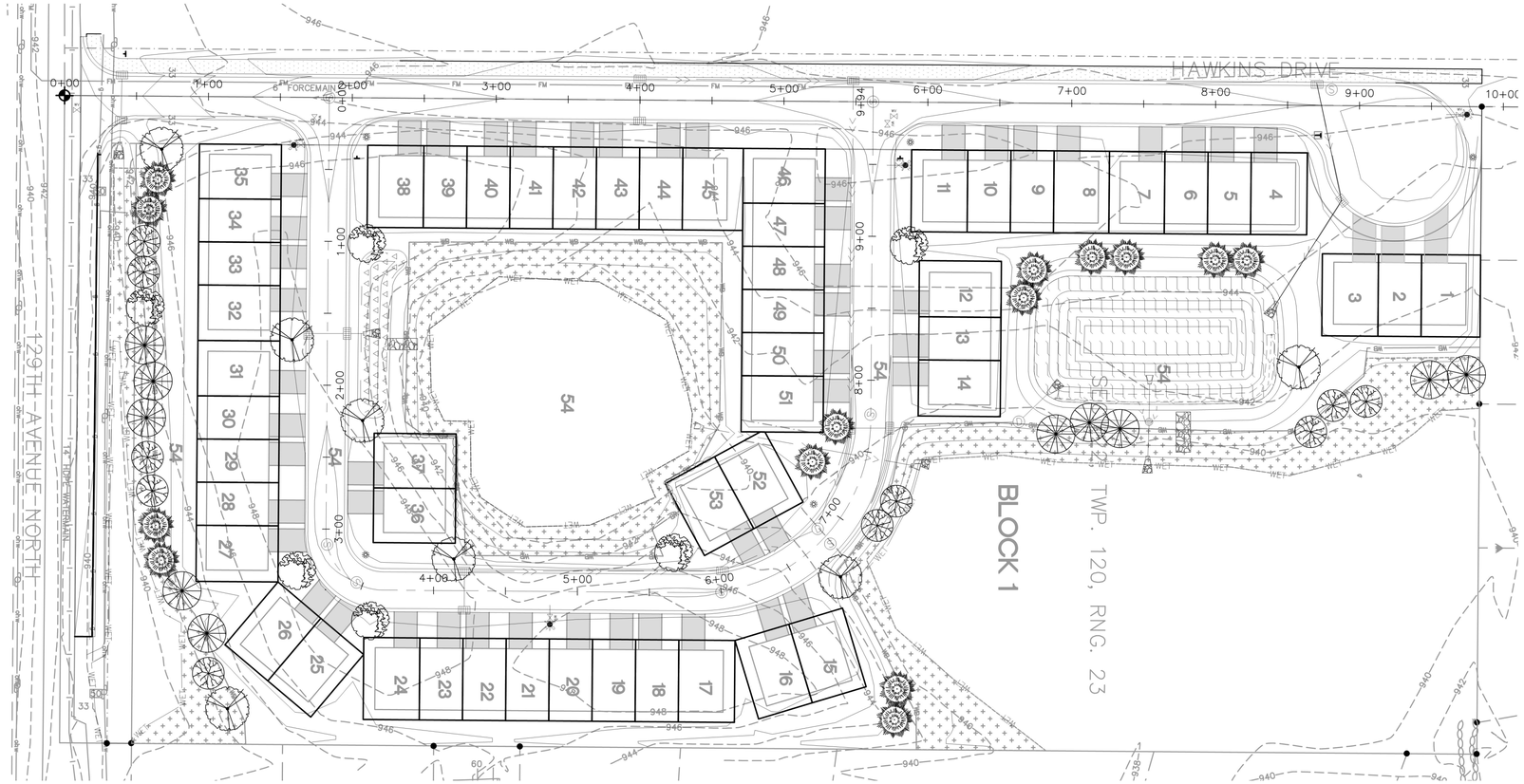
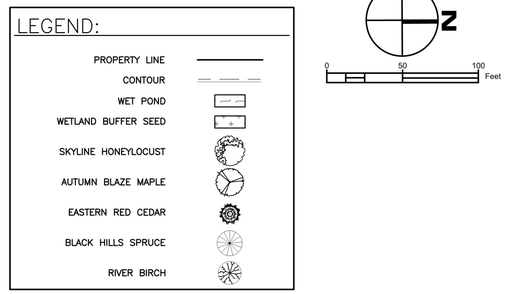
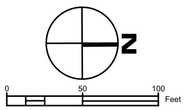






BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07

PLANT SCHEDULE

TREES

KEY	QTY	COMMON NAME	BOTANICAL NAME	ROOT	CAL/SIZE
SH	6	Skyline Honeylocust	Gleditsia triacanthos 'Skycole'	B&B	2.5"
AM	7	Autumn Blaze Maple	Acer x freemanii 'Jeffersred'	B&B	2.5"
RB	10	River Birch	Betula Nigra	B&B	2.5"
EC	14	Eastern Red Cedar	Juniperus virginiana	B&B	6'
WS	10	Black Hills (White) Spruce	Picea glauca 'Densata'	B&B	6'
TOTAL:	47				

NOTES:

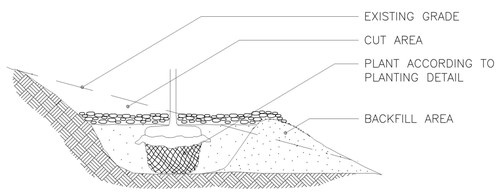
1. SEE EROSION CONTROL PLAN FOR ADDITIONAL TURF RESTORATION INFORMATION.
2. TREES MAY BE SUBSTITUTED WITH SIMILAR SPECIES GIVEN AVAILABILITY. CONTAINER STOCK MAY BE SUBSTITUTED FOR B&B AS APPROPRIATE.
3. CONIFEROUS TREES SHALL BE 6' TALL & DECIDUOUS TREES 2.5" DIAMETER UPON INSTALLATION.
4. WETLAND BUFFER AREA SHALL BE SEEDED WITH APPROPRIATE SEED MIX (SEE EROSION CONTROL PLAN) AND ALL OTHER AREAS SHALL BE SODDED.
5. TREES SHALL BE WARRANTED FOR A PERIOD OF 1 YEAR AFTER INSTALLATION. DEAD OR DISEASED PLANTS WITHIN THIS PERIOD SHALL BE REPLACED AT CONTRACTOR EXPENSE.
6. THE PLANTING DETAILS REPRESENT ADEQUATELY DRAINED SOIL CONDITIONS. THE CONTRACTOR SHOULD EXERCISE DISCRETION IN SETTING PLANTS 1"–3" HIGHER IN POORLY DRAINED SOILS.
7. ON 2:1 SLOPES OR GREATER, DO NOT CONSTRUCT THE UPHILL HALF OF THE WATERING BASIN.
8. ON WET, POORLY DRAINED SOILS, DO NOT CONSTRUCT WATERING BASIN.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE DRAINAGE IN HEAVY POORLY DRAINED OR IMPERVIOUS SOILS.
10. PLANTS SHOULD BE SET AT THE PROPER DEPTH WHEREBY THE BEGINNING TAPER OF THE ROOT FLARE IS AT THE SAME ELEVATION AS THE FINISHED SOIL GRADE. THIS SHOULD BE THE SAME DEPTH AS THE PLANTS WERE GROWN AT IN THE NURSERY. NOTE THAT THE ROOTS OF BALLED AND BURLAPPED PLANTS ARE UNACCEPTABLE WHEN THEY ARE COVERED BY MORE THAN 4" OF SOIL IN THE TOP OF THE BALL.
11. DELAY MULCH PLACEMENT IF NECESSARY TO ALLOW MORE TIME FOR EXCESS SOIL MOISTURE TO EVAPORATE FROM PLANTING AREAS BEFORE PLACING MULCH.

BALLED & BURLAPPED STOCK

1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING AS REQUIRED, REMOVING ANY WINDING OR GIRDING ROOTS.
3. SET PLANT ON UNDISTURBED NATIVE SOIL, OR THOROUGHLY COMPACTED BACKFILL SOIL AT THE SAME DEPTH (IF PROPER) AS IT WAS GROWN IN THE NURSERY.
4. EXPOSE ROOT FLARE AND SET AT GRADE. REMOVE ALL BURLAP AND ROPES FROM TOP ⅓ OF ROOT BALL, CUT WIRE BASKET DOWN TO SECOND HORIZONTAL WIRE FROM THE BOTTOM, AND DISPOSE OF OFF–SITE. CONTRACTOR IS RESPONSIBLE TO MAINTAIN PLUMB POSITION THROUGHOUT THE MAINTENANCE PERIOD. STAKE AS NECESSARY.
5. APPLY WATER TO SETTLE PLANTS AND FILL VOIDS THEN CONSTRUCT 3" DEPTH WATERING BASIN.
6. WATER THOROUGHLY WITHIN 2 HOURS.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.
8. BIODEGRADABLE TWINE MAY BE LEFT ON AS SUPPORT BETWEEN THE ROOT BALL AND ROOT COLLAR UNTIL THE END OF THE PLANT ESTABLISHMENT PERIOD AT WHICH TIME IT MUST BE CUT AND TOTALLY REMOVED FROM THE ROOT COLLAR. THE TWINE MUST BE TIED OR RETIED TO MID–LEVEL LOOPS OR POINTS ON THE BASKET. USE OF NONBIODEGRADABLE TWINE IS PROHIBITED.

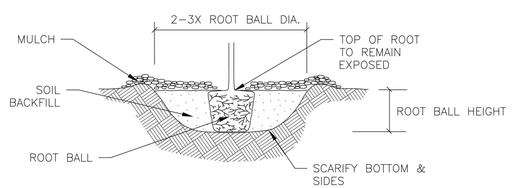
CONTAINER STOCK

1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING.
3. REMOVE CONTAINER AND SCORE OR PRUNE OUTSIDE OF SOIL MASS TO REDIRECT CIRCLING FIBROUS ROOTS AS NECESSARY.
4. SET PLANT ON UNDISTURBED NATIVE SOIL, OR THOROUGHLY COMPACTED BACKFILL SOIL AT THE SAME DEPTH (IF PROPER) AS IT WAS GROWN IN THE NURSERY.
5. APPLY WATER TO SETTLE PLANTS AND FILL VOIDS THEN CONSTRUCT 3" DEPTH WATERING BASIN.
6. WATER THOROUGHLY WITHIN 2 HOURS.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.



NOTE:
1. EXTENDED EXCAVATION AND BACKFILL SOIL TO A POINT DOWNSLOPE EQUAL TO OR LOWER IN ELEVATION THAN THE BOTTOM OF THE HOLE DIRECTLY BENEATH THE PLANT TO INSURE ADEQUATE DRAINAGE IN HEAVY SOILS. GRANULAR SOIL MUST BE ADDED AS BACKFILL IN AREAS OF POOR DRAINAGE.

FOR STEEP SLOPES



1 ISOLATED TREE PLANTINGS
BALLED & BURLAPPED OR CONTAINER STOCK

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HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

LANDSCAPING

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STORMWATER MANAGEMENT PLAN

HAWKINS DRIVE TOWNHOMES
ROGERS, MN

DATE: ~~02-06-2024~~ REV: 05-04-2024

PREPARED FOR:
Dean Johnson Homes

PREPARED BY:
Civil Methods, Inc.
PO Box 28038
Saint Paul, MN 55128

ENGINEER CERTIFICATION:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.

Name: David Poggi, PE

Signed:

Date: 05-04-2024

Registration: MN No. 44573

CIVIL METHODS, INC.
PROFESSIONAL ENGINEERS
LAND | WATER | INFRASTRUCTURE

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1. INTRODUCTION

The 54-unit Hawkins Drive Townhome development is proposed to be constructed on the 10.2 acre property located at 13020 Hawkins Drive in Rogers, MN. The existing property is undeveloped agricultural land containing a gravel drive and metal structure.

1.1 STORMWATER MANAGEMENT REGULATORY AGENCIES

Governmental agencies with jurisdiction over drainage and stormwater for this project include:

- City of St. Rogers (City)
- Elm Creek Watershed Management Commission (ECWMC)
- Minnesota Pollution Control Agency (MPCA)

1.2 APPLICABLE STORMWATER DESIGN STANDARDS

Applicable design standards by the above-listed agencies include:

- **Rate Control:** Post-construction runoff discharge rates must not exceed existing discharge rates at any point of discharge for the 2-yr, 10-yr, and 100-yr design events (Atlas 14).
- **Volume Control:** A volume equal to 1.1" over the site impervious area shall be retained and infiltrated onsite.
- **Treatment:** No increase in TSS or TP from existing condition.
- **Pretreatment:** Pretreatment required for infiltration / filtration systems.

2. EXISTING SITE CONDITIONS

The existing property is primarily agricultural with a gravel drive along the western boundary and a single metal structure off the driveway. The property is generally agricultural but contains multiple wetland areas that have been delineated and have been submitted for formal boundary determination.

Runoff from the property drains from high ground to each of the wetland areas, with a small portion of the property draining offsite to the west (Appendix A). The central wetland has a runout elevation to the northeast wetland, which is drained by an existing 15" storm sewer pipe through the residential area to the north. The wetland in the southeast corner of the property appears to drain east along 129th.

Available soil mapping data as well as geotechnical information collected for this project indicate the site consists primarily of silts and clays. The restrictive layer generally falls under the Hydrologic Soil Group Type C or D, with extremely limited infiltration capacity. The geotechnical investigation indicates perched groundwater in some areas around a 939

elevation, which corresponds with wetlands onsite, so groundwater is assumed near the same (Appendix B).

A HydroCAD model using SCS TR-20 methodology and the local NOAA Atlas-14 rainfall amounts has been developed to analyze the runoff condition of the subject area. Land cover, slopes, and soils have been accounted for in the existing condition.

3. PROPOSED SITE CONDITIONS

3.1 DRAINAGE CHARACTERISTICS

The existing drainage patterns will generally be maintained in the proposed condition, with stormwater discharging to the wetlands and most runoff ultimately reaching the existing 15" storm sewer draining the NE wetland to the north. A small portion of the property to the west will drain towards the new Hawkins Drive and will drain overland to the street catch basin.

The project will include 3.62 acres of impervious surface on the developed property (this does not include the turn lane on 129th Ave). Stormwater will be treated and controlled with a NURP basin with iron-enhanced sand filtration (IESF) shelf. The IESF shelf has been designed per standards accepted in nearby communities and within the ECWMC.

3.2 WATER QUALITY TREATMENT & VOLUME CONTROL

Infiltration practices are not feasible at this site due to soil conditions; therefore, the required infiltration volume of 1.1" from the site's impervious area will be treated for phosphorus and sediment removal with alternate means. The 1.1" of rainfall over 157,737 SF of impervious surface (site only, not including 129th) yields a water quality volume (WQV) of 14,459 CF for the project.

Treatment of a small portion of this area will be accomplished with a biofiltration basin on the south side of the central wetland. This basin will serve 14,930 SF of impervious area associated with the southern portion of Street A and nearby homes. The basin is sized to treat more than a WQV of 1.1" x 14930 SF = 1,369 CF. The basin design provides **2,138 CF** between the basin bottom of 942.00 and the overflow outlet elevation of 943.50. The 18" depth of WQV pool will draw down through the basin media draintile within 48 hours, and discharge into the central wetland. Pretreatment for the biofiltration basin will be provided by the sump catch basin immediately upstream of the basin inlet.

Most of the site runoff will be treated by a large wet sedimentation basin and iron-enhanced sand filter (IESF) shelf. The pretreatment wet basin is designed per MPCA Pond Design Level 2 standards, while the IESF shelf has been sized to exceed a generally accepted standard of 17 cu. ft. of volume per square foot of filter. Shelf area sizing has been based on the maximum

infiltration rate of 3 in/hr as permitted by the ECWMC, which equates to 12 CF / SF Filter. The filtration volume contained above the filtration bed (940.80) and below the outlet (941.60) equals **13,087 CF**. This volume requires a 1,091 SF IESF, or 200 ft of a 5.5 ft wide filter. A skimming outlet control structure will ensure buoyant material (trash, oils, etc.) will be retained within the basin.

The total WQV provided by both basins equals 13087 + 2138 = **15,225 CF**, exceeding the required WQV of 14,459 CF.

Pretreatment for the IESF shelf will be provided by a NURP wet basin. The NURP calculation (Appendix C) yields a required permanent pool volume of 0.53 ac-ft; the basin as designed provides 1.37 ac-ft below the filtration shelf bed elevation with an average depth of 4.77 FT.

The project must not increase pollutant loading from the existing condition. The pollutant discharge load in the post-construction condition has been compared to the load generated in the existing condition (with loading rates reflective of cropland) using the MIDS Calculator. The site area associated with wetlands have not been included in the analysis.

The existing condition analysis includes approximately 8.08 acres of contributing agricultural and impervious area from the site, which does not include the 2.67 acres of wetland area on the property. The area has been incorporated into the "existing" condition calculator with loading rates of 0.55 mg/l for phosphorus and 145 mg/l for TSS, reflective of an agricultural condition.

The proposed wet basin and filter shelf are modeled in series to reflect the settling occurring upstream of the filter. A 10% bypass coefficient has been included with the biofilter node to reflect that the WQV being filtered represents roughly 90-95% of the annual runoff volume.

MIDS Result Summary:

TSS Summary:		TP Summary:	
Existing Discharge:	2024 lb/yr	Existing Discharge:	7.44 lb/yr
Proposed Discharge:	586 lb/yr	Proposed Discharge:	3.93 lb/yr

As indicated, the TP and TSS discharge loading from the site will be reduced from the existing condition to the post-construction condition.

3.3 Rate Control

The rate control standards will be achieved within the NURP basin (Appendix A), where discharge will be restricted for the design rainfall events. A portion of the site along the east and south boundaries will discharge directly to wetlands; these areas have been incorporated into the hydraulic modeling.

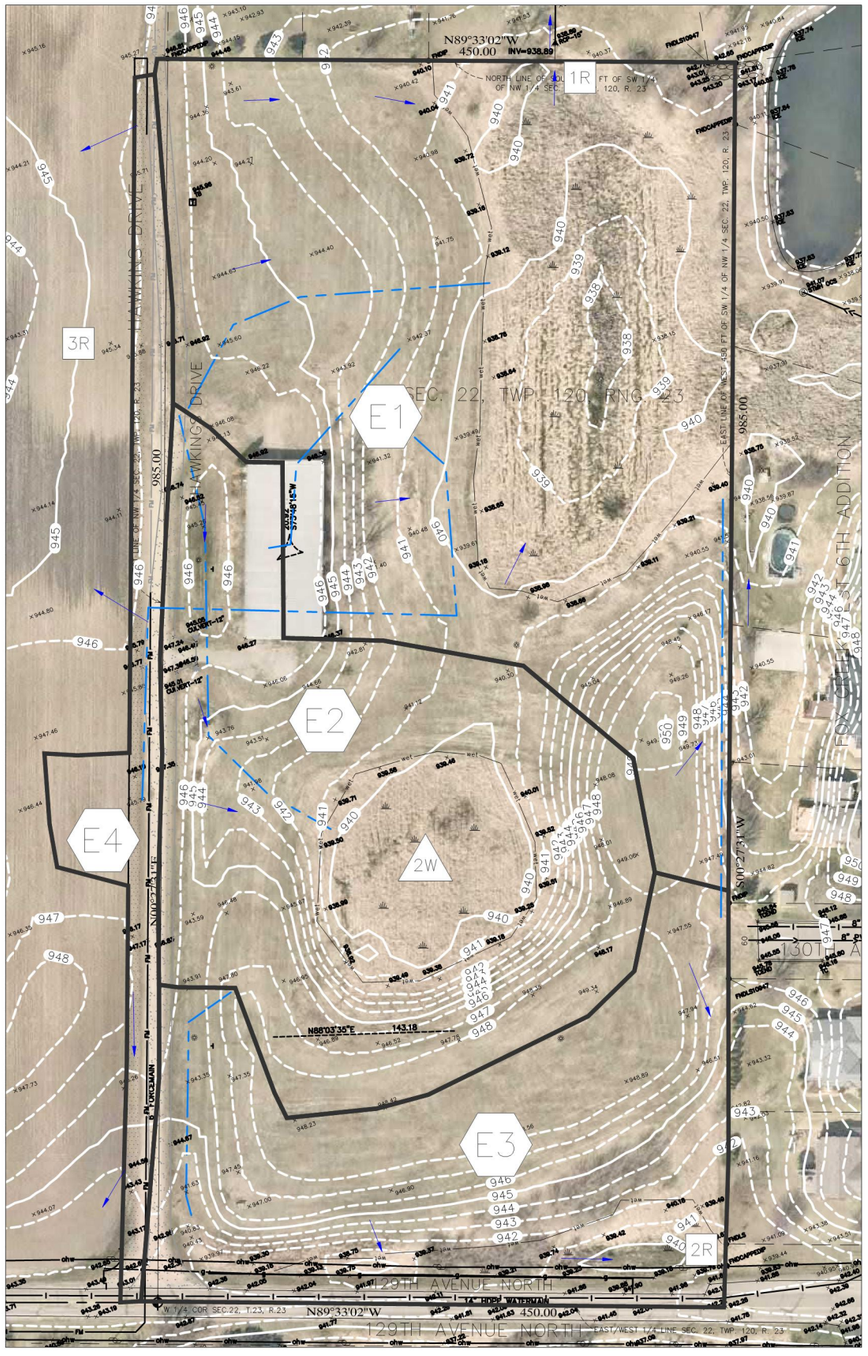
The existing condition soils have been modeled as HSG Type C representing the limited infiltration associated with the existing silt/clay loams. The following table summarizes results for the design events (model output is included in Appendix E).

Table 1: Flow Rate Comparison

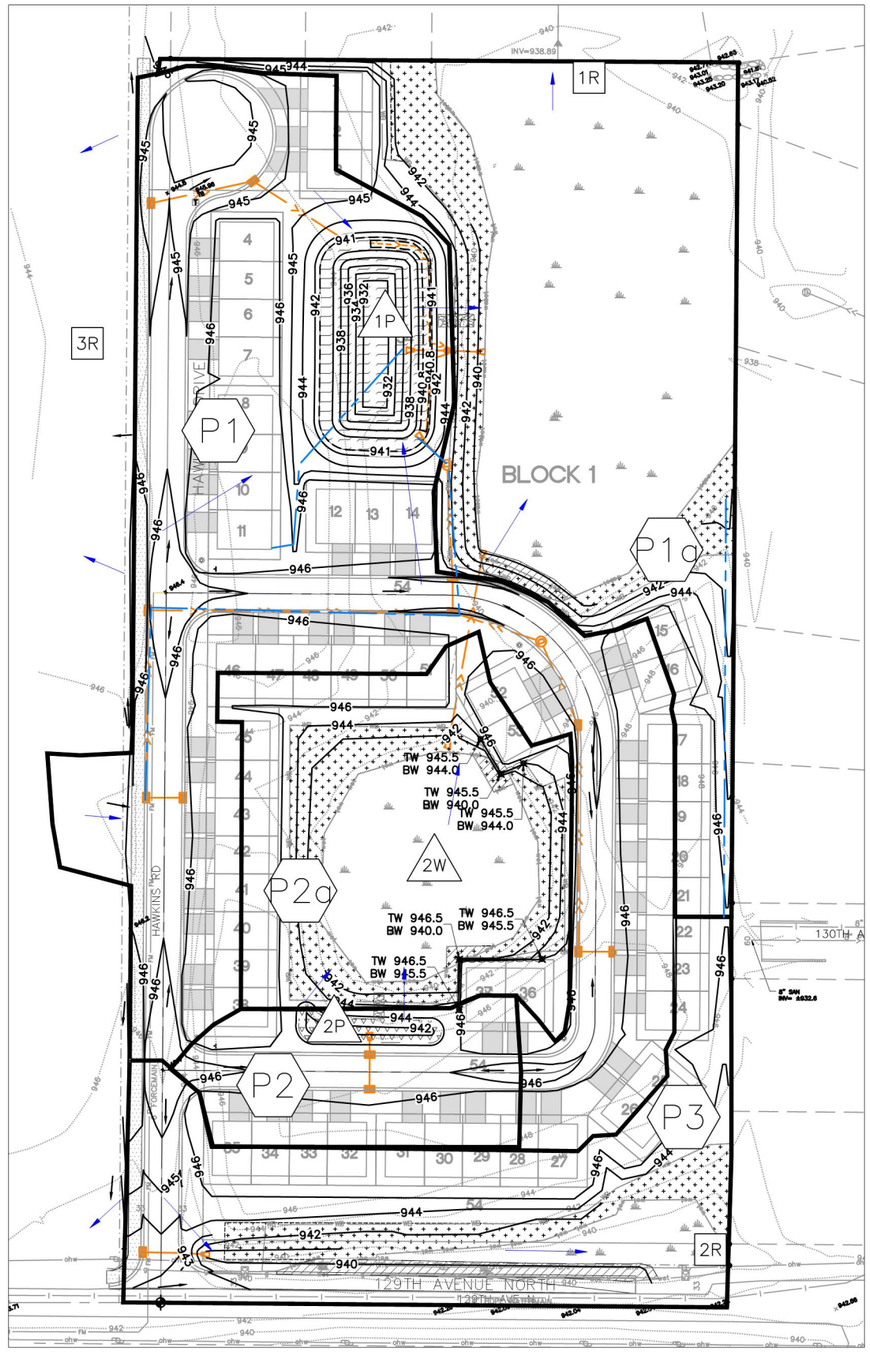
Node, ID	2-Year		10-Year		100-Year	
	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)	Existing (cfs)	Proposed (cfs)
1R	7.7	5.6	15.0	12.8	32.2	32.3
2R	4.2	4.0	8.4	7.5	18.1	15.3
3R	1.7	0.0	3.1	0.0	6.3	0.0

As indicated, the proposed stormwater management system reduces site discharge rates for the critical design storm events.

Appendix A – Figures



EXISTING CONDITION



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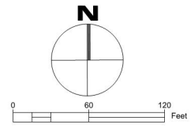

LEGEND:

- X — SUBCATCHMENT NODE ID
- X — BASIN NODE ID
- X — REACH NODE ID
- SUBCATCHMENT DELINEATION
- DRAINAGE DIRECTION
- TIME OF TRAVEL FLOW PATH
- IMPERVIOUS COVER

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HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

DRAINAGE DIAGRAM

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Appendix B – Soil Information

Chosen Valley Testing

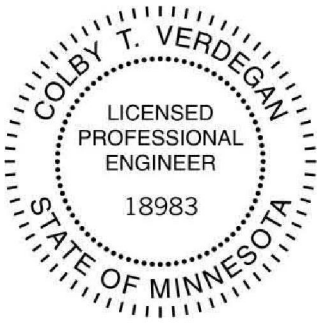
Design Phase Geotechnical Evaluation:

Proposed Townhouse Development
Northeast quadrant of Hawkins Drive and 129th Avenue North
Rogers, Minnesota

Prepared for:

Mr. Dean Johnson
Dean Johnson Homes

November 13, 2023
22712.23.MNS



I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly licensed engineer under the laws of the State of Minnesota.

Colby T. Verdegan, PE
Geotechnical Engineer
Registration Number 18983
Date: November 13, 2023

Chosen Valley Testing, Inc.

Geotechnical Engineering and Testing, 414 37th Ave N, St. Cloud, Minnesota 56303 (320) 774-3500 fax (320) 774-3554

Dean Johnson
Dean Johnson Homes
9300 County Road 19
Medina, MN 55357
Email: djohnsonhomes.com

November 13, 2023

Re: Design Phase Geotechnical Evaluation
Proposed Townhouse Development
Northeast quadrant of Hawkins Drive and 129th Avenue North
Rogers, Minnesota
CVT Project 22712.23.MNS

Dear Mr. Johnson,

As requested, we have prepared the report for the Townhouse project in Rogers, Minnesota. This letter briefly summarizes the findings in the attached report.

Summary of Boring Results

At the surface, the borings encountered about 1 foot of sandy topsoil.

Following the topsoil, the three western borings met fill to a depth of 2 to 6 ½ feet. The fill consisted mostly of dark brown sand lean clay. The fill in the west central boring was underlain by a thick layer of topsoil.

The natural soils underlying the topsoil and fill were dominated by glacial soils. These consisted mostly of sandy lean clay but included silty clayey sands as well. The borings terminated in either sandy lean clays or silty clayey sand at the planned 20 foot termination depth.

Water was encountered in two of the borings at depths of 2 feet below the surface. These depths correspond to the elevations of 939 feet on the datum used to locate the borings. We suspect the water encountered is perched water.

Summary of Analysis and Recommendations

Based on the borings, the soils below the topsoil and fill in the borings area appear to consist of silty clayey sand and sandy lean clay. We recommend removing all topsoil, fill and buried topsoil from below the structures and replacing those materials with engineered fill.

Footings are expected on bear on natural inorganic soils or engineered fill over the natural soils. Based on the assumed loads and proper implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert pressures of up to 2,500 psf.

Remarks

We appreciate the opportunity to serve you. The attached report provides more details of our analysis. If you have any questions about our report, please feel free to contact us at (651) 756-7384.

Sincerely,
Chosen Valley Testing, Inc.

Hannah Fischer
Graduate Geological Engineer

Colby T. Verdegan, PE
Sr. Geotechnical/Materials Engineer

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BORING LOCATION SKETCH
LOG OF BORING # 1-5
LEGEND TO SOIL DESCRIPTION

Design Phase Geotechnical Report
Proposed Hawkins Drive Townhouse Development
Northeast Quadrant of Hawkins Drive and 129th Avenue North
Rogers, Minnesota

CVT Project Number: 22712.23.MNS
Date: November 13, 2023

A. Introduction

The intent of this report is to present our findings to the client in the same logical sequence that led us to arrive at the opinions and recommendations expressed. Since our services often must be completed before the design is finished, assumptions are often needed to prepare a proper scope and to analyze the data. A complete and thorough review of the entire document, including its assumptions and its appendices, should be undertaken immediately upon receipt.

A.1. Purpose

This geotechnical report was prepared to aid in the design and construction of the proposed construction of the proposed townhouse project in Rogers, Minnesota. Our services were authorized by the Owner, Mr. Dean Johnson.

A.2. Scope

To obtain data for analysis, a total of five borings were authorized. The borings were drilled to depths of about 14.9 feet. Our engineering scope consisted of providing this report summarizing our findings, analyses and recommendations for the proposed project.

A.3. Boring Locations and Elevations

The boring locations were indicated to Chosen Valley Testing (CVT) on a site plan provided by the client. The sketch in the Appendix of this report shows the approximate boring locations as drilled and was made by superposing the plan and the boring locations onto a satellite view of the site using Google Earth software, including GPS coordinates for borings.

Elevations estimated using topographic contour lines on the concept layout and should be considered approximate.

A.4. Geologic Background

A geotechnical report is based on subsurface data collected for the specific structure or problem. Available geologic data from the region can help interpretation of the data and is briefly summarized in this section.

Geologic maps indicate that the dominant soils in the area are glacial till deposits of silty clayey sands. Bedrock is assumed to be more than 150 feet below the surface, therefore not considered for this report.

B. Subsurface Data

Procedures: The borings were performed using penetration test procedures (Method of Test D1586 of the American Society for Testing and Materials). This procedure allows for the extraction of intact soil specimen from deep in the ground. With this method, a hollow-stem auger is drilled to the desired sampling depth. A 2-inch OD sampling tube is then screwed onto the end of a sampling rod, inserted through the hole in the auger's tip, and then driven into the soil with a 140-pound hammer dropped repeatedly from a height of 30 inches above the sampling rod. The sampler is driven 18 inches into the soil, unless the material is too hard. The samples are generally taken at 2½ to 5-foot intervals. The core of soil obtained was classified and logged by the driller on site and a representative portion was then sealed and delivered to the geotechnical engineer for further review.

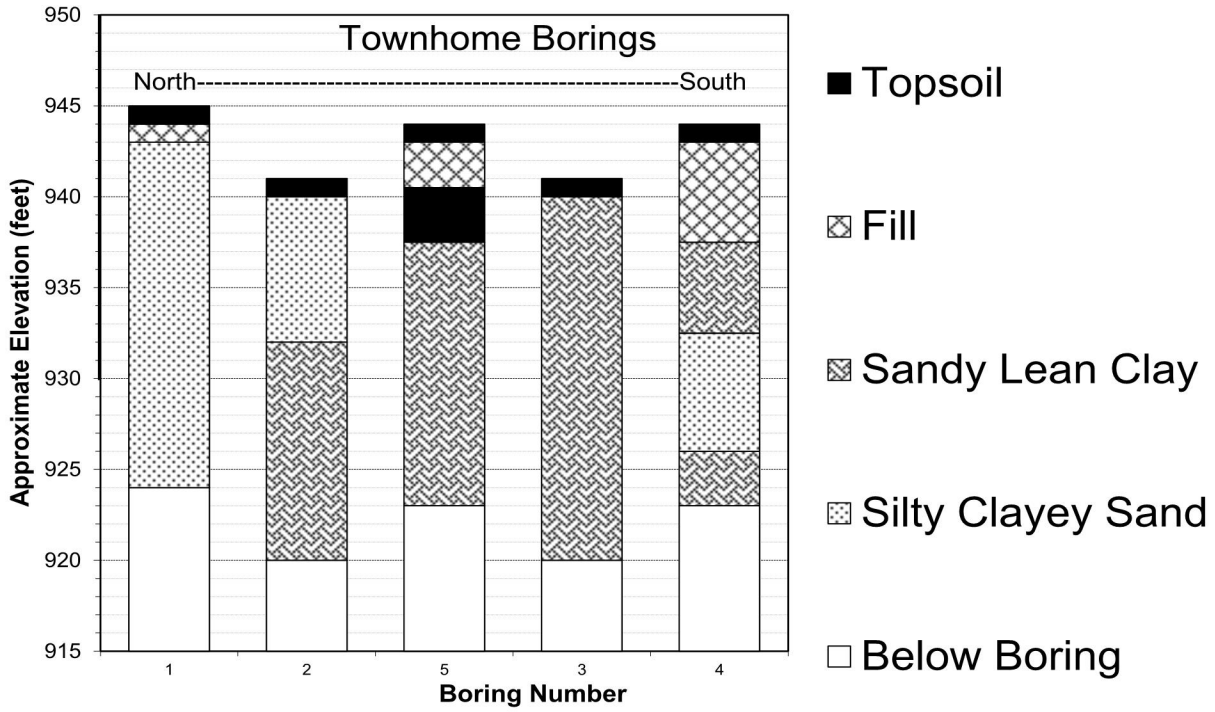
B.1. Stratification

At the surface, the borings encountered about 1 foot of sandy topsoil.

Following the topsoil, the three western borings (Borings, B-01, B-04 and B-05) met fill to a depth of 2 to 6 ½ feet. The fill consisted mostly of dark brown sand lean clay. The fill in the west central boring (Boring B-05) was underlain by a thick layer of topsoil.

The natural soils underlying the topsoil and fill were dominated by glacial soils. These consisted mostly of sandy lean clay but included silty clayey sands as well. The borings terminated in either sandy lean clays or silty clayey sand at the planned 20 foot termination depth.

For the reader's convenience, we have summarized the soil boring data on the cross-section which follows. The reader is referred to the log sheets in the Appendix for more detailed information.



B.2. Penetration Test and Laboratory Test Results

The number of blows needed for the hammer to advance the penetration test sampler is an indicator of soil characteristics. The results tend to be more meaningful for natural mineral soils than for fill soils. In fill soils, compaction tests are more meaningful.

Penetration resistance values ("N" Value) of 6 to 11 blows per foot (BPF) were recorded in the silty clayey sands indicating they were medium dense. Values in the natural sandy lean clays ranged from 4 to 17 BPF, indicating the clays were rather soft to stiff.

Fill soils had N Values of 5 to 6 BPF.

A key to descriptors used to qualify the relative density of soil (such as *soft, stiff, loose*, and *dense*) can be found on the Legend to Soil Description in the Appendix.

B.3. Groundwater Data

During drilling, the drillers may note the presence of moisture on the sampler, in the cuttings, or in the borehole itself. These findings are reported on the boring logs. Because water levels vary with weather, time of year, and other factors, the presence or lack of water during exploration is subject to interpretation and is not always conclusive.

Water was encountered in two of the borings (Borings B-02 and B-03) at depths of 2 feet below the surface. These depths correspond to the elevations of 939 feet on the datum used to locate the borings. We suspect the water encountered is perched water. We would expect groundwater levels to fluctuate similarly to levels of nearby creeks and rivers, and along with local weather patterns.

C. Design Data

Because each structure has a different loading configuration and intensity, different grades, and different structural or performance tolerances, the results of a geotechnical exploration will mean different things for different facilities. If the facility changes, Chosen Valley Testing should be contacted to discuss possible implications of the changes. Without a chance to review such changes, the recommendations of the soils engineer may no longer be valid or appropriate.

The project consists of the construction of a townhouse development. The buildings are assumed to be slab-on-grade, two story structures constructed of wood framing. The finished floor elevation was assumed to beat at about elevation 944 feet. close to or slightly above existing grades.

D. Analysis

Based on the borings, the soils below the topsoil and fill in the borings area appear to consist of silty clayey sand and sandy lean clay. We recommend removing all topsoil, fill and buried topsoil from below the structures and replacing those materials with engineered fill.

Footings are expected on bear on natural inorganic soils or engineered fill over the natural soils. Based on the assumed loads and proper implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert pressures of up to 2,500 psf.

The remainder of the report provides more details of our recommendations.

E. Building Grading Recommendations

E.1. Grading Recommendations

E.1.a. Stripping and Excavation: We recommend removing all topsoil, B-horizon and fill as well as any foundations and debris or other unsuitable materials from below the building areas. The tabulation below shows the apparent depth of these materials at the locations explored.

Boring Number	Approximate Ground Surface Elevation (ft)	Estimated Depth of Unsuitable Materials (ft)	Approximate Bottom Elevation of Unsuitable Materials (ft)
1	945	2	943
2	941	1	940
3	941	1	940
4	944	6 ½	937 ½
5	944	6 ½	937 ½

E.1.b. Subgrade Evaluation and Surface Compaction: The bearing soils in the footing trenches should be evaluated by CVT personnel before placing fill or foundations. Any unsuitable material observed should be removed and replaced with engineered fill.

E.1.c. Oversizing: Any stripping or corrective excavations should be oversized at least 1 foot beyond the foundations for each foot of fill needed below footing grade. This oversizing can be reduced by up to 50% if rather precise staking is present during grading.

E.1.d. Filling and Compaction: The existing non-organic soils below the topsoil appear suitable for reused as bulk fill below building and pavements, provided it is properly moisturized and compacted.

Otherwise, for ease in construction, clean sands or gravels with less than 12% particles passing a #200 sieve could be used but would have to be imported. Whereas the site is dominated by clayey soils, fill materials similar to the existing on site natural soils could also be considered, but should be rather uniform, suitable, non-expansive, and non-organic materials and should be reviewed by CVT geotechnical engineering prior to potential use.

New fill placed on site should be placed in lifts adjusted to the compactor being used and the material being compacted. We recommend limiting lifts to no more than 1 foot. This assumes large, self-propelled or tow-behind compactors are used. All materials below the building, in the oversized areas, or used as backfill for

walls should be compacted to a minimum of 95% of its maximum standard Proctor density (ASTM D 698).

E.2. Building Design

E.2.a. Foundation Depth: We recommend placing foundations at least 42 inches below the exposed ground surface for frost protection. Interior foundations in heated areas may be placed directly below slabs.

E.2.b. Bearing Capacity: Based on the assumed loads and implementation of the earthwork recommendations, we are of the opinion that foundations may be designed to exert pressures of up to 2,500 psf. This allowable bearing pressure includes a safety factor of at least 3 against shear failure.

E.2.c. Settlement: Based on a bearing pressure of 2,500 psf, total post-construction settlements are expected to be on the order of 1 inch or less. Differential settlement between similarly loaded footings is expected to be on the order of ½ inch or less.

E.2.d. Vapor Barrier: If the slab will receive coverings that are less permeable than concrete, a vapor barrier should be placed below the slab. Some contractors prefer to place this barrier below the sand, to limit the potential for curling.

E.2.e. Slab Design: The completed slab subgrade is expected to consist of natural silty sands or sandy lean clay. We recommend using a modulus of subgrade reaction of no more than 100 pci to design the slabs.

F. Paved Areas

F.1. Stripping and Grading

We recommend stripping the topsoil from below any paved areas. The underlying soils were typically silty clayey sands to sandy lean clays. To promote uniformity with the existing materials, we recommend using similar soils if needed below the pavements.

Fill placed in the upper 3 feet of the subgrade should be compacted to at least 100% of its maximum standard Proctor density. Below 3 feet, compaction to 95% is recommended. Compaction to 90% is usually sufficient in green areas. The completed pavement subgrade should be able to pass a test roll.

F.2. Pavement Design

After stripping and grading, the soils present at subgrade elevation are expected to be primarily generally silty clayey sands to sandy lean clays. These materials would be expected to have an R-value ranging from 12 to 20.

In the absence of traffic loading data, we would suggest a bituminous pavement section consisting of at least 3 ½ inches of bituminous and 8 inches of aggregate base. This pavement section should be considered preliminary and subject to review by the civil consultant, based on more specific traffic loading information.

The above pavement sections assume that the subgrade has been sufficiently moistened and compacted to pass a test roll. Observation of the test roll should be documented by qualified geotechnical personnel. The necessity of scarifying and recompacting the subgrade would be determined by the test roll.

G. Construction Testing and Documentation

G.1. Excavation

Earthwork can likely be performed with a variety of equipment, provided clayey subgrades are not overly wet or soft. Tracked equipment would likely be required if such conditions prevail at the time of construction. A backhoe or excavator with a smooth-lipped bucket is recommended for completing excavations to limit the disturbance to the supporting soils while also producing a smooth working surface.

G.2. Cold Weather

If the excavation occurs during freezing temperatures, good winter construction practices should be used. Frozen fill should be thawed before placing and filling should not be placed on frozen ground. Slab areas should be completely thawed prior to placing concrete.

G.3. Construction Testing and Documentation

The bottom of the excavations should be evaluated and documented by qualified geotechnical personnel to assess the soils at bearing depth. Any fill placed below building areas should be evaluated for conformance to the project gradation recommendations and should be tested for compaction. If filling proceeds during periods of freezing weather, full-time testing should be considered to help confirm that imported fill is thawed prior to and during compaction, and that all snow has been removed before placement of the fill.

Although our firm offers testing services relating to civil and structural components of the structure (such as concrete testing, reinforcement observations, etc.), specification of such services are beyond our work scope and the designer should be consulted as to such requirements.

H. Level of Care

The services provided for this project have been conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area, under similar budget and time constraints. This is our professional responsibility. No other warranty, expressed or implied, is made.

Appendix

Boring Location Sketch

Log of Boring # 1-5

Legend to Soil Description

Chosen Valley Testing, Inc.

Legend

Boring Locations

N

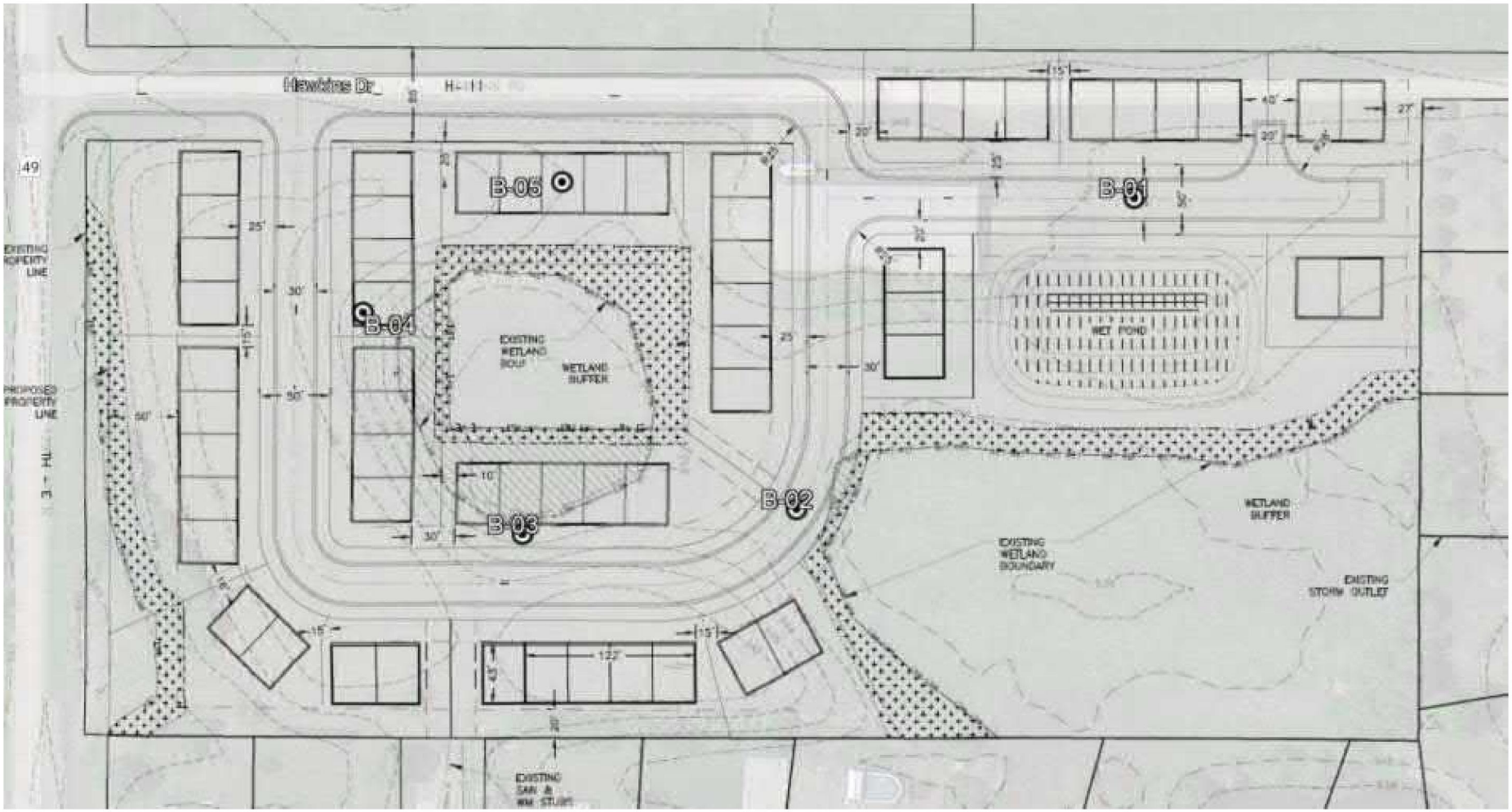
Boring Location Sketch

Hawkins Drive Townhomes

Northeast Quadrant of Hawkins Drive and 129th Avenue North

Rogers, Minnesota

CVT Project 22712.23.MNS



LOG OF BORING

CHOSEN VALLEY TESTING

Chosen Valley Testing, Inc.

PROJECT: 22712.23.MNS Design Phase Geotechnical Evaluation Hawkins Dr Townhomes 13020 Hawkins Dr. Rogers, Minnesota	BORING: **B-01** LOCATION: See attached sketch. DATE: 10/26/2023 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
945.0	0.0					
944.0	1.0	OL	**TOPSOIL** Silty Sand, fine-to-medium grained, trace Roots, dark brown, moist.			Elevations were estimated using topographic contour lines on the site plan provided by the client and should be considered approximate.
943.0	2.0		**FILL** Sandy Lean Clay, trace Gravel, dark brown, wet.			
		SC SM	**SILTY CLAYEY SAND** fine-to-medium grained, trace Gravel, brown, wet, loose to medium dense. (Glacial Till)	7		
				8		
				6		
				6		
				9		
				10		
				11		
924.0	21.0		End of boring. Water was not observed during drilling. Boring was sealed upon completion.			

CVT STANDARD 22712.23.MNS (ROGERS HAWKINS DR TOWNHOMES).GPJ LOG A GNNN06.GDT 11/13/23

LOG OF BORING

CHOSEN VALLEY TESTING

Chosen Valley Testing, Inc.

PROJECT: 22712.23.MNS Design Phase Geotechnical Evaluation Hawkins Dr Townhomes 13020 Hawkins Dr. Rogers, Minnesota	BORING: **B-02** LOCATION: See attached sketch. DATE: 10/26/2023 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
941.0	0.0					
940.0	1.0	OL	**TOPSOIL** Silty Clayey Sand, fine-to-medium grained, trace Roots, dark brown, moist.			
		SC SM	**SILTY CLAYEY SAND** fine-to-medium grained, trace Gravel, grey & brown mottling, wet, loose. (Glacial Till)	7	▽	
				7		
				10		
932.0	9.0					
		CL	**SANDY LEAN CLAY** trace Gravel, grey, wet, rather soft to rather stiff. (Glacial Till)	9		
				7		
				5		
				7		
920.0	21.0					
			End of boring. Water was observed purged from 2 to 5 feet. Boring was sealed upon completion.			

CVT STANDARD 22712.23.MNS (ROGERS HAWKINS DR TOWNHOMES).GPJ LOG A GNNN06.GDT 11/13/23

LOG OF BORING

CHOSEN VALLEY TESTING

Chosen Valley Testing, Inc.

PROJECT: 22712.23.MNS Design Phase Geotechnical Evaluation Hawkins Dr Townhomes 13020 Hawkins Dr. Rogers, Minnesota	BORING: **B-03** LOCATION: See attached sketch. DATE: 10/26/2023 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
941.0	0.0	OL	**TOPSOIL** Silty Sand, fine-to-medium grained, trace Roots, dark brown, moist.			
940.0	1.0	CL	**SANDY LEAN CLAY** trace Gravel, brown, wet, very stiff. (Glacial Till)	19	▽	
				10		
				13		
932.0	9.0	CL	**SANDY LEAN CLAY** trace Gravel, brown, wet, medium. (Glacial Till)	6		
				8		
				11		
922.5	18.5	CL	**SANDY LEAN CLAY** trace Gravel, grey, wet, rather stiff to very stiff. (Glacial Till)	17		
920.0	21.0		End of boring. Water was observed purged at 2 feet. Boring was sealed upon completion.			

CVT STANDARD 22712.23.MNS (ROGERS HAWKINS DR TOWNHOMES).GPJ LOG A GNNN06.GDT 11/13/23

LOG OF BORING

CHOSEN VALLEY TESTING

Chosen Valley Testing, Inc.

PROJECT: 22712.23.MNS Design Phase Geotechnical Evaluation Hawkins Dr Townhomes 13020 Hawkins Dr. Rogers, Minnesota	BORING: **B-04** LOCATION: See attached sketch. DATE: 10/26/2023 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
944.0	0.0					
943.0	1.0	OL	**TOPSOIL** Silty Sand, fine-to-medium grained, trace Roots, brown, moist.			
			FILL Sandy Clay to Clayey Sand, fine-to-medium grained, dark brown, moist.	5		
				6		
937.5	6.5	CL	**SANDY LEAN CLAY** trace Gravel, brown & grey mottling, wet, medium to rather stiff. (Glacial Till)	9		
				8		
932.5	11.5	SC SM	**SILTY CLAYEY SAND** fine-to-medium grained, trace Gravel, brown, moist, loose. (Glacial Till)	8		
				10		
926.0	18.0	SC SM	**SILTY CLAYEY SAND** fine-to-medium grained, trace Gravel, dark brown, moist, medium dense. (Glacial Till)	19		
923.0	21.0		End of boring. Water was not observed during drilling. Boring was sealed upon completion.			

CVT STANDARD 22712.23.MNS (ROGERS HAWKINS DR TOWNHOMES).GPJ LOG A GNNN06.GDT 11/13/23

LOG OF BORING

CHOSEN VALLEY TESTING

Chosen Valley Testing, Inc.

PROJECT: 22712.23.MNS Design Phase Geotechnical Evaluation Hawkins Dr Townhomes 13020 Hawkins Dr. Rogers, Minnesota	BORING: **B-05** LOCATION: See attached sketch. DATE: 10/26/2023 SCALE: 1" = 3'

Elev.	Depth	USCS Symbol	Description of Materials (ASTM D 2487/2488)	BPF	WL	Tests and Notes
944.0	0.0					
943.0	1.0	OL	**TOPSOIL** Silty Sand, fine-to-medium grained, trace Roots, brown, moist.			
940.5	3.5		**FILL** Sandy Lean Clay to Clayey Sand, fine-to-medium grained, brown to dark brown, moist.	6		
937.5	6.5	OL	**TOPSOIL**, Slighly Organic Lean Clay, black, wet. rather soft.	5		
932.5	11.5	CL	**SANDY LEAN CLAY** trace Gravel, brown, wet, rather soft to medium. (Glacial Till)	4 6		
923.0	21.0	CL	**SANDY LEAN CLAY** trace Gravel, grey, wet, medium. (Glacial Till)	8 7 8		
			End of boring. Water was not observed during drilling. Boring was sealed upon completion.			

CVT STANDARD 22712.23.MNS (ROGERS HAWKINS DR TOWNHOMES).GPJ LOG A GNNN06.GDT 11/13/23

UNIFIED SOIL CLASSIFICATION (ASTM D-2487/2488)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

Relative Proportions of Sand and Gravel

TERM	PERCENT
Trace	< 15
With	15 - 29
Modifier	> 30

Relative Proportions of Fines

TERM	PERCENT
Trace	< 5
With	5 - 12
Modifier	> 12

Grain Size Terminology

TERM	SIZE
Boulder	< 12 in.
Cobble	3 in. - 12 in.
Gravel	#4 sieve to 3 in.
Sand	#200 sieve to #4 sieve
Silt or Clay	Passing #200 sieve

SAMPLE TYPES

Hollow Stem

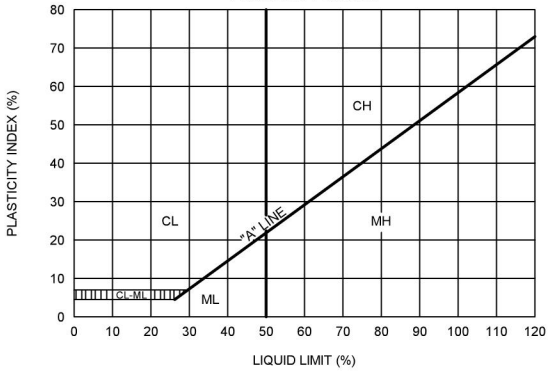
Standard Penetration Test

TEST SYMBOLS

MC	-	MOISTURE CONTENT	LL	-	LIQUID LIMIT
OC	-	ORGANIC CONTENT	PI	-	PLASTISITY INDEX
CN	-	CONSOLIDATION	SW	-	SWELL TEST
DD	-	DRY DENSITY	UU		Unconsolidated Undrained triaxial
PP	-	POCKET PENETROMETER			
RV	-	R-VALUE			
SA	-	SIEVE ANALYSIS			
P200	-	% PASSING #200 SIEVE			

- WATER LEVEL (WITH TIME OF) MEASUREMENT

PLASTICITY CHART



PENETRATION RESISTANCE
(RECORDED AS BLOWS / 0.5 FT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	COMPRESSIVE STRENGTH (TSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 1	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 3	0.25 - 0.50
MEDIUM DENSE	10 - 30	RATHER SOFT	4 - 5	0.50 - 1.0
DENSE	30 - 50	MEDIUM	6 - 8	
VERY DENSE	OVER 50	RATHER STIFF	9 - 12	1.0 - 2.0
		STIFF	13 - 16	
		VERY STIFF	17 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

Chosen Valley Testing, Inc.

Job No. 14202.18.MNR

LEGEND TO SOIL DESCRIPTIONS

CVT

CVT 14202.18.MNR (PRESTON VETERAN'S HOME).GPJ 1/10/19

Appendix C – NURP Calculation

Wet Pond Design (NURP Standard)

Date: 5/4/2024

Hawkins Drive Townhomes

Prepared by: Civil Methods, Inc.

Pond 1

Drainage Area (Ac):	4.194	Impervious Area (Ac):	2.493	Normal Water Area (Ac):	0.287
Pervious Area (Ac):	1.414	Impervious CN	98	Open Water CN	100
Pervious CN	74	Composite CN	90	Maximum Retention	1.11
Runoff from 2.5" Rainfall (Inches)		1.53	Volume Required for NURP (Ac-Ft)		0.53

Volume Provided: **1.37** 59674

Average Depth: **4.77**

Appendix D – MIDS Report

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Hawkins Drive Townhomes
User Name / Company Name:	Civil Methods, Inc.
Date:	02-06-2024
Project Description:	Hawkins Rd Subdivision - Evaluation of Existing Condition (ag values) - Not including wetland areas
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55340
Annual Rainfall (inches):	29.4
Phosphorus EMC (mg/l):	0.533
TSS EMC (mg/l):	145

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			7.326		7.326
				Impervious Area (acres)	0.753
				Total Area (acres)	8.079

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed					0
				Impervious Area (acres)	
				Total Area (acres)	0

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	3007	ft3
Volume removed by BMPs towards performance goal:		ft^3
Percent volume removed towards performance goal		**%**

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	5.1312	acre-ft
Annual runoff volume removed by BMPs:		acre-ft
Percent annual runoff volume removed:		**%**
Post development annual particulate P load:	4.0914	lbs
Annual particulate P removed by BMPs:		lbs
Post development annual dissolved P load:	3.348	lbs
Annual dissolved P removed by BMPs:	0	lbs
Total P removed by BMPs	0	lbs
Percent annual total phosphorus removed:		**%**
Post development annual TSS load:	2023.7	lbs
Annual TSS removed by BMPs:		lbs
Percent annual TSS removed:		**%**

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft3)	Volume Recieved (ft3)	Volume Retained (ft3)	Volume Outflow (ft3)	Percent Retained (%)

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)

BMP Schematic

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Hawkins Dr Townhomes
User Name / Company Name:	Civil Methods, Inc.
Date:	05-04-2024
Project Description:	Hawkins Dr Townhomes- Evaluation of basin/filter treatment
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55374
Annual Rainfall (inches):	29.5
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			4.267		4.267
				Impervious Area (acres)	3.62
				Total Area (acres)	7.887

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			1.414		1.414
				Impervious Area (acres)	2.493
				Total Area (acres)	3.907

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	14455	ft3
Volume removed by BMPs towards performance goal:	2137	ft^3
Percent volume removed towards performance goal	**15**	**%**

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	9.6858	acre-ft
Annual runoff volume removed by BMPs:	2.4346	acre-ft
Percent annual runoff volume removed:	**25**	**%**
Post development annual particulate P load:	4.347	lbs
Annual particulate P removed by BMPs:	2.573	lbs
Post development annual dissolved P load:	3.557	lbs
Annual dissolved P removed by BMPs:	1.552	lbs
Total P removed by BMPs	4.125	lbs
Percent annual total phosphorus removed:	**52**	**%**
Post development annual TSS load:	1435.8	lbs
Annual TSS removed by BMPs:	849.8	lbs
Percent annual TSS removed:	**59**	**%**

TP Discharge = 4.347+3.557-4.125 = 3.932 lb/yr

TSS Discharge = 1436-850 = 586 lb/yr

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft3)	Volume Recieved (ft3)	Volume Retained (ft3)	Volume Outflow (ft3)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	2137	9955	2137	7817	21
1 - Constructed stormwater pond	0	9955	0	9955	0

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	0	5.9282	2.4346	3.4936	41
1 - Constructed stormwater pond	5.9282	0	0	5.9282	0

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	0	0.4257	0.338	0.0877	79
1 - Constructed stormwater pond	2.6606	0	2.2349	0.4257	84

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	0	2.0027	1.37754	0.6252	69
1 - Constructed stormwater pond	2.1768	0	0.1741	2.0027	8

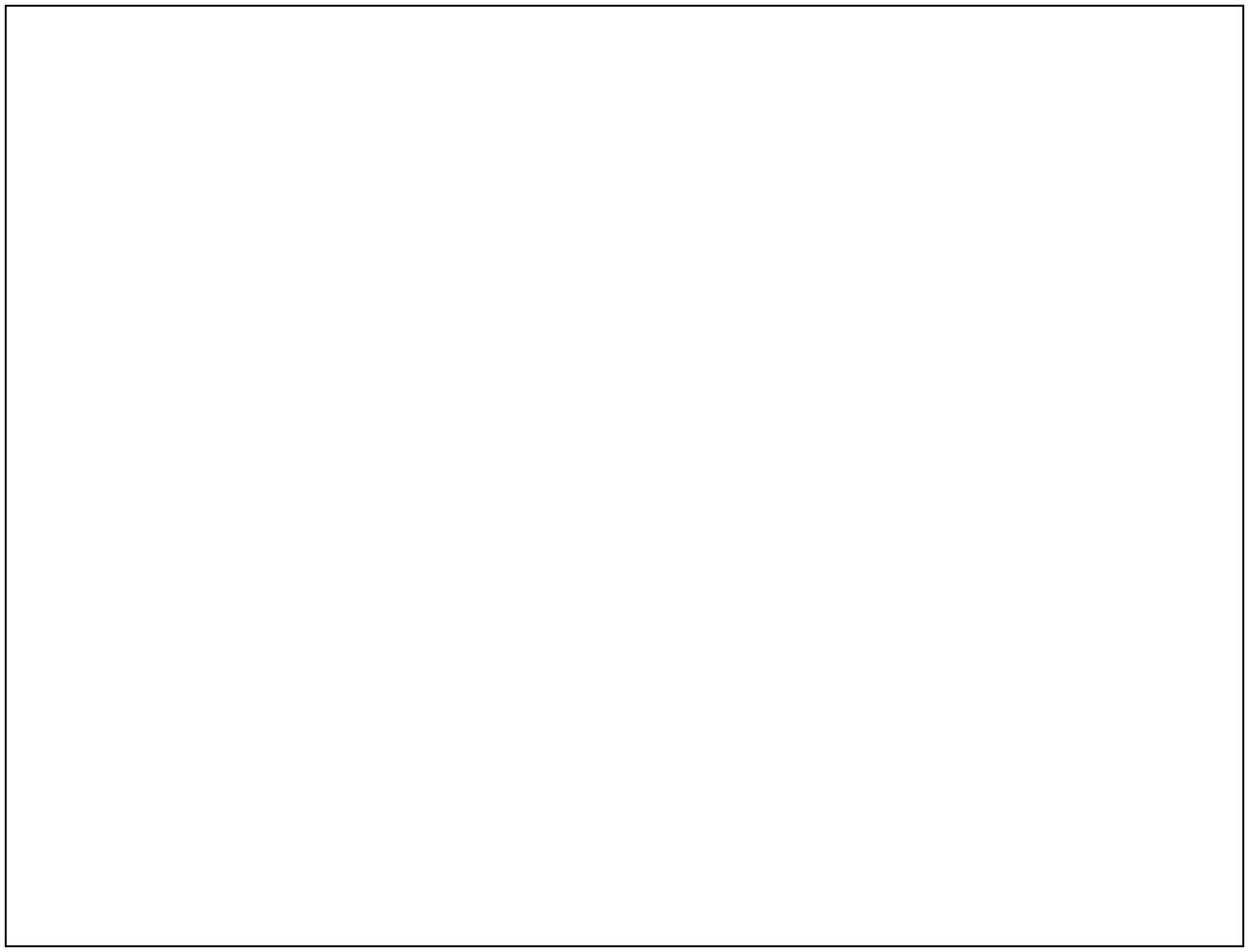
Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	0	2.4284	1.71554	0.7129	74
1 - Constructed stormwater pond	4.8374	0	2.409	2.4284	46

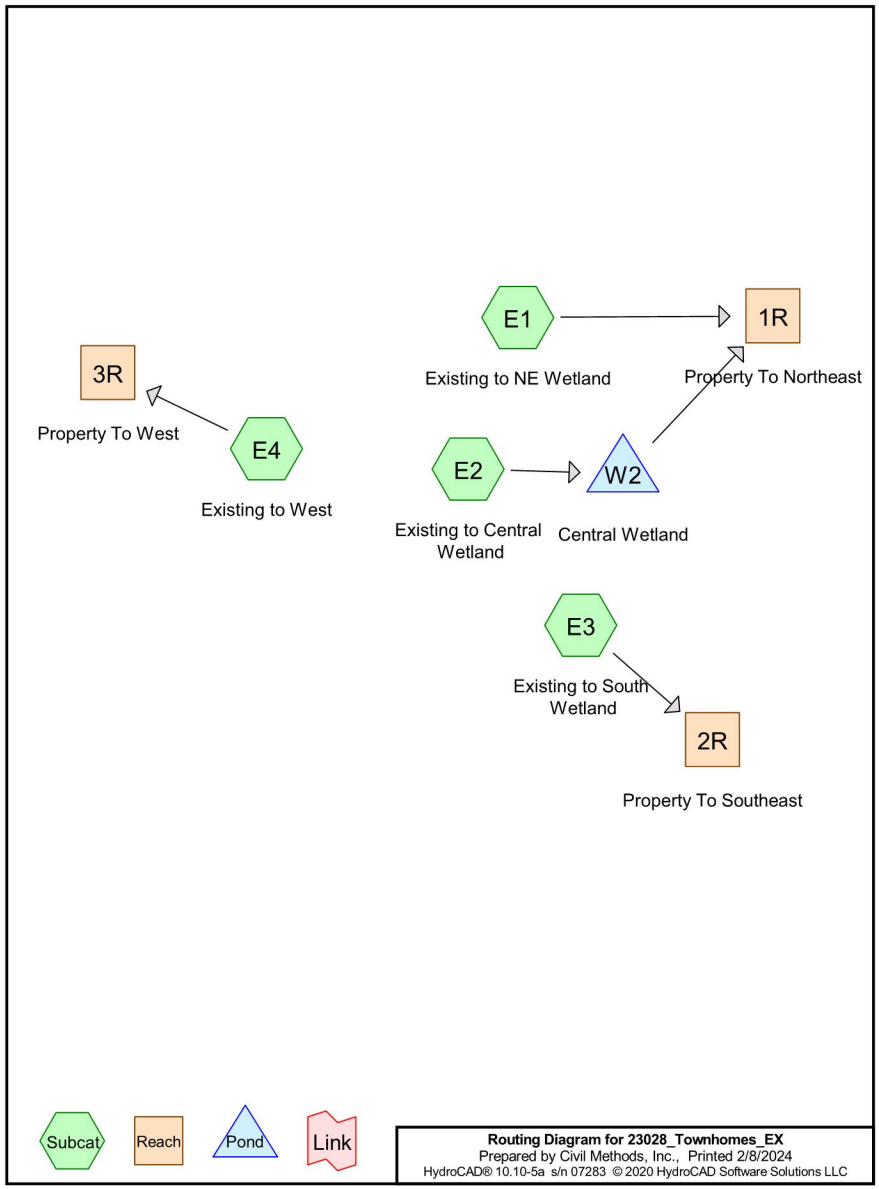
TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Bioretention basin (with underdrain)	0	140.61	111.63	28.979999999	79
1 - Constructed stormwater pond	878.8	0	738.19	140.61	84

BMP Schematic



Appendix E – HydroCAD Report



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	MSE 24-hr	3	Default	24.00	1	2.86	2
2	10-Year	MSE 24-hr	3	Default	24.00	1	4.26	2
3	100-Year	MSE 24-hr	3	Default	24.00	1	7.32	2

Summary for Subcatchment E1: Existing to NE Wetland

Runoff = 7.68 cfs @ 12.23 hrs, Volume= 0.487 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	6,850	98	Gravel Drive & Bldg
*	80,238	85	Wetland
	123,759	78	Row crops, C&T, Good, HSG C
	210,847	81	Weighted Average
	203,997	81	96.75% Pervious Area
	6,850	98	3.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
2.5	180	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.3	280	Total			

Summary for Subcatchment E2: Existing to Central Wetland

Runoff = 4.24 cfs @ 12.29 hrs, Volume= 0.307 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	8,700	98	Gravel Drive & Bldg
*	25,161	85	Wetland
	99,294	78	Row crops, C&T, Good, HSG C
	133,155	81	Weighted Average
	124,455	79	93.47% Pervious Area
	8,700	98	6.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
4.8	280	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.6	380	Total			

Summary for Subcatchment E3: Existing to South Wetland

Runoff = 4.23 cfs @ 12.17 hrs, Volume= 0.219 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	9,020	98	Gravel Drive & 129th
*	11,145	85	Wetland
	73,916	78	Row crops, C&T, Good, HSG C
	5,880	74	>75% Grass cover, Good, HSG C
	99,961	80	Weighted Average
	90,941	79	90.98% Pervious Area
	9,020	98	9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0440	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.6	95	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	195	Total			

Summary for Subcatchment E4: Existing to West

Runoff = 1.66 cfs @ 12.15 hrs, Volume= 0.078 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	8,250	98	Gravel Drive
*	0	85	Wetland
	22,170	78	Row crops, C&T, Good, HSG C
	30,420	83	Weighted Average
	22,170	78	72.88% Pervious Area
	8,250	98	27.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 7.897 ac, 4.52% Impervious, Inflow Depth = 0.74" for 2-Year event
Inflow = 7.68 cfs @ 12.23 hrs, Volume= 0.487 af
Outflow = 7.68 cfs @ 12.23 hrs, Volume= 0.487 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 2.295 ac, 9.02% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 4.23 cfs @ 12.17 hrs, Volume= 0.219 af
Outflow = 4.23 cfs @ 12.17 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Property To West

Inflow Area = 0.698 ac, 27.12% Impervious, Inflow Depth = 1.33" for 2-Year event
Inflow = 1.66 cfs @ 12.15 hrs, Volume= 0.078 af
Outflow = 1.66 cfs @ 12.15 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond W2: Central Wetland

Inflow Area = 3.057 ac, 6.53% Impervious, Inflow Depth = 1.21" for 2-Year event
Inflow = 4.24 cfs @ 12.29 hrs, Volume= 0.307 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 940.03' @ 25.06 hrs Surf.Area= 27,946 sf Storage= 20,227 cf (13,391 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	940.30'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.70 Width (feet) 15.00 104.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=939.50' TW=0.00' (Dynamic Tailwater)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Stage-Area-Storage for Pond W2: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364	943.76	41,924	149,404
943.23	39,745	127,761	943.77	41,965	149,823
943.24	39,786	128,159	943.78	42,006	150,243
943.25	39,828	128,557	943.79	42,047	150,663
943.26	39,869	128,956	943.80	42,088	151,084
943.27	39,910	129,355	943.81	42,129	151,505
943.28	39,951	129,754	943.82	42,170	151,926
943.29	39,992	130,154	943.83	42,211	152,348
943.30	40,033	130,554	943.84	42,252	152,771
943.31	40,074	130,954	943.85	42,294	153,193
943.32	40,115	131,355	943.86	42,335	153,617
943.33	40,156	131,756	943.87	42,376	154,040
943.34	40,197	132,158	943.88	42,417	154,464
943.35	40,239	132,560	943.89	42,458	154,888
943.36	40,280	132,963	943.90	42,499	155,313
943.37	40,321	133,366	943.91	42,540	155,738
943.38	40,362	133,769	943.92	42,581	156,164
943.39	40,403	134,173	943.93	42,622	156,590
943.40	40,444	134,577	943.94	42,663	157,016
943.41	40,485	134,982	943.95	42,704	157,443
943.42	40,526	135,387	943.96	42,746	157,871
943.43	40,567	135,793	943.97	42,787	158,298
943.44	40,608	136,199	943.98	42,828	158,726
943.45	40,649	136,605	943.99	42,869	159,155
943.46	40,691	137,012	944.00	**42,910**	**159,584**
943.47	40,732	137,419			
943.48	40,773	137,826			
943.49	40,814	138,234			
943.50	40,855	138,642			
943.51	40,896	139,051			
943.52	40,937	139,460			
943.53	40,978	139,870			
943.54	41,019	140,280			
943.55	41,060	140,690			
943.56	41,102	141,101			
943.57	41,143	141,512			
943.58	41,184	141,924			
943.59	41,225	142,336			
943.60	41,266	142,749			
943.61	41,307	143,161			
943.62	41,348	143,575			
943.63	41,389	143,988			
943.64	41,430	144,402			
943.65	41,471	144,817			
943.66	41,513	145,232			
943.67	41,554	145,647			
943.68	41,595	146,063			
943.69	41,636	146,479			
943.70	41,677	146,896			
943.71	41,718	147,313			
943.72	41,759	147,730			
943.73	41,800	148,148			
943.74	41,841	148,566			
943.75	41,883	148,985			

Summary for Subcatchment E1: Existing to NE Wetland

Runoff = 15.04 cfs @ 12.22 hrs, Volume= 0.945 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	6,850	98	Gravel Drive & Bldg
*	80,238	85	Wetland
	123,759	78	Row crops, C&T, Good, HSG C
	210,847	81	Weighted Average
	203,997	81	96.75% Pervious Area
	6,850	98	3.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
2.5	180	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.3	280	Total			

Summary for Subcatchment E2: Existing to Central Wetland

Runoff = 8.33 cfs @ 12.28 hrs, Volume= 0.597 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	8,700	98	Gravel Drive & Bldg
*	25,161	85	Wetland
	99,294	78	Row crops, C&T, Good, HSG C
	133,155	81	Weighted Average
	124,455	79	93.47% Pervious Area
	8,700	98	6.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
4.8	280	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.6	380	Total			

Summary for Subcatchment E3: Existing to South Wetland

Runoff = 8.38 cfs @ 12.17 hrs, Volume= 0.432 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	9,020	98	Gravel Drive & 129th
*	11,145	85	Wetland
	73,916	78	Row crops, C&T, Good, HSG C
	5,880	74	>75% Grass cover, Good, HSG C
	99,961	80	Weighted Average
	90,941	79	90.98% Pervious Area
	9,020	98	9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0440	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.6	95	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	195	Total			

Summary for Subcatchment E4: Existing to West

Runoff = 3.10 cfs @ 12.14 hrs, Volume= 0.146 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	8,250	98	Gravel Drive
*	0	85	Wetland
	22,170	78	Row crops, C&T, Good, HSG C
	30,420	83	Weighted Average
	22,170	78	72.88% Pervious Area
	8,250	98	27.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 7.897 ac, 4.52% Impervious, Inflow Depth = 1.61" for 10-Year event
Inflow = 15.04 cfs @ 12.22 hrs, Volume= 1.056 af
Outflow = 15.04 cfs @ 12.22 hrs, Volume= 1.056 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 2.295 ac, 9.02% Impervious, Inflow Depth = 2.26" for 10-Year event
Inflow = 8.38 cfs @ 12.17 hrs, Volume= 0.432 af
Outflow = 8.38 cfs @ 12.17 hrs, Volume= 0.432 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Property To West

Inflow Area = 0.698 ac, 27.12% Impervious, Inflow Depth = 2.51" for 10-Year event
Inflow = 3.10 cfs @ 12.14 hrs, Volume= 0.146 af
Outflow = 3.10 cfs @ 12.14 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond W2: Central Wetland

Inflow Area = 3.057 ac, 6.53% Impervious, Inflow Depth = 2.34" for 10-Year event
Inflow = 8.33 cfs @ 12.28 hrs, Volume= 0.597 af
Outflow = 0.20 cfs @ 16.44 hrs, Volume= 0.112 af, Atten= 98%, Lag= 249.6 min
Primary = 0.20 cfs @ 16.44 hrs, Volume= 0.112 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 940.32' @ 16.44 hrs Surf.Area= 28,961 sf Storage= 28,669 cf (21,834 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 344.8 min (1,159.0 - 814.2)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	940.30'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 1.70
			Width (feet) 15.00 104.00

Primary OutFlow Max=0.20 cfs @ 16.44 hrs HW=940.32' TW=0.00' (Dynamic Tailwater)
↑—**1=Custom Weir/Orifice** (Weir Controls 0.20 cfs @ 0.51 fps)

Stage-Area-Storage for Pond W2: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364	943.76	41,924	149,404
943.23	39,745	127,761	943.77	41,965	149,823
943.24	39,786	128,159	943.78	42,006	150,243
943.25	39,828	128,557	943.79	42,047	150,663
943.26	39,869	128,956	943.80	42,088	151,084
943.27	39,910	129,355	943.81	42,129	151,505
943.28	39,951	129,754	943.82	42,170	151,926
943.29	39,992	130,154	943.83	42,211	152,348
943.30	40,033	130,554	943.84	42,252	152,771
943.31	40,074	130,954	943.85	42,294	153,193
943.32	40,115	131,355	943.86	42,335	153,617
943.33	40,156	131,756	943.87	42,376	154,040
943.34	40,197	132,158	943.88	42,417	154,464
943.35	40,239	132,560	943.89	42,458	154,888
943.36	40,280	132,963	943.90	42,499	155,313
943.37	40,321	133,366	943.91	42,540	155,738
943.38	40,362	133,769	943.92	42,581	156,164
943.39	40,403	134,173	943.93	42,622	156,590
943.40	40,444	134,577	943.94	42,663	157,016
943.41	40,485	134,982	943.95	42,704	157,443
943.42	40,526	135,387	943.96	42,746	157,871
943.43	40,567	135,793	943.97	42,787	158,298
943.44	40,608	136,199	943.98	42,828	158,726
943.45	40,649	136,605	943.99	42,869	159,155
943.46	40,691	137,012	944.00	**42,910**	**159,584**
943.47	40,732	137,419			
943.48	40,773	137,826			
943.49	40,814	138,234			
943.50	40,855	138,642			
943.51	40,896	139,051			
943.52	40,937	139,460			
943.53	40,978	139,870			
943.54	41,019	140,280			
943.55	41,060	140,690			
943.56	41,102	141,101			
943.57	41,143	141,512			
943.58	41,184	141,924			
943.59	41,225	142,336			
943.60	41,266	142,749			
943.61	41,307	143,161			
943.62	41,348	143,575			
943.63	41,389	143,988			
943.64	41,430	144,402			
943.65	41,471	144,817			
943.66	41,513	145,232			
943.67	41,554	145,647			
943.68	41,595	146,063			
943.69	41,636	146,479			
943.70	41,677	146,896			
943.71	41,718	147,313			
943.72	41,759	147,730			
943.73	41,800	148,148			
943.74	41,841	148,566			
943.75	41,883	148,985			

Summary for Subcatchment E1: Existing to NE Wetland

Runoff = 32.16 cfs @ 12.22 hrs, Volume= 2.059 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	6,850	98	Gravel Drive & Bldg
*	80,238	85	Wetland
	123,759	78	Row crops, C&T, Good, HSG C
	210,847	81	Weighted Average
	203,997	81	96.75% Pervious Area
	6,850	98	3.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0150	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
2.5	180	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.3	280	Total			

Summary for Subcatchment E2: Existing to Central Wetland

Runoff = 17.87 cfs @ 12.27 hrs, Volume= 1.300 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	8,700	98	Gravel Drive & Bldg
*	25,161	85	Wetland
	99,294	78	Row crops, C&T, Good, HSG C
	133,155	81	Weighted Average
	124,455	79	93.47% Pervious Area
	8,700	98	6.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
4.8	280	0.0190	0.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.6	380	Total			

Summary for Subcatchment E3: Existing to South Wetland

Runoff = 18.08 cfs @ 12.17 hrs, Volume= 0.954 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	9,020	98	Gravel Drive & 129th
*	11,145	85	Wetland
	73,916	78	Row crops, C&T, Good, HSG C
	5,880	74	>75% Grass cover, Good, HSG C
	99,961	80	Weighted Average
	90,941	79	90.98% Pervious Area
	9,020	98	9.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0440	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.6	95	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.2	195	Total			

Summary for Subcatchment E4: Existing to West

Runoff = 6.34 cfs @ 12.14 hrs, Volume= 0.310 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	8,250	98	Gravel Drive
*	0	85	Wetland
	22,170	78	Row crops, C&T, Good, HSG C
	30,420	83	Weighted Average
	22,170	78	72.88% Pervious Area
	8,250	98	27.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 7.897 ac, 4.52% Impervious, Inflow Depth = 4.37" for 100-Year event
Inflow = 32.16 cfs @ 12.22 hrs, Volume= 2.874 af
Outflow = 32.16 cfs @ 12.22 hrs, Volume= 2.874 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 2.295 ac, 9.02% Impervious, Inflow Depth = 4.99" for 100-Year event
Inflow = 18.08 cfs @ 12.17 hrs, Volume= 0.954 af
Outflow = 18.08 cfs @ 12.17 hrs, Volume= 0.954 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 3R: Property To West

Inflow Area = 0.698 ac, 27.12% Impervious, Inflow Depth = 5.33" for 100-Year event
Inflow = 6.34 cfs @ 12.14 hrs, Volume= 0.310 af
Outflow = 6.34 cfs @ 12.14 hrs, Volume= 0.310 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond W2: Central Wetland

Inflow Area = 3.057 ac, 6.53% Impervious, Inflow Depth = 5.10" for 100-Year event
Inflow = 17.87 cfs @ 12.27 hrs, Volume= 1.300 af
Outflow = 7.99 cfs @ 12.55 hrs, Volume= 0.815 af, Atten= 55%, Lag= 16.7 min
Primary = 7.99 cfs @ 12.55 hrs, Volume= 0.815 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 940.54' @ 12.55 hrs Surf.Area= 29,714 sf Storage= 35,129 cf (28,294 cf above start)

Plug-Flow detention time= 197.9 min calculated for 0.658 af (51% of inflow)
Center-of-Mass det. time= 84.9 min (883.5 - 798.6)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	940.30'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.70 Width (feet) 15.00 104.00

Primary OutFlow Max=7.99 cfs @ 12.55 hrs HW=940.54' TW=0.00' (Dynamic Tailwater)
↑**1=Custom Weir/Orifice** (Weir Controls 7.99 cfs @ 1.52 fps)

Stage-Area-Storage for Pond W2: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond W2: Central Wetland (continued)

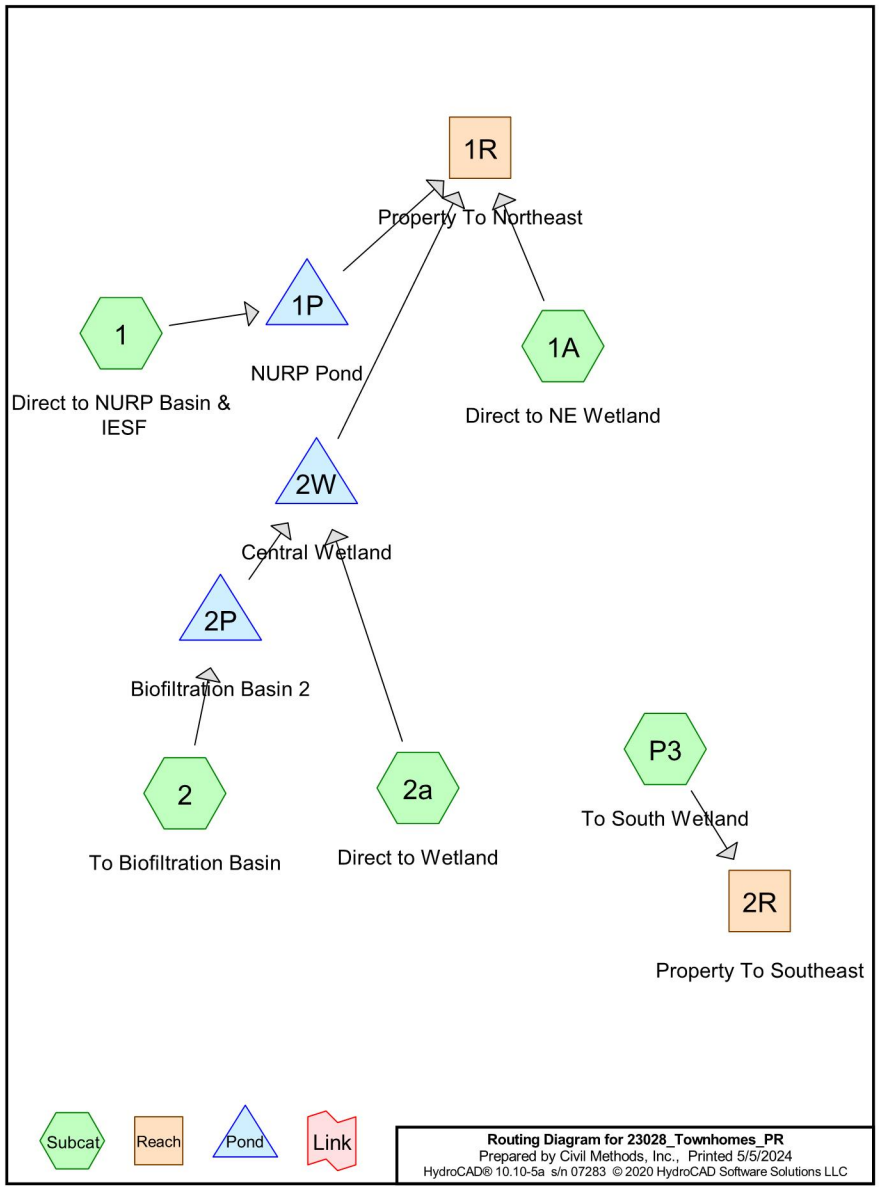
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond W2: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364
943.23	39,745	127,761
943.24	39,786	128,159
943.25	39,828	128,557
943.26	39,869	128,956
943.27	39,910	129,355
943.28	39,951	129,754
943.29	39,992	130,154
943.30	40,033	130,554
943.31	40,074	130,954
943.32	40,115	131,355
943.33	40,156	131,756
943.34	40,197	132,158
943.35	40,239	132,560
943.36	40,280	132,963
943.37	40,321	133,366
943.38	40,362	133,769
943.39	40,403	134,173
943.40	40,444	134,577
943.41	40,485	134,982
943.42	40,526	135,387
943.43	40,567	135,793
943.44	40,608	136,199
943.45	40,649	136,605
943.46	40,691	137,012
943.47	40,732	137,419
943.48	40,773	137,826
943.49	40,814	138,234
943.50	40,855	138,642
943.51	40,896	139,051
943.52	40,937	139,460
943.53	40,978	139,870
943.54	41,019	140,280
943.55	41,060	140,690
943.56	41,102	141,101
943.57	41,143	141,512
943.58	41,184	141,924
943.59	41,225	142,336
943.60	41,266	142,749
943.61	41,307	143,161
943.62	41,348	143,575
943.63	41,389	143,988
943.64	41,430	144,402
943.65	41,471	144,817
943.66	41,513	145,232
943.67	41,554	145,647
943.68	41,595	146,063
943.69	41,636	146,479
943.70	41,677	146,896
943.71	41,718	147,313
943.72	41,759	147,730
943.73	41,800	148,148
943.74	41,841	148,566
943.75	41,883	148,985
943.76	41,924	149,404
943.77	41,965	149,823
943.78	42,006	150,243
943.79	42,047	150,663
943.80	42,088	151,084
943.81	42,129	151,505
943.82	42,170	151,926
943.83	42,211	152,348
943.84	42,252	152,771
943.85	42,294	153,193
943.86	42,335	153,617
943.87	42,376	154,040
943.88	42,417	154,464
943.89	42,458	154,888
943.90	42,499	155,313
943.91	42,540	155,738
943.92	42,581	156,164
943.93	42,622	156,590
943.94	42,663	157,016
943.95	42,704	157,443
943.96	42,746	157,871
943.97	42,787	158,298
943.98	42,828	158,726
943.99	42,869	159,155
944.00	**42,910**	**159,584**



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	MSE 24-hr	3	Default	24.00	1	2.86	2
2	10-Year	MSE 24-hr	3	Default	24.00	1	4.26	2
3	100-Year	MSE 24-hr	3	Default	24.00	1	7.32	2

Summary for Subcatchment 1: Direct to NURP Basin & IESF

Runoff = 10.95 cfs @ 12.20 hrs, Volume= 0.649 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	108,612	98	
	61,599	74	>75% Grass cover, Good, HSG C
*	0	85	Wetland
*	12,498	100	Pond surface
	182,709	90	Weighted Average
	61,599	74	33.71% Pervious Area
	121,110	98	66.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.8	105	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	205	Total			

Summary for Subcatchment 1A: Direct to NE Wetland

Runoff = 4.76 cfs @ 12.22 hrs, Volume= 0.296 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	5,985	98	Back roof
*	80,253	85	Wetland
	35,748	74	>75% Grass cover, Good, HSG C
	121,986	82	Weighted Average
	116,001	82	95.09% Pervious Area
	5,985	98	4.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
3.4	200	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.9	300	Total			

Summary for Subcatchment 2: To Biofiltration Basin

Runoff = 1.85 cfs @ 12.14 hrs, Volume= 0.087 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	14,930	98	Impervious
*	13,217	74	2 Grass to biofilter
	28,147	87	Weighted Average
	13,217	74	46.96% Pervious Area
	14,930	98	53.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment 2a: Direct to Wetland

Runoff = 3.55 cfs @ 12.15 hrs, Volume= 0.166 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	11,340	98	Back roofs
*	22,584	85	Wetland
*	34,299	74	>75% Grass cover, Good, HSG C
	68,223	82	Weighted Average
	56,883	78	83.38% Pervious Area
	11,340	98	16.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment P3: To South Wetland

Runoff = 4.01 cfs @ 12.15 hrs, Volume= 0.187 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	21,190	98	Impervious roofs & street; 129th turn ln
	40,998	74	>75% Grass cover, Good, HSG C
*	11,145	85	Wetland
	73,333	83	Weighted Average
	52,143	76	71.10% Pervious Area
	21,190	98	28.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 9.207 ac, 38.24% Impervious, Inflow Depth > 1.51" for 2-Year event
Inflow = 5.60 cfs @ 12.25 hrs, Volume= 1.159 af
Outflow = 5.60 cfs @ 12.25 hrs, Volume= 1.159 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 1.683 ac, 28.90% Impervious, Inflow Depth = 1.33" for 2-Year event
Inflow = 4.01 cfs @ 12.15 hrs, Volume= 0.187 af
Outflow = 4.01 cfs @ 12.15 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: NURP Pond

Inflow Area = 4.194 ac, 66.29% Impervious, Inflow Depth = 1.86" for 2-Year event
Inflow = 10.95 cfs @ 12.20 hrs, Volume= 0.649 af
Outflow = 1.89 cfs @ 12.66 hrs, Volume= 0.626 af, Atten= 83%, Lag= 27.5 min
Primary = 1.89 cfs @ 12.66 hrs, Volume= 0.626 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 941.60' Surf.Area= 16,480 sf Storage= 68,932 cf
Peak Elev= 942.48' @ 12.66 hrs Surf.Area= 18,702 sf Storage= 84,522 cf (15,590 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 340.4 min (1,138.4 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1	932.00'	115,014 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
932.00	2,660	0	0
938.00	7,460	30,360	30,360
940.00	9,776	17,236	47,596
941.00	14,380	12,078	59,674
942.00	17,880	16,130	75,804
944.00	21,330	39,210	115,014

Device	Routing	Invert	Outlet Devices
#1	Primary	938.80'	**15.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 938.80' / 938.65' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	941.60'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 2.00 Width (feet) 0.00 2.00 4.00 4.00

Primary OutFlow Max=1.89 cfs @ 12.66 hrs HW=942.48' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 1.89 cfs of 10.32 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 1.89 cfs @ 2.45 fps)

Stage-Area-Storage for Pond 1P: NURP Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
932.00	2,660	0	933.08	3,524	3,339
932.02	2,676	53	933.10	3,540	3,410
932.04	2,692	107	933.12	3,556	3,481
932.06	2,708	161	933.14	3,572	3,552
932.08	2,724	215	933.16	3,588	3,624
932.10	2,740	270	933.18	3,604	3,696
932.12	2,756	325	933.20	3,620	3,768
932.14	2,772	380	933.22	3,636	3,841
932.16	2,788	436	933.24	3,652	3,913
932.18	2,804	492	933.26	3,668	3,987
932.20	2,820	548	933.28	3,684	4,060
932.22	2,836	605	933.30	3,700	4,134
932.24	2,852	661	933.32	3,716	4,208
932.26	2,868	719	933.34	3,732	4,283
932.28	2,884	776	933.36	3,748	4,357
932.30	2,900	834	933.38	3,764	4,433
932.32	2,916	892	933.40	3,780	4,508
932.34	2,932	951	933.42	3,796	4,584
932.36	2,948	1,009	933.44	3,812	4,660
932.38	2,964	1,069	933.46	3,828	4,736
932.40	2,980	1,128	933.48	3,844	4,813
932.42	2,996	1,188	933.50	3,860	4,890
932.44	3,012	1,248	933.52	3,876	4,967
932.46	3,028	1,308	933.54	3,892	5,045
932.48	3,044	1,369	933.56	3,908	5,123
932.50	3,060	1,430	933.58	3,924	5,201
932.52	3,076	1,491	933.60	3,940	5,280
932.54	3,092	1,553	933.62	3,956	5,359
932.56	3,108	1,615	933.64	3,972	5,438
932.58	3,124	1,677	933.66	3,988	5,518
932.60	3,140	1,740	933.68	4,004	5,598
932.62	3,156	1,803	933.70	4,020	5,678
932.64	3,172	1,866	933.72	4,036	5,759
932.66	3,188	1,930	933.74	4,052	5,839
932.68	3,204	1,994	933.76	4,068	5,921
932.70	3,220	2,058	933.78	4,084	6,002
932.72	3,236	2,123	933.80	4,100	6,084
932.74	3,252	2,187	933.82	4,116	6,166
932.76	3,268	2,253	933.84	4,132	6,249
932.78	3,284	2,318	933.86	4,148	6,331
932.80	3,300	2,384	933.88	4,164	6,415
932.82	3,316	2,450	933.90	4,180	6,498
932.84	3,332	2,517	933.92	4,196	6,582
932.86	3,348	2,583	933.94	4,212	6,666
932.88	3,364	2,651	933.96	4,228	6,750
932.90	3,380	2,718	933.98	4,244	6,835
932.92	3,396	2,786	934.00	4,260	6,920
932.94	3,412	2,854	934.02	4,276	7,005
932.96	3,428	2,922	934.04	4,292	7,091
932.98	3,444	2,991	934.06	4,308	7,177
933.00	3,460	3,060	934.08	4,324	7,263
933.02	3,476	3,129	934.10	4,340	7,350
933.04	3,492	3,199	934.12	4,356	7,437
933.06	3,508	3,269	934.14	4,372	7,524

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
934.16	4,388	7,612	935.24	5,252	12,817
934.18	4,404	7,700	935.26	5,268	12,923
934.20	4,420	7,788	935.28	5,284	13,028
934.22	4,436	7,877	935.30	5,300	13,134
934.24	4,452	7,965	935.32	5,316	13,240
934.26	4,468	8,055	935.34	5,332	13,347
934.28	4,484	8,144	935.36	5,348	13,453
934.30	4,500	8,234	935.38	5,364	13,561
934.32	4,516	8,324	935.40	5,380	13,668
934.34	4,532	8,415	935.42	5,396	13,776
934.36	4,548	8,505	935.44	5,412	13,884
934.38	4,564	8,597	935.46	5,428	13,992
934.40	4,580	8,688	935.48	5,444	14,101
934.42	4,596	8,780	935.50	5,460	14,210
934.44	4,612	8,872	935.52	5,476	14,319
934.46	4,628	8,964	935.54	5,492	14,429
934.48	4,644	9,057	935.56	5,508	14,539
934.50	4,660	9,150	935.58	5,524	14,649
934.52	4,676	9,243	935.60	5,540	14,760
934.54	4,692	9,337	935.62	5,556	14,871
934.56	4,708	9,431	935.64	5,572	14,982
934.58	4,724	9,525	935.66	5,588	15,094
934.60	4,740	9,620	935.68	5,604	15,206
934.62	4,756	9,715	935.70	5,620	15,318
934.64	4,772	9,810	935.72	5,636	15,431
934.66	4,788	9,906	935.74	5,652	15,543
934.68	4,804	10,002	935.76	5,668	15,657
934.70	4,820	10,098	935.78	5,684	15,770
934.72	4,836	10,195	935.80	5,700	15,884
934.74	4,852	10,291	935.82	5,716	15,998
934.76	4,868	10,389	935.84	5,732	16,113
934.78	4,884	10,486	935.86	5,748	16,227
934.80	4,900	10,584	935.88	5,764	16,343
934.82	4,916	10,682	935.90	5,780	16,458
934.84	4,932	10,781	935.92	5,796	16,574
934.86	4,948	10,879	935.94	5,812	16,690
934.88	4,964	10,979	935.96	5,828	16,806
934.90	4,980	11,078	935.98	5,844	16,923
934.92	4,996	11,178	936.00	5,860	17,040
934.94	5,012	11,278	936.02	5,876	17,157
934.96	5,028	11,378	936.04	5,892	17,275
934.98	5,044	11,479	936.06	5,908	17,393
935.00	5,060	11,580	936.08	5,924	17,511
935.02	5,076	11,681	936.10	5,940	17,630
935.04	5,092	11,783	936.12	5,956	17,749
935.06	5,108	11,885	936.14	5,972	17,868
935.08	5,124	11,987	936.16	5,988	17,988
935.10	5,140	12,090	936.18	6,004	18,108
935.12	5,156	12,193	936.20	6,020	18,228
935.14	5,172	12,296	936.22	6,036	18,349
935.16	5,188	12,400	936.24	6,052	18,469
935.18	5,204	12,504	936.26	6,068	18,591
935.20	5,220	12,608	936.28	6,084	18,712
935.22	5,236	12,713	936.30	6,100	18,834

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
936.32	6,116	18,956	937.40	6,980	26,028
936.34	6,132	19,079	937.42	6,996	26,168
936.36	6,148	19,201	937.44	7,012	26,308
936.38	6,164	19,325	937.46	7,028	26,448
936.40	6,180	19,448	937.48	7,044	26,589
936.42	6,196	19,572	937.50	7,060	26,730
936.44	6,212	19,696	937.52	7,076	26,871
936.46	6,228	19,820	937.54	7,092	27,013
936.48	6,244	19,945	937.56	7,108	27,155
936.50	6,260	20,070	937.58	7,124	27,297
936.52	6,276	20,195	937.60	7,140	27,440
936.54	6,292	20,321	937.62	7,156	27,583
936.56	6,308	20,447	937.64	7,172	27,726
936.58	6,324	20,573	937.66	7,188	27,870
936.60	6,340	20,700	937.68	7,204	28,014
936.62	6,356	20,827	937.70	7,220	28,158
936.64	6,372	20,954	937.72	7,236	28,303
936.66	6,388	21,082	937.74	7,252	28,447
936.68	6,404	21,210	937.76	7,268	28,593
936.70	6,420	21,338	937.78	7,284	28,738
936.72	6,436	21,467	937.80	7,300	28,884
936.74	6,452	21,595	937.82	7,316	29,030
936.76	6,468	21,725	937.84	7,332	29,177
936.78	6,484	21,854	937.86	7,348	29,323
936.80	6,500	21,984	937.88	7,364	29,471
936.82	6,516	22,114	937.90	7,380	29,618
936.84	6,532	22,245	937.92	7,396	29,766
936.86	6,548	22,375	937.94	7,412	29,914
936.88	6,564	22,507	937.96	7,428	30,062
936.90	6,580	22,638	937.98	7,444	30,211
936.92	6,596	22,770	938.00	7,460	30,360
936.94	6,612	22,902	938.02	7,483	30,509
936.96	6,628	23,034	938.04	7,506	30,659
936.98	6,644	23,167	938.06	7,529	30,810
937.00	6,660	23,300	938.08	7,553	30,961
937.02	6,676	23,433	938.10	7,576	31,112
937.04	6,692	23,567	938.12	7,599	31,264
937.06	6,708	23,701	938.14	7,622	31,416
937.08	6,724	23,835	938.16	7,645	31,568
937.10	6,740	23,970	938.18	7,668	31,722
937.12	6,756	24,105	938.20	7,692	31,875
937.14	6,772	24,240	938.22	7,715	32,029
937.16	6,788	24,376	938.24	7,738	32,184
937.18	6,804	24,512	938.26	7,761	32,339
937.20	6,820	24,648	938.28	7,784	32,494
937.22	6,836	24,785	938.30	7,807	32,650
937.24	6,852	24,921	938.32	7,831	32,806
937.26	6,868	25,059	938.34	7,854	32,963
937.28	6,884	25,196	938.36	7,877	33,121
937.30	6,900	25,334	938.38	7,900	33,278
937.32	6,916	25,472	938.40	7,923	33,437
937.34	6,932	25,611	938.42	7,946	33,595
937.36	6,948	25,749	938.44	7,970	33,754
937.38	6,964	25,889	938.46	7,993	33,914

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.48	8,016	34,074	939.56	9,266	43,407
938.50	8,039	34,235	939.58	9,290	43,592
938.52	8,062	34,396	939.60	9,313	43,778
938.54	8,085	34,557	939.62	9,336	43,965
938.56	8,108	34,719	939.64	9,359	44,152
938.58	8,132	34,882	939.66	9,382	44,339
938.60	8,155	35,044	939.68	9,405	44,527
938.62	8,178	35,208	939.70	9,429	44,715
938.64	8,201	35,372	939.72	9,452	44,904
938.66	8,224	35,536	939.74	9,475	45,093
938.68	8,247	35,701	939.76	9,498	45,283
938.70	8,271	35,866	939.78	9,521	45,473
938.72	8,294	36,031	939.80	9,544	45,664
938.74	8,317	36,197	939.82	9,568	45,855
938.76	8,340	36,364	939.84	9,591	46,047
938.78	8,363	36,531	939.86	9,614	46,239
938.80	8,386	36,699	939.88	9,637	46,431
938.82	8,410	36,867	939.90	9,660	46,624
938.84	8,433	37,035	939.92	9,683	46,818
938.86	8,456	37,204	939.94	9,707	47,012
938.88	8,479	37,373	939.96	9,730	47,206
938.90	8,502	37,543	939.98	9,753	47,401
938.92	8,525	37,713	940.00	9,776	47,596
938.94	8,549	37,884	940.02	9,868	47,792
938.96	8,572	38,055	940.04	9,960	47,991
938.98	8,595	38,227	940.06	10,052	48,191
939.00	8,618	38,399	940.08	10,144	48,393
939.02	8,641	38,572	940.10	10,236	48,597
939.04	8,664	38,745	940.12	10,328	48,802
939.06	8,687	38,918	940.14	10,421	49,010
939.08	8,711	39,092	940.16	10,513	49,219
939.10	8,734	39,267	940.18	10,605	49,430
939.12	8,757	39,441	940.20	10,697	49,643
939.14	8,780	39,617	940.22	10,789	49,858
939.16	8,803	39,793	940.24	10,881	50,075
939.18	8,826	39,969	940.26	10,973	50,293
939.20	8,850	40,146	940.28	11,065	50,514
939.22	8,873	40,323	940.30	11,157	50,736
939.24	8,896	40,501	940.32	11,249	50,960
939.26	8,919	40,679	940.34	11,341	51,186
939.28	8,942	40,857	940.36	11,433	51,414
939.30	8,965	41,037	940.38	11,526	51,643
939.32	8,989	41,216	940.40	11,618	51,875
939.34	9,012	41,396	940.42	11,710	52,108
939.36	9,035	41,577	940.44	11,802	52,343
939.38	9,058	41,757	940.46	11,894	52,580
939.40	9,081	41,939	940.48	11,986	52,819
939.42	9,104	42,121	940.50	12,078	53,060
939.44	9,128	42,303	940.52	12,170	53,302
939.46	9,151	42,486	940.54	12,262	53,546
939.48	9,174	42,669	940.56	12,354	53,792
939.50	9,197	42,853	940.58	12,446	54,040
939.52	9,220	43,037	940.60	12,538	54,290
939.54	9,243	43,222	940.62	12,630	54,542

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
940.64	12,723	54,796	941.72	16,900	70,935
940.66	12,815	55,051	941.74	16,970	71,274
940.68	12,907	55,308	941.76	17,040	71,614
940.70	12,999	55,567	941.78	17,110	71,955
940.72	13,091	55,828	941.80	17,180	72,298
940.74	13,183	56,091	941.82	17,250	72,642
940.76	13,275	56,355	941.84	17,320	72,988
940.78	13,367	56,622	941.86	17,390	73,335
940.80	13,459	56,890	941.88	17,460	73,684
940.82	13,551	57,160	941.90	17,530	74,033
940.84	13,643	57,432	941.92	17,600	74,385
940.86	13,735	57,706	941.94	17,670	74,738
940.88	13,828	57,982	941.96	17,740	75,092
940.90	13,920	58,259	941.98	17,810	75,447
940.92	14,012	58,538	942.00	17,880	75,804
940.94	14,104	58,819	942.02	17,914	76,162
940.96	14,196	59,102	942.04	17,949	76,521
940.98	14,288	59,387	942.06	17,983	76,880
941.00	14,380	59,674	942.08	18,018	77,240
941.02	14,450	59,962	942.10	18,053	77,601
941.04	14,520	60,252	942.12	18,087	77,962
941.06	14,590	60,543	942.14	18,121	78,324
941.08	14,660	60,836	942.16	18,156	78,687
941.10	14,730	61,130	942.18	18,190	79,050
941.12	14,800	61,425	942.20	18,225	79,415
941.14	14,870	61,721	942.22	18,260	79,779
941.16	14,940	62,020	942.24	18,294	80,145
941.18	15,010	62,319	942.26	18,328	80,511
941.20	15,080	62,620	942.28	18,363	80,878
941.22	15,150	62,922	942.30	18,397	81,246
941.24	15,220	63,226	942.32	18,432	81,614
941.26	15,290	63,531	942.34	18,467	81,983
941.28	15,360	63,838	942.36	18,501	82,353
941.30	15,430	64,145	942.38	18,535	82,723
941.32	15,500	64,455	942.40	18,570	83,094
941.34	15,570	64,766	942.42	18,604	83,466
941.36	15,640	65,078	942.44	18,639	83,838
941.38	15,710	65,391	942.46	18,674	84,211
941.40	15,780	65,706	942.48	18,708	84,585
941.42	15,850	66,022	942.50	18,743	84,960
941.44	15,920	66,340	942.52	18,777	85,335
941.46	15,990	66,659	942.54	18,811	85,711
941.48	16,060	66,980	942.56	18,846	86,087
941.50	16,130	67,302	942.58	18,881	86,465
941.52	16,200	67,625	942.60	18,915	86,843
941.54	16,270	67,949	942.62	18,950	87,221
941.56	16,340	68,276	942.64	18,984	87,600
941.58	16,410	68,603	942.66	19,018	87,981
941.60	16,480	68,932	942.68	19,053	88,361
941.62	16,550	69,262	942.70	19,088	88,743
941.64	16,620	69,594	942.72	19,122	89,125
941.66	16,690	69,927	942.74	19,157	89,508
941.68	16,760	70,262	942.76	19,191	89,891
941.70	16,830	70,598	942.78	19,225	90,275

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.80	19,260	90,660	943.88	21,123	112,467
942.82	19,295	91,046	943.90	21,157	112,890
942.84	19,329	91,432	943.92	21,192	113,313
942.86	19,364	91,819	943.94	21,227	113,737
942.88	19,398	92,206	943.96	21,261	114,162
942.90	19,432	92,595	943.98	21,296	114,588
942.92	19,467	92,984	944.00	**21,330**	**115,014**
942.94	19,502	93,373			
942.96	19,536	93,764			
942.98	19,571	94,155			
943.00	19,605	94,547			
943.02	19,639	94,939			
943.04	19,674	95,332			
943.06	19,708	95,726			
943.08	19,743	96,120			
943.10	19,778	96,516			
943.12	19,812	96,912			
943.14	19,846	97,308			
943.16	19,881	97,705			
943.18	19,915	98,103			
943.20	19,950	98,502			
943.22	19,985	98,901			
943.24	20,019	99,301			
943.26	20,053	99,702			
943.28	20,088	100,104			
943.30	20,122	100,506			
943.32	20,157	100,908			
943.34	20,192	101,312			
943.36	20,226	101,716			
943.38	20,260	102,121			
943.40	20,295	102,526			
943.42	20,329	102,933			
943.44	20,364	103,340			
943.46	20,399	103,747			
943.48	20,433	104,156			
943.50	20,468	104,565			
943.52	20,502	104,974			
943.54	20,536	105,385			
943.56	20,571	105,796			
943.58	20,606	106,208			
943.60	20,640	106,620			
943.62	20,675	107,033			
943.64	20,709	107,447			
943.66	20,743	107,862			
943.68	20,778	108,277			
943.70	20,813	108,693			
943.72	20,847	109,109			
943.74	20,882	109,527			
943.76	20,916	109,944			
943.78	20,950	110,363			
943.80	20,985	110,782			
943.82	21,020	111,203			
943.84	21,054	111,623			
943.86	21,089	112,045			

Summary for Pond 2P: Biofiltration Basin 2

Inflow Area = 0.646 ac, 53.04% Impervious, Inflow Depth = 1.62" for 2-Year event
Inflow = 1.85 cfs @ 12.14 hrs, Volume= 0.087 af
Outflow = 0.16 cfs @ 12.93 hrs, Volume= 0.087 af, Atten= 91%, Lag= 47.2 min
Primary = 0.16 cfs @ 12.93 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 943.54' @ 12.93 hrs Surf.Area= 2,196 sf Storage= 2,226 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 460.7 min (1,262.4 - 801.8)

Volume	Invert	Avail.Storage	Storage Description
#1	942.00'	3,349 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.00	698	0	0
943.50	2,153	2,138	2,138
944.00	2,688	1,210	3,349

Device	Routing	Invert	Outlet Devices
#1	Primary	942.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	943.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50
			Width (feet) 4.00 6.00

Primary OutFlow Max=0.16 cfs @ 12.93 hrs HW=943.54' TW=939.70' (Dynamic Tailwater)
↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
└**2=Custom Weir/Orifice** (Weir Controls 0.11 cfs @ 0.66 fps)

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.00	698	0	942.54	1,222	518
942.01	708	7	942.55	1,231	531
942.02	717	14	942.56	1,241	543
942.03	727	21	942.57	1,251	555
942.04	737	29	942.58	1,261	568
942.05	746	36	942.59	1,270	581
942.06	756	44	942.60	1,280	593
942.07	766	51	942.61	1,290	606
942.08	776	59	942.62	1,299	619
942.09	785	67	942.63	1,309	632
942.10	795	75	942.64	1,319	645
942.11	805	83	942.65	1,328	659
942.12	814	91	942.66	1,338	672
942.13	824	99	942.67	1,348	685
942.14	834	107	942.68	1,358	699
942.15	843	116	942.69	1,367	713
942.16	853	124	942.70	1,377	726
942.17	863	133	942.71	1,387	740
942.18	873	141	942.72	1,396	754
942.19	882	150	942.73	1,406	768
942.20	892	159	942.74	1,416	782
942.21	902	168	942.75	1,426	796
942.22	911	177	942.76	1,435	811
942.23	921	186	942.77	1,445	825
942.24	931	195	942.78	1,455	840
942.25	941	205	942.79	1,464	854
942.26	950	214	942.80	1,474	869
942.27	960	224	942.81	1,484	884
942.28	970	233	942.82	1,493	898
942.29	979	243	942.83	1,503	913
942.30	989	253	942.84	1,513	929
942.31	999	263	942.85	1,523	944
942.32	1,008	273	942.86	1,532	959
942.33	1,018	283	942.87	1,542	974
942.34	1,028	293	942.88	1,552	990
942.35	1,038	304	942.89	1,561	1,005
942.36	1,047	314	942.90	1,571	1,021
942.37	1,057	325	942.91	1,581	1,037
942.38	1,067	335	942.92	1,590	1,053
942.39	1,076	346	942.93	1,600	1,069
942.40	1,086	357	942.94	1,610	1,085
942.41	1,096	368	942.95	1,620	1,101
942.42	1,105	379	942.96	1,629	1,117
942.43	1,115	390	942.97	1,639	1,133
942.44	1,125	401	942.98	1,649	1,150
942.45	1,135	412	942.99	1,658	1,166
942.46	1,144	424	943.00	1,668	1,183
942.47	1,154	435	943.01	1,678	1,200
942.48	1,164	447	943.02	1,687	1,217
942.49	1,173	458	943.03	1,697	1,233
942.50	1,183	470	943.04	1,707	1,250
942.51	1,193	482	943.05	1,716	1,268
942.52	1,202	494	943.06	1,726	1,285
942.53	1,212	506	943.07	1,736	1,302

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.08	1,746	1,320	943.62	2,281	2,404
943.09	1,755	1,337	943.63	2,292	2,427
943.10	1,765	1,355	943.64	2,303	2,450
943.11	1,775	1,372	943.65	2,313	2,473
943.12	1,784	1,390	943.66	2,324	2,496
943.13	1,794	1,408	943.67	2,335	2,520
943.14	1,804	1,426	943.68	2,346	2,543
943.15	1,813	1,444	943.69	2,356	2,567
943.16	1,823	1,462	943.70	2,367	2,590
943.17	1,833	1,481	943.71	2,378	2,614
943.18	1,843	1,499	943.72	2,388	2,638
943.19	1,852	1,517	943.73	2,399	2,662
943.20	1,862	1,536	943.74	2,410	2,686
943.21	1,872	1,555	943.75	2,421	2,710
943.22	1,881	1,573	943.76	2,431	2,734
943.23	1,891	1,592	943.77	2,442	2,759
943.24	1,901	1,611	943.78	2,453	2,783
943.25	1,911	1,630	943.79	2,463	2,808
943.26	1,920	1,649	943.80	2,474	2,832
943.27	1,930	1,669	943.81	2,485	2,857
943.28	1,940	1,688	943.82	2,495	2,882
943.29	1,949	1,708	943.83	2,506	2,907
943.30	1,959	1,727	943.84	2,517	2,932
943.31	1,969	1,747	943.85	2,528	2,957
943.32	1,978	1,766	943.86	2,538	2,983
943.33	1,988	1,786	943.87	2,549	3,008
943.34	1,998	1,806	943.88	2,560	3,034
943.35	2,008	1,826	943.89	2,570	3,059
943.36	2,017	1,846	943.90	2,581	3,085
943.37	2,027	1,867	943.91	2,592	3,111
943.38	2,037	1,887	943.92	2,602	3,137
943.39	2,046	1,907	943.93	2,613	3,163
943.40	2,056	1,928	943.94	2,624	3,189
943.41	2,066	1,948	943.95	2,635	3,215
943.42	2,075	1,969	943.96	2,645	3,242
943.43	2,085	1,990	943.97	2,656	3,268
943.44	2,095	2,011	943.98	2,667	3,295
943.45	2,105	2,032	943.99	2,677	3,322
943.46	2,114	2,053	944.00	**2,688**	**3,349**
943.47	2,124	2,074			
943.48	2,134	2,095			
943.49	2,143	2,117			
943.50	2,153	2,138			
943.51	2,164	2,160			
943.52	2,174	2,182			
943.53	2,185	2,203			
943.54	2,196	2,225			
943.55	2,206	2,247			
943.56	2,217	2,269			
943.57	2,228	2,292			
943.58	2,239	2,314			
943.59	2,249	2,336			
943.60	2,260	2,359			
943.61	2,271	2,382			

Summary for Pond 2W: Central Wetland

Inflow Area = 2.212 ac, 27.26% Impervious, Inflow Depth = 1.37" for 2-Year event
Inflow = 3.59 cfs @ 12.15 hrs, Volume= 0.253 af
Outflow = 0.17 cfs @ 14.83 hrs, Volume= 0.237 af, Atten= 95%, Lag= 161.2 min
Primary = 0.17 cfs @ 14.83 hrs, Volume= 0.237 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 939.73' @ 14.83 hrs Surf.Area= 25,010 sf Storage= 12,318 cf (5,483 cf above start)

Plug-Flow detention time= 1,905.5 min calculated for 0.080 af (32% of inflow)
Center-of-Mass det. time= 680.7 min (1,649.6 - 968.9)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	939.50'	**12.0" Round Culvert** L= 150.0' Ke= 0.500 Inlet / Outlet Invert= 939.50' / 938.70' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 14.83 hrs HW=939.73' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.17 cfs @ 1.84 fps)

Stage-Area-Storage for Pond 2W: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364	943.76	41,924	149,404
943.23	39,745	127,761	943.77	41,965	149,823
943.24	39,786	128,159	943.78	42,006	150,243
943.25	39,828	128,557	943.79	42,047	150,663
943.26	39,869	128,956	943.80	42,088	151,084
943.27	39,910	129,355	943.81	42,129	151,505
943.28	39,951	129,754	943.82	42,170	151,926
943.29	39,992	130,154	943.83	42,211	152,348
943.30	40,033	130,554	943.84	42,252	152,771
943.31	40,074	130,954	943.85	42,294	153,193
943.32	40,115	131,355	943.86	42,335	153,617
943.33	40,156	131,756	943.87	42,376	154,040
943.34	40,197	132,158	943.88	42,417	154,464
943.35	40,239	132,560	943.89	42,458	154,888
943.36	40,280	132,963	943.90	42,499	155,313
943.37	40,321	133,366	943.91	42,540	155,738
943.38	40,362	133,769	943.92	42,581	156,164
943.39	40,403	134,173	943.93	42,622	156,590
943.40	40,444	134,577	943.94	42,663	157,016
943.41	40,485	134,982	943.95	42,704	157,443
943.42	40,526	135,387	943.96	42,746	157,871
943.43	40,567	135,793	943.97	42,787	158,298
943.44	40,608	136,199	943.98	42,828	158,726
943.45	40,649	136,605	943.99	42,869	159,155
943.46	40,691	137,012	944.00	**42,910**	**159,584**
943.47	40,732	137,419			
943.48	40,773	137,826			
943.49	40,814	138,234			
943.50	40,855	138,642			
943.51	40,896	139,051			
943.52	40,937	139,460			
943.53	40,978	139,870			
943.54	41,019	140,280			
943.55	41,060	140,690			
943.56	41,102	141,101			
943.57	41,143	141,512			
943.58	41,184	141,924			
943.59	41,225	142,336			
943.60	41,266	142,749			
943.61	41,307	143,161			
943.62	41,348	143,575			
943.63	41,389	143,988			
943.64	41,430	144,402			
943.65	41,471	144,817			
943.66	41,513	145,232			
943.67	41,554	145,647			
943.68	41,595	146,063			
943.69	41,636	146,479			
943.70	41,677	146,896			
943.71	41,718	147,313			
943.72	41,759	147,730			
943.73	41,800	148,148			
943.74	41,841	148,566			
943.75	41,883	148,985			

Summary for Subcatchment 1: Direct to NURP Basin & IESF

Runoff = 18.26 cfs @ 12.20 hrs, Volume= 1.107 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	108,612	98	
	61,599	74	>75% Grass cover, Good, HSG C
*	0	85	Wetland
*	12,498	100	Pond surface
	182,709	90	Weighted Average
	61,599	74	33.71% Pervious Area
	121,110	98	66.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.8	105	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	205	Total			

Summary for Subcatchment 1A: Direct to NE Wetland

Runoff = 9.12 cfs @ 12.22 hrs, Volume= 0.566 af, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	5,985	98	Back roof
*	80,253	85	Wetland
	35,748	74	>75% Grass cover, Good, HSG C
	121,986	82	Weighted Average
	116,001	82	95.09% Pervious Area
	5,985	98	4.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
3.4	200	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.9	300	Total			

Summary for Subcatchment 2: To Biofiltration Basin

Runoff = 3.22 cfs @ 12.14 hrs, Volume= 0.155 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	14,930	98	Impervious
*	13,217	74	2 Grass to biofilter
	28,147	87	Weighted Average
	13,217	74	46.96% Pervious Area
	14,930	98	53.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment 2a: Direct to Wetland

Runoff = 6.72 cfs @ 12.14 hrs, Volume= 0.317 af, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	11,340	98	Back roofs
*	22,584	85	Wetland
*	34,299	74	>75% Grass cover, Good, HSG C
	68,223	82	Weighted Average
	56,883	78	83.38% Pervious Area
	11,340	98	16.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment P3: To South Wetland

Runoff = 7.46 cfs @ 12.14 hrs, Volume= 0.353 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

	Area (sf)	CN	Description
*	21,190	98	Impervious roofs & street; 129th turn ln
	40,998	74	>75% Grass cover, Good, HSG C
*	11,145	85	Wetland
	73,333	83	Weighted Average
	52,143	76	71.10% Pervious Area
	21,190	98	28.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 9.207 ac, 38.24% Impervious, Inflow Depth > 2.74" for 10-Year event
Inflow = 12.77 cfs @ 12.27 hrs, Volume= 2.105 af
Outflow = 12.77 cfs @ 12.27 hrs, Volume= 2.105 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 1.683 ac, 28.90% Impervious, Inflow Depth = 2.51" for 10-Year event
Inflow = 7.46 cfs @ 12.14 hrs, Volume= 0.353 af
Outflow = 7.46 cfs @ 12.14 hrs, Volume= 0.353 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: NURP Pond

Inflow Area = 4.194 ac, 66.29% Impervious, Inflow Depth = 3.17" for 10-Year event
Inflow = 18.26 cfs @ 12.20 hrs, Volume= 1.107 af
Outflow = 5.96 cfs @ 12.46 hrs, Volume= 1.083 af, Atten= 67%, Lag= 15.9 min
Primary = 5.96 cfs @ 12.46 hrs, Volume= 1.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 941.60' Surf.Area= 16,480 sf Storage= 68,932 cf
Peak Elev= 942.90' @ 12.46 hrs Surf.Area= 19,429 sf Storage= 92,552 cf (23,620 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 235.1 min (1,022.5 - 787.4)

Volume	Invert	Avail.Storage	Storage Description
#1	932.00'	115,014 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
932.00	2,660	0	0
938.00	7,460	30,360	30,360
940.00	9,776	17,236	47,596
941.00	14,380	12,078	59,674
942.00	17,880	16,130	75,804
944.00	21,330	39,210	115,014

Device	Routing	Invert	Outlet Devices
#1	Primary	938.80'	**15.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 938.80' / 938.65' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	941.60'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 2.00 Width (feet) 0.00 2.00 4.00 4.00

Primary OutFlow Max=5.96 cfs @ 12.46 hrs HW=942.90' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 5.96 cfs of 11.01 cfs potential flow)
↑—**2=Custom Weir/Orifice** (Weir Controls 5.96 cfs @ 2.72 fps)

Stage-Area-Storage for Pond 1P: NURP Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
932.00	2,660	0	933.08	3,524	3,339
932.02	2,676	53	933.10	3,540	3,410
932.04	2,692	107	933.12	3,556	3,481
932.06	2,708	161	933.14	3,572	3,552
932.08	2,724	215	933.16	3,588	3,624
932.10	2,740	270	933.18	3,604	3,696
932.12	2,756	325	933.20	3,620	3,768
932.14	2,772	380	933.22	3,636	3,841
932.16	2,788	436	933.24	3,652	3,913
932.18	2,804	492	933.26	3,668	3,987
932.20	2,820	548	933.28	3,684	4,060
932.22	2,836	605	933.30	3,700	4,134
932.24	2,852	661	933.32	3,716	4,208
932.26	2,868	719	933.34	3,732	4,283
932.28	2,884	776	933.36	3,748	4,357
932.30	2,900	834	933.38	3,764	4,433
932.32	2,916	892	933.40	3,780	4,508
932.34	2,932	951	933.42	3,796	4,584
932.36	2,948	1,009	933.44	3,812	4,660
932.38	2,964	1,069	933.46	3,828	4,736
932.40	2,980	1,128	933.48	3,844	4,813
932.42	2,996	1,188	933.50	3,860	4,890
932.44	3,012	1,248	933.52	3,876	4,967
932.46	3,028	1,308	933.54	3,892	5,045
932.48	3,044	1,369	933.56	3,908	5,123
932.50	3,060	1,430	933.58	3,924	5,201
932.52	3,076	1,491	933.60	3,940	5,280
932.54	3,092	1,553	933.62	3,956	5,359
932.56	3,108	1,615	933.64	3,972	5,438
932.58	3,124	1,677	933.66	3,988	5,518
932.60	3,140	1,740	933.68	4,004	5,598
932.62	3,156	1,803	933.70	4,020	5,678
932.64	3,172	1,866	933.72	4,036	5,759
932.66	3,188	1,930	933.74	4,052	5,839
932.68	3,204	1,994	933.76	4,068	5,921
932.70	3,220	2,058	933.78	4,084	6,002
932.72	3,236	2,123	933.80	4,100	6,084
932.74	3,252	2,187	933.82	4,116	6,166
932.76	3,268	2,253	933.84	4,132	6,249
932.78	3,284	2,318	933.86	4,148	6,331
932.80	3,300	2,384	933.88	4,164	6,415
932.82	3,316	2,450	933.90	4,180	6,498
932.84	3,332	2,517	933.92	4,196	6,582
932.86	3,348	2,583	933.94	4,212	6,666
932.88	3,364	2,651	933.96	4,228	6,750
932.90	3,380	2,718	933.98	4,244	6,835
932.92	3,396	2,786	934.00	4,260	6,920
932.94	3,412	2,854	934.02	4,276	7,005
932.96	3,428	2,922	934.04	4,292	7,091
932.98	3,444	2,991	934.06	4,308	7,177
933.00	3,460	3,060	934.08	4,324	7,263
933.02	3,476	3,129	934.10	4,340	7,350
933.04	3,492	3,199	934.12	4,356	7,437
933.06	3,508	3,269	934.14	4,372	7,524

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
934.16	4,388	7,612	935.24	5,252	12,817
934.18	4,404	7,700	935.26	5,268	12,923
934.20	4,420	7,788	935.28	5,284	13,028
934.22	4,436	7,877	935.30	5,300	13,134
934.24	4,452	7,965	935.32	5,316	13,240
934.26	4,468	8,055	935.34	5,332	13,347
934.28	4,484	8,144	935.36	5,348	13,453
934.30	4,500	8,234	935.38	5,364	13,561
934.32	4,516	8,324	935.40	5,380	13,668
934.34	4,532	8,415	935.42	5,396	13,776
934.36	4,548	8,505	935.44	5,412	13,884
934.38	4,564	8,597	935.46	5,428	13,992
934.40	4,580	8,688	935.48	5,444	14,101
934.42	4,596	8,780	935.50	5,460	14,210
934.44	4,612	8,872	935.52	5,476	14,319
934.46	4,628	8,964	935.54	5,492	14,429
934.48	4,644	9,057	935.56	5,508	14,539
934.50	4,660	9,150	935.58	5,524	14,649
934.52	4,676	9,243	935.60	5,540	14,760
934.54	4,692	9,337	935.62	5,556	14,871
934.56	4,708	9,431	935.64	5,572	14,982
934.58	4,724	9,525	935.66	5,588	15,094
934.60	4,740	9,620	935.68	5,604	15,206
934.62	4,756	9,715	935.70	5,620	15,318
934.64	4,772	9,810	935.72	5,636	15,431
934.66	4,788	9,906	935.74	5,652	15,543
934.68	4,804	10,002	935.76	5,668	15,657
934.70	4,820	10,098	935.78	5,684	15,770
934.72	4,836	10,195	935.80	5,700	15,884
934.74	4,852	10,291	935.82	5,716	15,998
934.76	4,868	10,389	935.84	5,732	16,113
934.78	4,884	10,486	935.86	5,748	16,227
934.80	4,900	10,584	935.88	5,764	16,343
934.82	4,916	10,682	935.90	5,780	16,458
934.84	4,932	10,781	935.92	5,796	16,574
934.86	4,948	10,879	935.94	5,812	16,690
934.88	4,964	10,979	935.96	5,828	16,806
934.90	4,980	11,078	935.98	5,844	16,923
934.92	4,996	11,178	936.00	5,860	17,040
934.94	5,012	11,278	936.02	5,876	17,157
934.96	5,028	11,378	936.04	5,892	17,275
934.98	5,044	11,479	936.06	5,908	17,393
935.00	5,060	11,580	936.08	5,924	17,511
935.02	5,076	11,681	936.10	5,940	17,630
935.04	5,092	11,783	936.12	5,956	17,749
935.06	5,108	11,885	936.14	5,972	17,868
935.08	5,124	11,987	936.16	5,988	17,988
935.10	5,140	12,090	936.18	6,004	18,108
935.12	5,156	12,193	936.20	6,020	18,228
935.14	5,172	12,296	936.22	6,036	18,349
935.16	5,188	12,400	936.24	6,052	18,469
935.18	5,204	12,504	936.26	6,068	18,591
935.20	5,220	12,608	936.28	6,084	18,712
935.22	5,236	12,713	936.30	6,100	18,834

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
936.32	6,116	18,956	937.40	6,980	26,028
936.34	6,132	19,079	937.42	6,996	26,168
936.36	6,148	19,201	937.44	7,012	26,308
936.38	6,164	19,325	937.46	7,028	26,448
936.40	6,180	19,448	937.48	7,044	26,589
936.42	6,196	19,572	937.50	7,060	26,730
936.44	6,212	19,696	937.52	7,076	26,871
936.46	6,228	19,820	937.54	7,092	27,013
936.48	6,244	19,945	937.56	7,108	27,155
936.50	6,260	20,070	937.58	7,124	27,297
936.52	6,276	20,195	937.60	7,140	27,440
936.54	6,292	20,321	937.62	7,156	27,583
936.56	6,308	20,447	937.64	7,172	27,726
936.58	6,324	20,573	937.66	7,188	27,870
936.60	6,340	20,700	937.68	7,204	28,014
936.62	6,356	20,827	937.70	7,220	28,158
936.64	6,372	20,954	937.72	7,236	28,303
936.66	6,388	21,082	937.74	7,252	28,447
936.68	6,404	21,210	937.76	7,268	28,593
936.70	6,420	21,338	937.78	7,284	28,738
936.72	6,436	21,467	937.80	7,300	28,884
936.74	6,452	21,595	937.82	7,316	29,030
936.76	6,468	21,725	937.84	7,332	29,177
936.78	6,484	21,854	937.86	7,348	29,323
936.80	6,500	21,984	937.88	7,364	29,471
936.82	6,516	22,114	937.90	7,380	29,618
936.84	6,532	22,245	937.92	7,396	29,766
936.86	6,548	22,375	937.94	7,412	29,914
936.88	6,564	22,507	937.96	7,428	30,062
936.90	6,580	22,638	937.98	7,444	30,211
936.92	6,596	22,770	938.00	7,460	30,360
936.94	6,612	22,902	938.02	7,483	30,509
936.96	6,628	23,034	938.04	7,506	30,659
936.98	6,644	23,167	938.06	7,529	30,810
937.00	6,660	23,300	938.08	7,553	30,961
937.02	6,676	23,433	938.10	7,576	31,112
937.04	6,692	23,567	938.12	7,599	31,264
937.06	6,708	23,701	938.14	7,622	31,416
937.08	6,724	23,835	938.16	7,645	31,568
937.10	6,740	23,970	938.18	7,668	31,722
937.12	6,756	24,105	938.20	7,692	31,875
937.14	6,772	24,240	938.22	7,715	32,029
937.16	6,788	24,376	938.24	7,738	32,184
937.18	6,804	24,512	938.26	7,761	32,339
937.20	6,820	24,648	938.28	7,784	32,494
937.22	6,836	24,785	938.30	7,807	32,650
937.24	6,852	24,921	938.32	7,831	32,806
937.26	6,868	25,059	938.34	7,854	32,963
937.28	6,884	25,196	938.36	7,877	33,121
937.30	6,900	25,334	938.38	7,900	33,278
937.32	6,916	25,472	938.40	7,923	33,437
937.34	6,932	25,611	938.42	7,946	33,595
937.36	6,948	25,749	938.44	7,970	33,754
937.38	6,964	25,889	938.46	7,993	33,914

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.48	8,016	34,074	939.56	9,266	43,407
938.50	8,039	34,235	939.58	9,290	43,592
938.52	8,062	34,396	939.60	9,313	43,778
938.54	8,085	34,557	939.62	9,336	43,965
938.56	8,108	34,719	939.64	9,359	44,152
938.58	8,132	34,882	939.66	9,382	44,339
938.60	8,155	35,044	939.68	9,405	44,527
938.62	8,178	35,208	939.70	9,429	44,715
938.64	8,201	35,372	939.72	9,452	44,904
938.66	8,224	35,536	939.74	9,475	45,093
938.68	8,247	35,701	939.76	9,498	45,283
938.70	8,271	35,866	939.78	9,521	45,473
938.72	8,294	36,031	939.80	9,544	45,664
938.74	8,317	36,197	939.82	9,568	45,855
938.76	8,340	36,364	939.84	9,591	46,047
938.78	8,363	36,531	939.86	9,614	46,239
938.80	8,386	36,699	939.88	9,637	46,431
938.82	8,410	36,867	939.90	9,660	46,624
938.84	8,433	37,035	939.92	9,683	46,818
938.86	8,456	37,204	939.94	9,707	47,012
938.88	8,479	37,373	939.96	9,730	47,206
938.90	8,502	37,543	939.98	9,753	47,401
938.92	8,525	37,713	940.00	9,776	47,596
938.94	8,549	37,884	940.02	9,868	47,792
938.96	8,572	38,055	940.04	9,960	47,991
938.98	8,595	38,227	940.06	10,052	48,191
939.00	8,618	38,399	940.08	10,144	48,393
939.02	8,641	38,572	940.10	10,236	48,597
939.04	8,664	38,745	940.12	10,328	48,802
939.06	8,687	38,918	940.14	10,421	49,010
939.08	8,711	39,092	940.16	10,513	49,219
939.10	8,734	39,267	940.18	10,605	49,430
939.12	8,757	39,441	940.20	10,697	49,643
939.14	8,780	39,617	940.22	10,789	49,858
939.16	8,803	39,793	940.24	10,881	50,075
939.18	8,826	39,969	940.26	10,973	50,293
939.20	8,850	40,146	940.28	11,065	50,514
939.22	8,873	40,323	940.30	11,157	50,736
939.24	8,896	40,501	940.32	11,249	50,960
939.26	8,919	40,679	940.34	11,341	51,186
939.28	8,942	40,857	940.36	11,433	51,414
939.30	8,965	41,037	940.38	11,526	51,643
939.32	8,989	41,216	940.40	11,618	51,875
939.34	9,012	41,396	940.42	11,710	52,108
939.36	9,035	41,577	940.44	11,802	52,343
939.38	9,058	41,757	940.46	11,894	52,580
939.40	9,081	41,939	940.48	11,986	52,819
939.42	9,104	42,121	940.50	12,078	53,060
939.44	9,128	42,303	940.52	12,170	53,302
939.46	9,151	42,486	940.54	12,262	53,546
939.48	9,174	42,669	940.56	12,354	53,792
939.50	9,197	42,853	940.58	12,446	54,040
939.52	9,220	43,037	940.60	12,538	54,290
939.54	9,243	43,222	940.62	12,630	54,542

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
940.64	12,723	54,796	941.72	16,900	70,935
940.66	12,815	55,051	941.74	16,970	71,274
940.68	12,907	55,308	941.76	17,040	71,614
940.70	12,999	55,567	941.78	17,110	71,955
940.72	13,091	55,828	941.80	17,180	72,298
940.74	13,183	56,091	941.82	17,250	72,642
940.76	13,275	56,355	941.84	17,320	72,988
940.78	13,367	56,622	941.86	17,390	73,335
940.80	13,459	56,890	941.88	17,460	73,684
940.82	13,551	57,160	941.90	17,530	74,033
940.84	13,643	57,432	941.92	17,600	74,385
940.86	13,735	57,706	941.94	17,670	74,738
940.88	13,828	57,982	941.96	17,740	75,092
940.90	13,920	58,259	941.98	17,810	75,447
940.92	14,012	58,538	942.00	17,880	75,804
940.94	14,104	58,819	942.02	17,914	76,162
940.96	14,196	59,102	942.04	17,949	76,521
940.98	14,288	59,387	942.06	17,983	76,880
941.00	14,380	59,674	942.08	18,018	77,240
941.02	14,450	59,962	942.10	18,053	77,601
941.04	14,520	60,252	942.12	18,087	77,962
941.06	14,590	60,543	942.14	18,121	78,324
941.08	14,660	60,836	942.16	18,156	78,687
941.10	14,730	61,130	942.18	18,190	79,050
941.12	14,800	61,425	942.20	18,225	79,415
941.14	14,870	61,721	942.22	18,260	79,779
941.16	14,940	62,020	942.24	18,294	80,145
941.18	15,010	62,319	942.26	18,328	80,511
941.20	15,080	62,620	942.28	18,363	80,878
941.22	15,150	62,922	942.30	18,397	81,246
941.24	15,220	63,226	942.32	18,432	81,614
941.26	15,290	63,531	942.34	18,467	81,983
941.28	15,360	63,838	942.36	18,501	82,353
941.30	15,430	64,145	942.38	18,535	82,723
941.32	15,500	64,455	942.40	18,570	83,094
941.34	15,570	64,766	942.42	18,604	83,466
941.36	15,640	65,078	942.44	18,639	83,838
941.38	15,710	65,391	942.46	18,674	84,211
941.40	15,780	65,706	942.48	18,708	84,585
941.42	15,850	66,022	942.50	18,743	84,960
941.44	15,920	66,340	942.52	18,777	85,335
941.46	15,990	66,659	942.54	18,811	85,711
941.48	16,060	66,980	942.56	18,846	86,087
941.50	16,130	67,302	942.58	18,881	86,465
941.52	16,200	67,625	942.60	18,915	86,843
941.54	16,270	67,949	942.62	18,950	87,221
941.56	16,340	68,276	942.64	18,984	87,600
941.58	16,410	68,603	942.66	19,018	87,981
941.60	16,480	68,932	942.68	19,053	88,361
941.62	16,550	69,262	942.70	19,088	88,743
941.64	16,620	69,594	942.72	19,122	89,125
941.66	16,690	69,927	942.74	19,157	89,508
941.68	16,760	70,262	942.76	19,191	89,891
941.70	16,830	70,598	942.78	19,225	90,275

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.80	19,260	90,660	943.88	21,123	112,467
942.82	19,295	91,046	943.90	21,157	112,890
942.84	19,329	91,432	943.92	21,192	113,313
942.86	19,364	91,819	943.94	21,227	113,737
942.88	19,398	92,206	943.96	21,261	114,162
942.90	19,432	92,595	943.98	21,296	114,588
942.92	19,467	92,984	944.00	**21,330**	**115,014**
942.94	19,502	93,373			
942.96	19,536	93,764			
942.98	19,571	94,155			
943.00	19,605	94,547			
943.02	19,639	94,939			
943.04	19,674	95,332			
943.06	19,708	95,726			
943.08	19,743	96,120			
943.10	19,778	96,516			
943.12	19,812	96,912			
943.14	19,846	97,308			
943.16	19,881	97,705			
943.18	19,915	98,103			
943.20	19,950	98,502			
943.22	19,985	98,901			
943.24	20,019	99,301			
943.26	20,053	99,702			
943.28	20,088	100,104			
943.30	20,122	100,506			
943.32	20,157	100,908			
943.34	20,192	101,312			
943.36	20,226	101,716			
943.38	20,260	102,121			
943.40	20,295	102,526			
943.42	20,329	102,933			
943.44	20,364	103,340			
943.46	20,399	103,747			
943.48	20,433	104,156			
943.50	20,468	104,565			
943.52	20,502	104,974			
943.54	20,536	105,385			
943.56	20,571	105,796			
943.58	20,606	106,208			
943.60	20,640	106,620			
943.62	20,675	107,033			
943.64	20,709	107,447			
943.66	20,743	107,862			
943.68	20,778	108,277			
943.70	20,813	108,693			
943.72	20,847	109,109			
943.74	20,882	109,527			
943.76	20,916	109,944			
943.78	20,950	110,363			
943.80	20,985	110,782			
943.82	21,020	111,203			
943.84	21,054	111,623			
943.86	21,089	112,045			

Summary for Pond 2P: Biofiltration Basin 2

Inflow Area = 0.646 ac, 53.04% Impervious, Inflow Depth = 2.88" for 10-Year event
Inflow = 3.22 cfs @ 12.14 hrs, Volume= 0.155 af
Outflow = 1.83 cfs @ 12.23 hrs, Volume= 0.155 af, Atten= 43%, Lag= 5.1 min
Primary = 1.83 cfs @ 12.23 hrs, Volume= 0.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 943.75' @ 12.23 hrs Surf.Area= 2,418 sf Storage= 2,703 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 306.3 min (1,096.6 - 790.3)

Volume	Invert	Avail.Storage	Storage Description
#1	942.00'	3,349 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.00	698	0	0
943.50	2,153	2,138	2,138
944.00	2,688	1,210	3,349

Device	Routing	Invert	Outlet Devices
#1	Primary	942.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	943.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50
			Width (feet) 4.00 6.00

Primary OutFlow Max=1.82 cfs @ 12.23 hrs HW=943.75' TW=939.79' (Dynamic Tailwater)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)
└—**2=Custom Weir/Orifice** (Weir Controls 1.77 cfs @ 1.59 fps)

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.00	698	0	942.54	1,222	518
942.01	708	7	942.55	1,231	531
942.02	717	14	942.56	1,241	543
942.03	727	21	942.57	1,251	555
942.04	737	29	942.58	1,261	568
942.05	746	36	942.59	1,270	581
942.06	756	44	942.60	1,280	593
942.07	766	51	942.61	1,290	606
942.08	776	59	942.62	1,299	619
942.09	785	67	942.63	1,309	632
942.10	795	75	942.64	1,319	645
942.11	805	83	942.65	1,328	659
942.12	814	91	942.66	1,338	672
942.13	824	99	942.67	1,348	685
942.14	834	107	942.68	1,358	699
942.15	843	116	942.69	1,367	713
942.16	853	124	942.70	1,377	726
942.17	863	133	942.71	1,387	740
942.18	873	141	942.72	1,396	754
942.19	882	150	942.73	1,406	768
942.20	892	159	942.74	1,416	782
942.21	902	168	942.75	1,426	796
942.22	911	177	942.76	1,435	811
942.23	921	186	942.77	1,445	825
942.24	931	195	942.78	1,455	840
942.25	941	205	942.79	1,464	854
942.26	950	214	942.80	1,474	869
942.27	960	224	942.81	1,484	884
942.28	970	233	942.82	1,493	898
942.29	979	243	942.83	1,503	913
942.30	989	253	942.84	1,513	929
942.31	999	263	942.85	1,523	944
942.32	1,008	273	942.86	1,532	959
942.33	1,018	283	942.87	1,542	974
942.34	1,028	293	942.88	1,552	990
942.35	1,038	304	942.89	1,561	1,005
942.36	1,047	314	942.90	1,571	1,021
942.37	1,057	325	942.91	1,581	1,037
942.38	1,067	335	942.92	1,590	1,053
942.39	1,076	346	942.93	1,600	1,069
942.40	1,086	357	942.94	1,610	1,085
942.41	1,096	368	942.95	1,620	1,101
942.42	1,105	379	942.96	1,629	1,117
942.43	1,115	390	942.97	1,639	1,133
942.44	1,125	401	942.98	1,649	1,150
942.45	1,135	412	942.99	1,658	1,166
942.46	1,144	424	943.00	1,668	1,183
942.47	1,154	435	943.01	1,678	1,200
942.48	1,164	447	943.02	1,687	1,217
942.49	1,173	458	943.03	1,697	1,233
942.50	1,183	470	943.04	1,707	1,250
942.51	1,193	482	943.05	1,716	1,268
942.52	1,202	494	943.06	1,726	1,285
942.53	1,212	506	943.07	1,736	1,302

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.08	1,746	1,320	943.62	2,281	2,404
943.09	1,755	1,337	943.63	2,292	2,427
943.10	1,765	1,355	943.64	2,303	2,450
943.11	1,775	1,372	943.65	2,313	2,473
943.12	1,784	1,390	943.66	2,324	2,496
943.13	1,794	1,408	943.67	2,335	2,520
943.14	1,804	1,426	943.68	2,346	2,543
943.15	1,813	1,444	943.69	2,356	2,567
943.16	1,823	1,462	943.70	2,367	2,590
943.17	1,833	1,481	943.71	2,378	2,614
943.18	1,843	1,499	943.72	2,388	2,638
943.19	1,852	1,517	943.73	2,399	2,662
943.20	1,862	1,536	943.74	2,410	2,686
943.21	1,872	1,555	943.75	2,421	2,710
943.22	1,881	1,573	943.76	2,431	2,734
943.23	1,891	1,592	943.77	2,442	2,759
943.24	1,901	1,611	943.78	2,453	2,783
943.25	1,911	1,630	943.79	2,463	2,808
943.26	1,920	1,649	943.80	2,474	2,832
943.27	1,930	1,669	943.81	2,485	2,857
943.28	1,940	1,688	943.82	2,495	2,882
943.29	1,949	1,708	943.83	2,506	2,907
943.30	1,959	1,727	943.84	2,517	2,932
943.31	1,969	1,747	943.85	2,528	2,957
943.32	1,978	1,766	943.86	2,538	2,983
943.33	1,988	1,786	943.87	2,549	3,008
943.34	1,998	1,806	943.88	2,560	3,034
943.35	2,008	1,826	943.89	2,570	3,059
943.36	2,017	1,846	943.90	2,581	3,085
943.37	2,027	1,867	943.91	2,592	3,111
943.38	2,037	1,887	943.92	2,602	3,137
943.39	2,046	1,907	943.93	2,613	3,163
943.40	2,056	1,928	943.94	2,624	3,189
943.41	2,066	1,948	943.95	2,635	3,215
943.42	2,075	1,969	943.96	2,645	3,242
943.43	2,085	1,990	943.97	2,656	3,268
943.44	2,095	2,011	943.98	2,667	3,295
943.45	2,105	2,032	943.99	2,677	3,322
943.46	2,114	2,053	944.00	**2,688**	**3,349**
943.47	2,124	2,074			
943.48	2,134	2,095			
943.49	2,143	2,117			
943.50	2,153	2,138			
943.51	2,164	2,160			
943.52	2,174	2,182			
943.53	2,185	2,203			
943.54	2,196	2,225			
943.55	2,206	2,247			
943.56	2,217	2,269			
943.57	2,228	2,292			
943.58	2,239	2,314			
943.59	2,249	2,336			
943.60	2,260	2,359			
943.61	2,271	2,382			

Summary for Pond 2W: Central Wetland

Inflow Area = 2.212 ac, 27.26% Impervious, Inflow Depth = 2.56" for 10-Year event
Inflow = 7.41 cfs @ 12.16 hrs, Volume= 0.472 af
Outflow = 0.59 cfs @ 13.39 hrs, Volume= 0.456 af, Atten= 92%, Lag= 73.6 min
Primary = 0.59 cfs @ 13.39 hrs, Volume= 0.456 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 939.94' @ 13.39 hrs Surf.Area= 27,215 sf Storage= 17,784 cf (10,949 cf above start)

Plug-Flow detention time= 937.7 min calculated for 0.299 af (63% of inflow)
Center-of-Mass det. time= 485.2 min (1,383.6 - 898.3)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	939.50'	**12.0" Round Culvert** L= 150.0' Ke= 0.500 Inlet / Outlet Invert= 939.50' / 938.70' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.59 cfs @ 13.39 hrs HW=939.94' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.59 cfs @ 2.62 fps)

Stage-Area-Storage for Pond 2W: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364	943.76	41,924	149,404
943.23	39,745	127,761	943.77	41,965	149,823
943.24	39,786	128,159	943.78	42,006	150,243
943.25	39,828	128,557	943.79	42,047	150,663
943.26	39,869	128,956	943.80	42,088	151,084
943.27	39,910	129,355	943.81	42,129	151,505
943.28	39,951	129,754	943.82	42,170	151,926
943.29	39,992	130,154	943.83	42,211	152,348
943.30	40,033	130,554	943.84	42,252	152,771
943.31	40,074	130,954	943.85	42,294	153,193
943.32	40,115	131,355	943.86	42,335	153,617
943.33	40,156	131,756	943.87	42,376	154,040
943.34	40,197	132,158	943.88	42,417	154,464
943.35	40,239	132,560	943.89	42,458	154,888
943.36	40,280	132,963	943.90	42,499	155,313
943.37	40,321	133,366	943.91	42,540	155,738
943.38	40,362	133,769	943.92	42,581	156,164
943.39	40,403	134,173	943.93	42,622	156,590
943.40	40,444	134,577	943.94	42,663	157,016
943.41	40,485	134,982	943.95	42,704	157,443
943.42	40,526	135,387	943.96	42,746	157,871
943.43	40,567	135,793	943.97	42,787	158,298
943.44	40,608	136,199	943.98	42,828	158,726
943.45	40,649	136,605	943.99	42,869	159,155
943.46	40,691	137,012	944.00	**42,910**	**159,584**
943.47	40,732	137,419			
943.48	40,773	137,826			
943.49	40,814	138,234			
943.50	40,855	138,642			
943.51	40,896	139,051			
943.52	40,937	139,460			
943.53	40,978	139,870			
943.54	41,019	140,280			
943.55	41,060	140,690			
943.56	41,102	141,101			
943.57	41,143	141,512			
943.58	41,184	141,924			
943.59	41,225	142,336			
943.60	41,266	142,749			
943.61	41,307	143,161			
943.62	41,348	143,575			
943.63	41,389	143,988			
943.64	41,430	144,402			
943.65	41,471	144,817			
943.66	41,513	145,232			
943.67	41,554	145,647			
943.68	41,595	146,063			
943.69	41,636	146,479			
943.70	41,677	146,896			
943.71	41,718	147,313			
943.72	41,759	147,730			
943.73	41,800	148,148			
943.74	41,841	148,566			
943.75	41,883	148,985			

Summary for Subcatchment 1: Direct to NURP Basin & IESF

Runoff = 34.09 cfs @ 12.20 hrs, Volume= 2.145 af, Depth= 6.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	108,612	98	
	61,599	74	>75% Grass cover, Good, HSG C
*	0	85	Wetland
*	12,498	100	Pond surface
	182,709	90	Weighted Average
	61,599	74	33.71% Pervious Area
	121,110	98	66.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
1.8	105	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	205	Total			

Summary for Subcatchment 1A: Direct to NE Wetland

Runoff = 19.18 cfs @ 12.22 hrs, Volume= 1.217 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	5,985	98	Back roof
*	80,253	85	Wetland
	35,748	74	>75% Grass cover, Good, HSG C
	121,986	82	Weighted Average
	116,001	82	95.09% Pervious Area
	5,985	98	4.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0200	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.80"
3.4	200	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.9	300	Total			

Summary for Subcatchment 2: To Biofiltration Basin

Runoff = 6.22 cfs @ 12.14 hrs, Volume= 0.312 af, Depth= 5.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	14,930	98	Impervious
*	13,217	74	2 Grass to biofilter
	28,147	87	Weighted Average
	13,217	74	46.96% Pervious Area
	14,930	98	53.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment 2a: Direct to Wetland

Runoff = 13.98 cfs @ 12.14 hrs, Volume= 0.681 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	11,340	98	Back roofs
*	22,584	85	Wetland
*	34,299	74	>75% Grass cover, Good, HSG C
	68,223	82	Weighted Average
	56,883	78	83.38% Pervious Area
	11,340	98	16.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Subcatchment P3: To South Wetland

Runoff = 15.28 cfs @ 12.14 hrs, Volume= 0.748 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

	Area (sf)	CN	Description
*	21,190	98	Impervious roofs & street; 129th turn ln
	40,998	74	>75% Grass cover, Good, HSG C
*	11,145	85	Wetland
	73,333	83	Weighted Average
	52,143	76	71.10% Pervious Area
	21,190	98	28.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Summary for Reach 1R: Property To Northeast

Inflow Area = 9.207 ac, 38.24% Impervious, Inflow Depth > 5.62" for 100-Year event
Inflow = 32.25 cfs @ 12.22 hrs, Volume= 4.315 af
Outflow = 32.25 cfs @ 12.22 hrs, Volume= 4.315 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Property To Southeast

Inflow Area = 1.683 ac, 28.90% Impervious, Inflow Depth = 5.33" for 100-Year event
Inflow = 15.28 cfs @ 12.14 hrs, Volume= 0.748 af
Outflow = 15.28 cfs @ 12.14 hrs, Volume= 0.748 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: NURP Pond

Inflow Area = 4.194 ac, 66.29% Impervious, Inflow Depth = 6.14" for 100-Year event
Inflow = 34.09 cfs @ 12.20 hrs, Volume= 2.145 af
Outflow = 12.23 cfs @ 12.44 hrs, Volume= 2.121 af, Atten= 64%, Lag= 14.3 min
Primary = 12.23 cfs @ 12.44 hrs, Volume= 2.121 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 941.60' Surf.Area= 16,480 sf Storage= 68,932 cf
Peak Elev= 943.71' @ 12.44 hrs Surf.Area= 20,823 sf Storage= 108,820 cf (39,888 cf above start)

Plug-Flow detention time= 722.2 min calculated for 0.539 af (25% of inflow)
Center-of-Mass det. time= 155.0 min (929.5 - 774.5)

Volume	Invert	Avail.Storage	Storage Description
#1	932.00'	115,014 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
932.00	2,660	0	0
938.00	7,460	30,360	30,360
940.00	9,776	17,236	47,596
941.00	14,380	12,078	59,674
942.00	17,880	16,130	75,804
944.00	21,330	39,210	115,014

Device	Routing	Invert	Outlet Devices
#1	Primary	938.80'	**15.0" Round Culvert** L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 938.80' / 938.65' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	941.60'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 1.00 2.00 Width (feet) 0.00 2.00 4.00 4.00

Primary OutFlow Max=12.23 cfs @ 12.44 hrs HW=943.71' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 12.23 cfs @ 9.96 fps)
↑—**2=Custom Weir/Orifice** (Passes 12.23 cfs of 20.66 cfs potential flow)

Stage-Area-Storage for Pond 1P: NURP Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
932.00	2,660	0	933.08	3,524	3,339
932.02	2,676	53	933.10	3,540	3,410
932.04	2,692	107	933.12	3,556	3,481
932.06	2,708	161	933.14	3,572	3,552
932.08	2,724	215	933.16	3,588	3,624
932.10	2,740	270	933.18	3,604	3,696
932.12	2,756	325	933.20	3,620	3,768
932.14	2,772	380	933.22	3,636	3,841
932.16	2,788	436	933.24	3,652	3,913
932.18	2,804	492	933.26	3,668	3,987
932.20	2,820	548	933.28	3,684	4,060
932.22	2,836	605	933.30	3,700	4,134
932.24	2,852	661	933.32	3,716	4,208
932.26	2,868	719	933.34	3,732	4,283
932.28	2,884	776	933.36	3,748	4,357
932.30	2,900	834	933.38	3,764	4,433
932.32	2,916	892	933.40	3,780	4,508
932.34	2,932	951	933.42	3,796	4,584
932.36	2,948	1,009	933.44	3,812	4,660
932.38	2,964	1,069	933.46	3,828	4,736
932.40	2,980	1,128	933.48	3,844	4,813
932.42	2,996	1,188	933.50	3,860	4,890
932.44	3,012	1,248	933.52	3,876	4,967
932.46	3,028	1,308	933.54	3,892	5,045
932.48	3,044	1,369	933.56	3,908	5,123
932.50	3,060	1,430	933.58	3,924	5,201
932.52	3,076	1,491	933.60	3,940	5,280
932.54	3,092	1,553	933.62	3,956	5,359
932.56	3,108	1,615	933.64	3,972	5,438
932.58	3,124	1,677	933.66	3,988	5,518
932.60	3,140	1,740	933.68	4,004	5,598
932.62	3,156	1,803	933.70	4,020	5,678
932.64	3,172	1,866	933.72	4,036	5,759
932.66	3,188	1,930	933.74	4,052	5,839
932.68	3,204	1,994	933.76	4,068	5,921
932.70	3,220	2,058	933.78	4,084	6,002
932.72	3,236	2,123	933.80	4,100	6,084
932.74	3,252	2,187	933.82	4,116	6,166
932.76	3,268	2,253	933.84	4,132	6,249
932.78	3,284	2,318	933.86	4,148	6,331
932.80	3,300	2,384	933.88	4,164	6,415
932.82	3,316	2,450	933.90	4,180	6,498
932.84	3,332	2,517	933.92	4,196	6,582
932.86	3,348	2,583	933.94	4,212	6,666
932.88	3,364	2,651	933.96	4,228	6,750
932.90	3,380	2,718	933.98	4,244	6,835
932.92	3,396	2,786	934.00	4,260	6,920
932.94	3,412	2,854	934.02	4,276	7,005
932.96	3,428	2,922	934.04	4,292	7,091
932.98	3,444	2,991	934.06	4,308	7,177
933.00	3,460	3,060	934.08	4,324	7,263
933.02	3,476	3,129	934.10	4,340	7,350
933.04	3,492	3,199	934.12	4,356	7,437
933.06	3,508	3,269	934.14	4,372	7,524

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
934.16	4,388	7,612	935.24	5,252	12,817
934.18	4,404	7,700	935.26	5,268	12,923
934.20	4,420	7,788	935.28	5,284	13,028
934.22	4,436	7,877	935.30	5,300	13,134
934.24	4,452	7,965	935.32	5,316	13,240
934.26	4,468	8,055	935.34	5,332	13,347
934.28	4,484	8,144	935.36	5,348	13,453
934.30	4,500	8,234	935.38	5,364	13,561
934.32	4,516	8,324	935.40	5,380	13,668
934.34	4,532	8,415	935.42	5,396	13,776
934.36	4,548	8,505	935.44	5,412	13,884
934.38	4,564	8,597	935.46	5,428	13,992
934.40	4,580	8,688	935.48	5,444	14,101
934.42	4,596	8,780	935.50	5,460	14,210
934.44	4,612	8,872	935.52	5,476	14,319
934.46	4,628	8,964	935.54	5,492	14,429
934.48	4,644	9,057	935.56	5,508	14,539
934.50	4,660	9,150	935.58	5,524	14,649
934.52	4,676	9,243	935.60	5,540	14,760
934.54	4,692	9,337	935.62	5,556	14,871
934.56	4,708	9,431	935.64	5,572	14,982
934.58	4,724	9,525	935.66	5,588	15,094
934.60	4,740	9,620	935.68	5,604	15,206
934.62	4,756	9,715	935.70	5,620	15,318
934.64	4,772	9,810	935.72	5,636	15,431
934.66	4,788	9,906	935.74	5,652	15,543
934.68	4,804	10,002	935.76	5,668	15,657
934.70	4,820	10,098	935.78	5,684	15,770
934.72	4,836	10,195	935.80	5,700	15,884
934.74	4,852	10,291	935.82	5,716	15,998
934.76	4,868	10,389	935.84	5,732	16,113
934.78	4,884	10,486	935.86	5,748	16,227
934.80	4,900	10,584	935.88	5,764	16,343
934.82	4,916	10,682	935.90	5,780	16,458
934.84	4,932	10,781	935.92	5,796	16,574
934.86	4,948	10,879	935.94	5,812	16,690
934.88	4,964	10,979	935.96	5,828	16,806
934.90	4,980	11,078	935.98	5,844	16,923
934.92	4,996	11,178	936.00	5,860	17,040
934.94	5,012	11,278	936.02	5,876	17,157
934.96	5,028	11,378	936.04	5,892	17,275
934.98	5,044	11,479	936.06	5,908	17,393
935.00	5,060	11,580	936.08	5,924	17,511
935.02	5,076	11,681	936.10	5,940	17,630
935.04	5,092	11,783	936.12	5,956	17,749
935.06	5,108	11,885	936.14	5,972	17,868
935.08	5,124	11,987	936.16	5,988	17,988
935.10	5,140	12,090	936.18	6,004	18,108
935.12	5,156	12,193	936.20	6,020	18,228
935.14	5,172	12,296	936.22	6,036	18,349
935.16	5,188	12,400	936.24	6,052	18,469
935.18	5,204	12,504	936.26	6,068	18,591
935.20	5,220	12,608	936.28	6,084	18,712
935.22	5,236	12,713	936.30	6,100	18,834

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
936.32	6,116	18,956	937.40	6,980	26,028
936.34	6,132	19,079	937.42	6,996	26,168
936.36	6,148	19,201	937.44	7,012	26,308
936.38	6,164	19,325	937.46	7,028	26,448
936.40	6,180	19,448	937.48	7,044	26,589
936.42	6,196	19,572	937.50	7,060	26,730
936.44	6,212	19,696	937.52	7,076	26,871
936.46	6,228	19,820	937.54	7,092	27,013
936.48	6,244	19,945	937.56	7,108	27,155
936.50	6,260	20,070	937.58	7,124	27,297
936.52	6,276	20,195	937.60	7,140	27,440
936.54	6,292	20,321	937.62	7,156	27,583
936.56	6,308	20,447	937.64	7,172	27,726
936.58	6,324	20,573	937.66	7,188	27,870
936.60	6,340	20,700	937.68	7,204	28,014
936.62	6,356	20,827	937.70	7,220	28,158
936.64	6,372	20,954	937.72	7,236	28,303
936.66	6,388	21,082	937.74	7,252	28,447
936.68	6,404	21,210	937.76	7,268	28,593
936.70	6,420	21,338	937.78	7,284	28,738
936.72	6,436	21,467	937.80	7,300	28,884
936.74	6,452	21,595	937.82	7,316	29,030
936.76	6,468	21,725	937.84	7,332	29,177
936.78	6,484	21,854	937.86	7,348	29,323
936.80	6,500	21,984	937.88	7,364	29,471
936.82	6,516	22,114	937.90	7,380	29,618
936.84	6,532	22,245	937.92	7,396	29,766
936.86	6,548	22,375	937.94	7,412	29,914
936.88	6,564	22,507	937.96	7,428	30,062
936.90	6,580	22,638	937.98	7,444	30,211
936.92	6,596	22,770	938.00	7,460	30,360
936.94	6,612	22,902	938.02	7,483	30,509
936.96	6,628	23,034	938.04	7,506	30,659
936.98	6,644	23,167	938.06	7,529	30,810
937.00	6,660	23,300	938.08	7,553	30,961
937.02	6,676	23,433	938.10	7,576	31,112
937.04	6,692	23,567	938.12	7,599	31,264
937.06	6,708	23,701	938.14	7,622	31,416
937.08	6,724	23,835	938.16	7,645	31,568
937.10	6,740	23,970	938.18	7,668	31,722
937.12	6,756	24,105	938.20	7,692	31,875
937.14	6,772	24,240	938.22	7,715	32,029
937.16	6,788	24,376	938.24	7,738	32,184
937.18	6,804	24,512	938.26	7,761	32,339
937.20	6,820	24,648	938.28	7,784	32,494
937.22	6,836	24,785	938.30	7,807	32,650
937.24	6,852	24,921	938.32	7,831	32,806
937.26	6,868	25,059	938.34	7,854	32,963
937.28	6,884	25,196	938.36	7,877	33,121
937.30	6,900	25,334	938.38	7,900	33,278
937.32	6,916	25,472	938.40	7,923	33,437
937.34	6,932	25,611	938.42	7,946	33,595
937.36	6,948	25,749	938.44	7,970	33,754
937.38	6,964	25,889	938.46	7,993	33,914

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.48	8,016	34,074	939.56	9,266	43,407
938.50	8,039	34,235	939.58	9,290	43,592
938.52	8,062	34,396	939.60	9,313	43,778
938.54	8,085	34,557	939.62	9,336	43,965
938.56	8,108	34,719	939.64	9,359	44,152
938.58	8,132	34,882	939.66	9,382	44,339
938.60	8,155	35,044	939.68	9,405	44,527
938.62	8,178	35,208	939.70	9,429	44,715
938.64	8,201	35,372	939.72	9,452	44,904
938.66	8,224	35,536	939.74	9,475	45,093
938.68	8,247	35,701	939.76	9,498	45,283
938.70	8,271	35,866	939.78	9,521	45,473
938.72	8,294	36,031	939.80	9,544	45,664
938.74	8,317	36,197	939.82	9,568	45,855
938.76	8,340	36,364	939.84	9,591	46,047
938.78	8,363	36,531	939.86	9,614	46,239
938.80	8,386	36,699	939.88	9,637	46,431
938.82	8,410	36,867	939.90	9,660	46,624
938.84	8,433	37,035	939.92	9,683	46,818
938.86	8,456	37,204	939.94	9,707	47,012
938.88	8,479	37,373	939.96	9,730	47,206
938.90	8,502	37,543	939.98	9,753	47,401
938.92	8,525	37,713	940.00	9,776	47,596
938.94	8,549	37,884	940.02	9,868	47,792
938.96	8,572	38,055	940.04	9,960	47,991
938.98	8,595	38,227	940.06	10,052	48,191
939.00	8,618	38,399	940.08	10,144	48,393
939.02	8,641	38,572	940.10	10,236	48,597
939.04	8,664	38,745	940.12	10,328	48,802
939.06	8,687	38,918	940.14	10,421	49,010
939.08	8,711	39,092	940.16	10,513	49,219
939.10	8,734	39,267	940.18	10,605	49,430
939.12	8,757	39,441	940.20	10,697	49,643
939.14	8,780	39,617	940.22	10,789	49,858
939.16	8,803	39,793	940.24	10,881	50,075
939.18	8,826	39,969	940.26	10,973	50,293
939.20	8,850	40,146	940.28	11,065	50,514
939.22	8,873	40,323	940.30	11,157	50,736
939.24	8,896	40,501	940.32	11,249	50,960
939.26	8,919	40,679	940.34	11,341	51,186
939.28	8,942	40,857	940.36	11,433	51,414
939.30	8,965	41,037	940.38	11,526	51,643
939.32	8,989	41,216	940.40	11,618	51,875
939.34	9,012	41,396	940.42	11,710	52,108
939.36	9,035	41,577	940.44	11,802	52,343
939.38	9,058	41,757	940.46	11,894	52,580
939.40	9,081	41,939	940.48	11,986	52,819
939.42	9,104	42,121	940.50	12,078	53,060
939.44	9,128	42,303	940.52	12,170	53,302
939.46	9,151	42,486	940.54	12,262	53,546
939.48	9,174	42,669	940.56	12,354	53,792
939.50	9,197	42,853	940.58	12,446	54,040
939.52	9,220	43,037	940.60	12,538	54,290
939.54	9,243	43,222	940.62	12,630	54,542

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
940.64	12,723	54,796	941.72	16,900	70,935
940.66	12,815	55,051	941.74	16,970	71,274
940.68	12,907	55,308	941.76	17,040	71,614
940.70	12,999	55,567	941.78	17,110	71,955
940.72	13,091	55,828	941.80	17,180	72,298
940.74	13,183	56,091	941.82	17,250	72,642
940.76	13,275	56,355	941.84	17,320	72,988
940.78	13,367	56,622	941.86	17,390	73,335
940.80	13,459	56,890	941.88	17,460	73,684
940.82	13,551	57,160	941.90	17,530	74,033
940.84	13,643	57,432	941.92	17,600	74,385
940.86	13,735	57,706	941.94	17,670	74,738
940.88	13,828	57,982	941.96	17,740	75,092
940.90	13,920	58,259	941.98	17,810	75,447
940.92	14,012	58,538	942.00	17,880	75,804
940.94	14,104	58,819	942.02	17,914	76,162
940.96	14,196	59,102	942.04	17,949	76,521
940.98	14,288	59,387	942.06	17,983	76,880
941.00	14,380	59,674	942.08	18,018	77,240
941.02	14,450	59,962	942.10	18,053	77,601
941.04	14,520	60,252	942.12	18,087	77,962
941.06	14,590	60,543	942.14	18,121	78,324
941.08	14,660	60,836	942.16	18,156	78,687
941.10	14,730	61,130	942.18	18,190	79,050
941.12	14,800	61,425	942.20	18,225	79,415
941.14	14,870	61,721	942.22	18,260	79,779
941.16	14,940	62,020	942.24	18,294	80,145
941.18	15,010	62,319	942.26	18,328	80,511
941.20	15,080	62,620	942.28	18,363	80,878
941.22	15,150	62,922	942.30	18,397	81,246
941.24	15,220	63,226	942.32	18,432	81,614
941.26	15,290	63,531	942.34	18,467	81,983
941.28	15,360	63,838	942.36	18,501	82,353
941.30	15,430	64,145	942.38	18,535	82,723
941.32	15,500	64,455	942.40	18,570	83,094
941.34	15,570	64,766	942.42	18,604	83,466
941.36	15,640	65,078	942.44	18,639	83,838
941.38	15,710	65,391	942.46	18,674	84,211
941.40	15,780	65,706	942.48	18,708	84,585
941.42	15,850	66,022	942.50	18,743	84,960
941.44	15,920	66,340	942.52	18,777	85,335
941.46	15,990	66,659	942.54	18,811	85,711
941.48	16,060	66,980	942.56	18,846	86,087
941.50	16,130	67,302	942.58	18,881	86,465
941.52	16,200	67,625	942.60	18,915	86,843
941.54	16,270	67,949	942.62	18,950	87,221
941.56	16,340	68,276	942.64	18,984	87,600
941.58	16,410	68,603	942.66	19,018	87,981
941.60	16,480	68,932	942.68	19,053	88,361
941.62	16,550	69,262	942.70	19,088	88,743
941.64	16,620	69,594	942.72	19,122	89,125
941.66	16,690	69,927	942.74	19,157	89,508
941.68	16,760	70,262	942.76	19,191	89,891
941.70	16,830	70,598	942.78	19,225	90,275

Stage-Area-Storage for Pond 1P: NURP Pond (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.80	19,260	90,660	943.88	21,123	112,467
942.82	19,295	91,046	943.90	21,157	112,890
942.84	19,329	91,432	943.92	21,192	113,313
942.86	19,364	91,819	943.94	21,227	113,737
942.88	19,398	92,206	943.96	21,261	114,162
942.90	19,432	92,595	943.98	21,296	114,588
942.92	19,467	92,984	944.00	**21,330**	**115,014**
942.94	19,502	93,373			
942.96	19,536	93,764			
942.98	19,571	94,155			
943.00	19,605	94,547			
943.02	19,639	94,939			
943.04	19,674	95,332			
943.06	19,708	95,726			
943.08	19,743	96,120			
943.10	19,778	96,516			
943.12	19,812	96,912			
943.14	19,846	97,308			
943.16	19,881	97,705			
943.18	19,915	98,103			
943.20	19,950	98,502			
943.22	19,985	98,901			
943.24	20,019	99,301			
943.26	20,053	99,702			
943.28	20,088	100,104			
943.30	20,122	100,506			
943.32	20,157	100,908			
943.34	20,192	101,312			
943.36	20,226	101,716			
943.38	20,260	102,121			
943.40	20,295	102,526			
943.42	20,329	102,933			
943.44	20,364	103,340			
943.46	20,399	103,747			
943.48	20,433	104,156			
943.50	20,468	104,565			
943.52	20,502	104,974			
943.54	20,536	105,385			
943.56	20,571	105,796			
943.58	20,606	106,208			
943.60	20,640	106,620			
943.62	20,675	107,033			
943.64	20,709	107,447			
943.66	20,743	107,862			
943.68	20,778	108,277			
943.70	20,813	108,693			
943.72	20,847	109,109			
943.74	20,882	109,527			
943.76	20,916	109,944			
943.78	20,950	110,363			
943.80	20,985	110,782			
943.82	21,020	111,203			
943.84	21,054	111,623			
943.86	21,089	112,045			

Summary for Pond 2P: Biofiltration Basin 2

Inflow Area = 0.646 ac, 53.04% Impervious, Inflow Depth = 5.79" for 100-Year event
Inflow = 6.22 cfs @ 12.14 hrs, Volume= 0.312 af
Outflow = 5.61 cfs @ 12.17 hrs, Volume= 0.312 af, Atten= 10%, Lag= 1.8 min
Primary = 5.61 cfs @ 12.17 hrs, Volume= 0.312 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 944.00' @ 12.17 hrs Surf.Area= 2,687 sf Storage= 3,347 cf

Plug-Flow detention time= 182.9 min calculated for 0.312 af (100% of inflow)
Center-of-Mass det. time= 183.0 min (959.4 - 776.4)

Volume	Invert	Avail.Storage	Storage Description
#1	942.00'	3,349 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
942.00	698	0	0
943.50	2,153	2,138	2,138
944.00	2,688	1,210	3,349

Device	Routing	Invert	Outlet Devices
#1	Primary	942.00'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	943.50'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
			Head (feet) 0.00 0.50
			Width (feet) 4.00 6.00

Primary OutFlow Max=5.60 cfs @ 12.17 hrs HW=944.00' TW=940.11' (Dynamic Tailwater)
↑**1=Exfiltration** (Exfiltration Controls 0.06 cfs)
└**2=Custom Weir/Orifice** (Weir Controls 5.54 cfs @ 2.22 fps)

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.00	698	0	942.54	1,222	518
942.01	708	7	942.55	1,231	531
942.02	717	14	942.56	1,241	543
942.03	727	21	942.57	1,251	555
942.04	737	29	942.58	1,261	568
942.05	746	36	942.59	1,270	581
942.06	756	44	942.60	1,280	593
942.07	766	51	942.61	1,290	606
942.08	776	59	942.62	1,299	619
942.09	785	67	942.63	1,309	632
942.10	795	75	942.64	1,319	645
942.11	805	83	942.65	1,328	659
942.12	814	91	942.66	1,338	672
942.13	824	99	942.67	1,348	685
942.14	834	107	942.68	1,358	699
942.15	843	116	942.69	1,367	713
942.16	853	124	942.70	1,377	726
942.17	863	133	942.71	1,387	740
942.18	873	141	942.72	1,396	754
942.19	882	150	942.73	1,406	768
942.20	892	159	942.74	1,416	782
942.21	902	168	942.75	1,426	796
942.22	911	177	942.76	1,435	811
942.23	921	186	942.77	1,445	825
942.24	931	195	942.78	1,455	840
942.25	941	205	942.79	1,464	854
942.26	950	214	942.80	1,474	869
942.27	960	224	942.81	1,484	884
942.28	970	233	942.82	1,493	898
942.29	979	243	942.83	1,503	913
942.30	989	253	942.84	1,513	929
942.31	999	263	942.85	1,523	944
942.32	1,008	273	942.86	1,532	959
942.33	1,018	283	942.87	1,542	974
942.34	1,028	293	942.88	1,552	990
942.35	1,038	304	942.89	1,561	1,005
942.36	1,047	314	942.90	1,571	1,021
942.37	1,057	325	942.91	1,581	1,037
942.38	1,067	335	942.92	1,590	1,053
942.39	1,076	346	942.93	1,600	1,069
942.40	1,086	357	942.94	1,610	1,085
942.41	1,096	368	942.95	1,620	1,101
942.42	1,105	379	942.96	1,629	1,117
942.43	1,115	390	942.97	1,639	1,133
942.44	1,125	401	942.98	1,649	1,150
942.45	1,135	412	942.99	1,658	1,166
942.46	1,144	424	943.00	1,668	1,183
942.47	1,154	435	943.01	1,678	1,200
942.48	1,164	447	943.02	1,687	1,217
942.49	1,173	458	943.03	1,697	1,233
942.50	1,183	470	943.04	1,707	1,250
942.51	1,193	482	943.05	1,716	1,268
942.52	1,202	494	943.06	1,726	1,285
942.53	1,212	506	943.07	1,736	1,302

Stage-Area-Storage for Pond 2P: Biofiltration Basin 2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.08	1,746	1,320	943.62	2,281	2,404
943.09	1,755	1,337	943.63	2,292	2,427
943.10	1,765	1,355	943.64	2,303	2,450
943.11	1,775	1,372	943.65	2,313	2,473
943.12	1,784	1,390	943.66	2,324	2,496
943.13	1,794	1,408	943.67	2,335	2,520
943.14	1,804	1,426	943.68	2,346	2,543
943.15	1,813	1,444	943.69	2,356	2,567
943.16	1,823	1,462	943.70	2,367	2,590
943.17	1,833	1,481	943.71	2,378	2,614
943.18	1,843	1,499	943.72	2,388	2,638
943.19	1,852	1,517	943.73	2,399	2,662
943.20	1,862	1,536	943.74	2,410	2,686
943.21	1,872	1,555	943.75	2,421	2,710
943.22	1,881	1,573	943.76	2,431	2,734
943.23	1,891	1,592	943.77	2,442	2,759
943.24	1,901	1,611	943.78	2,453	2,783
943.25	1,911	1,630	943.79	2,463	2,808
943.26	1,920	1,649	943.80	2,474	2,832
943.27	1,930	1,669	943.81	2,485	2,857
943.28	1,940	1,688	943.82	2,495	2,882
943.29	1,949	1,708	943.83	2,506	2,907
943.30	1,959	1,727	943.84	2,517	2,932
943.31	1,969	1,747	943.85	2,528	2,957
943.32	1,978	1,766	943.86	2,538	2,983
943.33	1,988	1,786	943.87	2,549	3,008
943.34	1,998	1,806	943.88	2,560	3,034
943.35	2,008	1,826	943.89	2,570	3,059
943.36	2,017	1,846	943.90	2,581	3,085
943.37	2,027	1,867	943.91	2,592	3,111
943.38	2,037	1,887	943.92	2,602	3,137
943.39	2,046	1,907	943.93	2,613	3,163
943.40	2,056	1,928	943.94	2,624	3,189
943.41	2,066	1,948	943.95	2,635	3,215
943.42	2,075	1,969	943.96	2,645	3,242
943.43	2,085	1,990	943.97	2,656	3,268
943.44	2,095	2,011	943.98	2,667	3,295
943.45	2,105	2,032	943.99	2,677	3,322
943.46	2,114	2,053	944.00	**2,688**	**3,349**
943.47	2,124	2,074			
943.48	2,134	2,095			
943.49	2,143	2,117			
943.50	2,153	2,138			
943.51	2,164	2,160			
943.52	2,174	2,182			
943.53	2,185	2,203			
943.54	2,196	2,225			
943.55	2,206	2,247			
943.56	2,217	2,269			
943.57	2,228	2,292			
943.58	2,239	2,314			
943.59	2,249	2,336			
943.60	2,260	2,359			
943.61	2,271	2,382			

Summary for Pond 2W: Central Wetland

Inflow Area = 2.212 ac, 27.26% Impervious, Inflow Depth = 5.38" for 100-Year event
Inflow = 19.29 cfs @ 12.15 hrs, Volume= 0.993 af
Outflow = 1.96 cfs @ 12.72 hrs, Volume= 0.976 af, Atten= 90%, Lag= 34.6 min
Primary = 1.96 cfs @ 12.72 hrs, Volume= 0.976 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Starting Elev= 939.50' Surf.Area= 22,584 sf Storage= 6,835 cf
Peak Elev= 940.39' @ 12.72 hrs Surf.Area= 29,188 sf Storage= 30,597 cf (23,762 cf above start)

Plug-Flow detention time= 512.3 min calculated for 0.819 af (83% of inflow)
Center-of-Mass det. time= 332.8 min (1,173.3 - 840.5)

Volume	Invert	Avail.Storage	Storage Description
#1	938.90'	159,584 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
938.90	200	0	0
939.50	22,584	6,835	6,835
940.00	27,850	12,609	19,444
942.00	34,690	62,540	81,984
944.00	42,910	77,600	159,584

Device	Routing	Invert	Outlet Devices
#1	Primary	939.50'	**12.0" Round Culvert** L= 150.0' Ke= 0.500 Inlet / Outlet Invert= 939.50' / 938.70' S= 0.0053 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.96 cfs @ 12.72 hrs HW=940.39' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.96 cfs @ 3.51 fps)

Stage-Area-Storage for Pond 2W: Central Wetland

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
938.90	200	0	939.44	20,346	5,547
938.91	573	4	939.45	20,719	5,753
938.92	946	11	939.46	21,092	5,962
938.93	1,319	23	939.47	21,465	6,174
938.94	1,692	38	939.48	21,838	6,391
938.95	2,065	57	939.49	22,211	6,611
938.96	2,438	79	939.50	22,584	6,835
938.97	2,811	105	939.51	22,689	7,062
938.98	3,185	135	939.52	22,795	7,289
938.99	3,558	169	939.53	22,900	7,517
939.00	3,931	207	939.54	23,005	7,747
939.01	4,304	248	939.55	23,111	7,978
939.02	4,677	293	939.56	23,216	8,209
939.03	5,050	341	939.57	23,321	8,442
939.04	5,423	394	939.58	23,427	8,676
939.05	5,796	450	939.59	23,532	8,910
939.06	6,169	510	939.60	23,637	9,146
939.07	6,542	573	939.61	23,743	9,383
939.08	6,915	640	939.62	23,848	9,621
939.09	7,288	711	939.63	23,953	9,860
939.10	7,661	786	939.64	24,058	10,100
939.11	8,034	865	939.65	24,164	10,341
939.12	8,407	947	939.66	24,269	10,583
939.13	8,781	1,033	939.67	24,374	10,827
939.14	9,154	1,122	939.68	24,480	11,071
939.15	9,527	1,216	939.69	24,585	11,316
939.16	9,900	1,313	939.70	24,690	11,563
939.17	10,273	1,414	939.71	24,796	11,810
939.18	10,646	1,518	939.72	24,901	12,059
939.19	11,019	1,627	939.73	25,006	12,308
939.20	11,392	1,739	939.74	25,112	12,559
939.21	11,765	1,855	939.75	25,217	12,810
939.22	12,138	1,974	939.76	25,322	13,063
939.23	12,511	2,097	939.77	25,428	13,317
939.24	12,884	2,224	939.78	25,533	13,572
939.25	13,257	2,355	939.79	25,638	13,827
939.26	13,630	2,489	939.80	25,744	14,084
939.27	14,003	2,628	939.81	25,849	14,342
939.28	14,377	2,770	939.82	25,954	14,601
939.29	14,750	2,915	939.83	26,060	14,861
939.30	15,123	3,065	939.84	26,165	15,123
939.31	15,496	3,218	939.85	26,270	15,385
939.32	15,869	3,374	939.86	26,376	15,648
939.33	16,242	3,535	939.87	26,481	15,912
939.34	16,615	3,699	939.88	26,586	16,178
939.35	16,988	3,867	939.89	26,691	16,444
939.36	17,361	4,039	939.90	26,797	16,711
939.37	17,734	4,215	939.91	26,902	16,980
939.38	18,107	4,394	939.92	27,007	17,249
939.39	18,480	4,577	939.93	27,113	17,520
939.40	18,853	4,763	939.94	27,218	17,792
939.41	19,226	4,954	939.95	27,323	18,064
939.42	19,599	5,148	939.96	27,429	18,338
939.43	19,973	5,346	939.97	27,534	18,613

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
939.98	27,639	18,889	940.52	29,628	34,388
939.99	27,745	19,166	940.53	29,663	34,685
940.00	27,850	19,444	940.54	29,697	34,981
940.01	27,884	19,722	940.55	29,731	35,278
940.02	27,918	20,001	940.56	29,765	35,576
940.03	27,953	20,281	940.57	29,799	35,874
940.04	27,987	20,560	940.58	29,834	36,172
940.05	28,021	20,840	940.59	29,868	36,470
940.06	28,055	21,121	940.60	29,902	36,769
940.07	28,089	21,402	940.61	29,936	37,068
940.08	28,124	21,683	940.62	29,970	37,368
940.09	28,158	21,964	940.63	30,005	37,668
940.10	28,192	22,246	940.64	30,039	37,968
940.11	28,226	22,528	940.65	30,073	38,269
940.12	28,260	22,810	940.66	30,107	38,570
940.13	28,295	23,093	940.67	30,141	38,871
940.14	28,329	23,376	940.68	30,176	39,172
940.15	28,363	23,660	940.69	30,210	39,474
940.16	28,397	23,943	940.70	30,244	39,777
940.17	28,431	24,228	940.71	30,278	40,079
940.18	28,466	24,512	940.72	30,312	40,382
940.19	28,500	24,797	940.73	30,347	40,685
940.20	28,534	25,082	940.74	30,381	40,989
940.21	28,568	25,368	940.75	30,415	41,293
940.22	28,602	25,653	940.76	30,449	41,597
940.23	28,637	25,940	940.77	30,483	41,902
940.24	28,671	26,226	940.78	30,518	42,207
940.25	28,705	26,513	940.79	30,552	42,512
940.26	28,739	26,800	940.80	30,586	42,818
940.27	28,773	27,088	940.81	30,620	43,124
940.28	28,808	27,376	940.82	30,654	43,431
940.29	28,842	27,664	940.83	30,689	43,737
940.30	28,876	27,953	940.84	30,723	44,044
940.31	28,910	28,242	940.85	30,757	44,352
940.32	28,944	28,531	940.86	30,791	44,659
940.33	28,979	28,820	940.87	30,825	44,967
940.34	29,013	29,110	940.88	30,860	45,276
940.35	29,047	29,401	940.89	30,894	45,585
940.36	29,081	29,691	940.90	30,928	45,894
940.37	29,115	29,982	940.91	30,962	46,203
940.38	29,150	30,274	940.92	30,996	46,513
940.39	29,184	30,565	940.93	31,031	46,823
940.40	29,218	30,857	940.94	31,065	47,134
940.41	29,252	31,150	940.95	31,099	47,444
940.42	29,286	31,442	940.96	31,133	47,756
940.43	29,321	31,735	940.97	31,167	48,067
940.44	29,355	32,029	940.98	31,202	48,379
940.45	29,389	32,322	940.99	31,236	48,691
940.46	29,423	32,617	941.00	31,270	49,004
940.47	29,457	32,911	941.01	31,304	49,317
940.48	29,492	33,206	941.02	31,338	49,630
940.49	29,526	33,501	941.03	31,373	49,943
940.50	29,560	33,796	941.04	31,407	50,257
940.51	29,594	34,092	941.05	31,441	50,571

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
941.06	31,475	50,886	941.60	33,322	68,381
941.07	31,509	51,201	941.61	33,356	68,715
941.08	31,544	51,516	941.62	33,390	69,048
941.09	31,578	51,832	941.63	33,425	69,382
941.10	31,612	52,148	941.64	33,459	69,717
941.11	31,646	52,464	941.65	33,493	70,052
941.12	31,680	52,781	941.66	33,527	70,387
941.13	31,715	53,098	941.67	33,561	70,722
941.14	31,749	53,415	941.68	33,596	71,058
941.15	31,783	53,733	941.69	33,630	71,394
941.16	31,817	54,051	941.70	33,664	71,731
941.17	31,851	54,369	941.71	33,698	72,067
941.18	31,886	54,688	941.72	33,732	72,405
941.19	31,920	55,007	941.73	33,767	72,742
941.20	31,954	55,326	941.74	33,801	73,080
941.21	31,988	55,646	941.75	33,835	73,418
941.22	32,022	55,966	941.76	33,869	73,757
941.23	32,057	56,286	941.77	33,903	74,095
941.24	32,091	56,607	941.78	33,938	74,435
941.25	32,125	56,928	941.79	33,972	74,774
941.26	32,159	57,249	941.80	34,006	75,114
941.27	32,193	57,571	941.81	34,040	75,454
941.28	32,228	57,893	941.82	34,074	75,795
941.29	32,262	58,216	941.83	34,109	76,136
941.30	32,296	58,539	941.84	34,143	76,477
941.31	32,330	58,862	941.85	34,177	76,819
941.32	32,364	59,185	941.86	34,211	77,161
941.33	32,399	59,509	941.87	34,245	77,503
941.34	32,433	59,833	941.88	34,280	77,846
941.35	32,467	60,158	941.89	34,314	78,188
941.36	32,501	60,483	941.90	34,348	78,532
941.37	32,535	60,808	941.91	34,382	78,875
941.38	32,570	61,133	941.92	34,416	79,219
941.39	32,604	61,459	941.93	34,451	79,564
941.40	32,638	61,785	941.94	34,485	79,908
941.41	32,672	62,112	941.95	34,519	80,253
941.42	32,706	62,439	941.96	34,553	80,599
941.43	32,741	62,766	941.97	34,587	80,945
941.44	32,775	63,094	941.98	34,622	81,291
941.45	32,809	63,421	941.99	34,656	81,637
941.46	32,843	63,750	942.00	34,690	81,984
941.47	32,877	64,078	942.01	34,731	82,331
941.48	32,912	64,407	942.02	34,772	82,678
941.49	32,946	64,737	942.03	34,813	83,026
941.50	32,980	65,066	942.04	34,854	83,375
941.51	33,014	65,396	942.05	34,895	83,723
941.52	33,048	65,726	942.06	34,937	84,072
941.53	33,083	66,057	942.07	34,978	84,422
941.54	33,117	66,388	942.08	35,019	84,772
941.55	33,151	66,719	942.09	35,060	85,122
941.56	33,185	67,051	942.10	35,101	85,473
941.57	33,219	67,383	942.11	35,142	85,824
941.58	33,254	67,716	942.12	35,183	86,176
941.59	33,288	68,048	942.13	35,224	86,528

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
942.14	35,265	86,881	942.68	37,485	106,523
942.15	35,306	87,233	942.69	37,526	106,898
942.16	35,348	87,587	942.70	37,567	107,274
942.17	35,389	87,940	942.71	37,608	107,650
942.18	35,430	88,294	942.72	37,649	108,026
942.19	35,471	88,649	942.73	37,690	108,403
942.20	35,512	89,004	942.74	37,731	108,780
942.21	35,553	89,359	942.75	37,773	109,157
942.22	35,594	89,715	942.76	37,814	109,535
942.23	35,635	90,071	942.77	37,855	109,913
942.24	35,676	90,428	942.78	37,896	110,292
942.25	35,718	90,785	942.79	37,937	110,671
942.26	35,759	91,142	942.80	37,978	111,051
942.27	35,800	91,500	942.81	38,019	111,431
942.28	35,841	91,858	942.82	38,060	111,811
942.29	35,882	92,217	942.83	38,101	112,192
942.30	35,923	92,576	942.84	38,142	112,573
942.31	35,964	92,935	942.85	38,184	112,955
942.32	36,005	93,295	942.86	38,225	113,337
942.33	36,046	93,655	942.87	38,266	113,719
942.34	36,087	94,016	942.88	38,307	114,102
942.35	36,129	94,377	942.89	38,348	114,486
942.36	36,170	94,738	942.90	38,389	114,869
942.37	36,211	95,100	942.91	38,430	115,253
942.38	36,252	95,463	942.92	38,471	115,638
942.39	36,293	95,825	942.93	38,512	116,023
942.40	36,334	96,188	942.94	38,553	116,408
942.41	36,375	96,552	942.95	38,594	116,794
942.42	36,416	96,916	942.96	38,636	117,180
942.43	36,457	97,280	942.97	38,677	117,567
942.44	36,498	97,645	942.98	38,718	117,954
942.45	36,539	98,010	942.99	38,759	118,341
942.46	36,581	98,376	943.00	38,800	118,729
942.47	36,622	98,742	943.01	38,841	119,117
942.48	36,663	99,108	943.02	38,882	119,506
942.49	36,704	99,475	943.03	38,923	119,895
942.50	36,745	99,842	943.04	38,964	120,284
942.51	36,786	100,210	943.05	39,005	120,674
942.52	36,827	100,578	943.06	39,047	121,064
942.53	36,868	100,947	943.07	39,088	121,455
942.54	36,909	101,316	943.08	39,129	121,846
942.55	36,950	101,685	943.09	39,170	122,237
942.56	36,992	102,055	943.10	39,211	122,629
942.57	37,033	102,425	943.11	39,252	123,022
942.58	37,074	102,795	943.12	39,293	123,414
942.59	37,115	103,166	943.13	39,334	123,807
942.60	37,156	103,538	943.14	39,375	124,201
942.61	37,197	103,909	943.15	39,416	124,595
942.62	37,238	104,281	943.16	39,458	124,989
942.63	37,279	104,654	943.17	39,499	125,384
942.64	37,320	105,027	943.18	39,540	125,779
942.65	37,361	105,400	943.19	39,581	126,175
942.66	37,403	105,774	943.20	39,622	126,571
942.67	37,444	106,148	943.21	39,663	126,967

Stage-Area-Storage for Pond 2W: Central Wetland (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
943.22	39,704	127,364
943.23	39,745	127,761
943.24	39,786	128,159
943.25	39,828	128,557
943.26	39,869	128,956
943.27	39,910	129,355
943.28	39,951	129,754
943.29	39,992	130,154
943.30	40,033	130,554
943.31	40,074	130,954
943.32	40,115	131,355
943.33	40,156	131,756
943.34	40,197	132,158
943.35	40,239	132,560
943.36	40,280	132,963
943.37	40,321	133,366
943.38	40,362	133,769
943.39	40,403	134,173
943.40	40,444	134,577
943.41	40,485	134,982
943.42	40,526	135,387
943.43	40,567	135,793
943.44	40,608	136,199
943.45	40,649	136,605
943.46	40,691	137,012
943.47	40,732	137,419
943.48	40,773	137,826
943.49	40,814	138,234
943.50	40,855	138,642
943.51	40,896	139,051
943.52	40,937	139,460
943.53	40,978	139,870
943.54	41,019	140,280
943.55	41,060	140,690
943.56	41,102	141,101
943.57	41,143	141,512
943.58	41,184	141,924
943.59	41,225	142,336
943.60	41,266	142,749
943.61	41,307	143,161
943.62	41,348	143,575
943.63	41,389	143,988
943.64	41,430	144,402
943.65	41,471	144,817
943.66	41,513	145,232
943.67	41,554	145,647
943.68	41,595	146,063
943.69	41,636	146,479
943.70	41,677	146,896
943.71	41,718	147,313
943.72	41,759	147,730
943.73	41,800	148,148
943.74	41,841	148,566
943.75	41,883	148,985
943.76	41,924	149,404
943.77	41,965	149,823
943.78	42,006	150,243
943.79	42,047	150,663
943.80	42,088	151,084
943.81	42,129	151,505
943.82	42,170	151,926
943.83	42,211	152,348
943.84	42,252	152,771
943.85	42,294	153,193
943.86	42,335	153,617
943.87	42,376	154,040
943.88	42,417	154,464
943.89	42,458	154,888
943.90	42,499	155,313
943.91	42,540	155,738
943.92	42,581	156,164
943.93	42,622	156,590
943.94	42,663	157,016
943.95	42,704	157,443
943.96	42,746	157,871
943.97	42,787	158,298
943.98	42,828	158,726
943.99	42,869	159,155
944.00	**42,910**	**159,584**

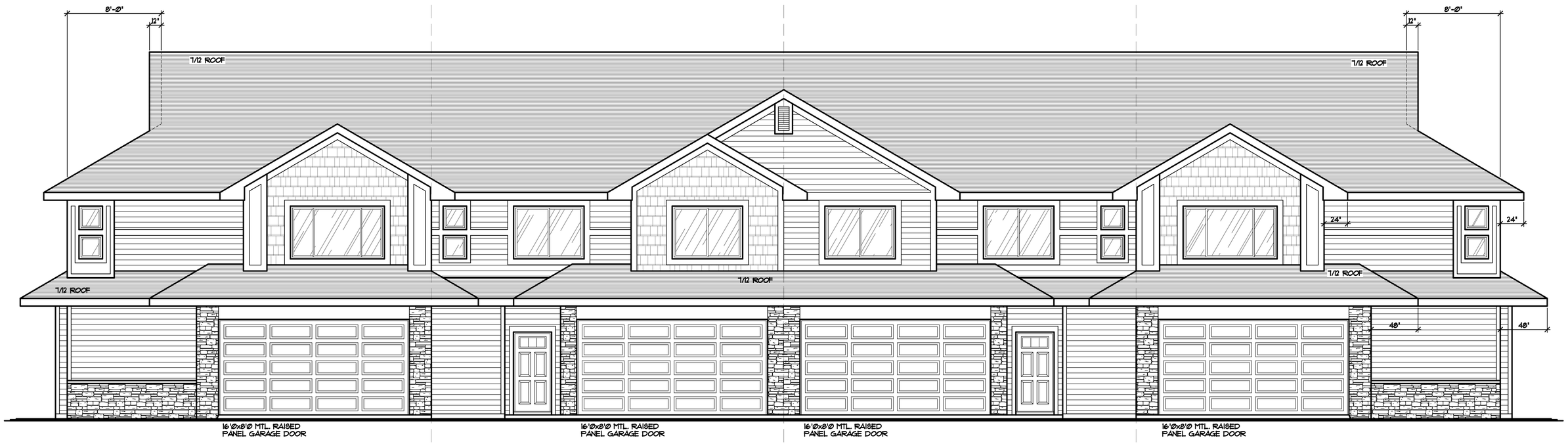
WINDOW & DOOR TRIMMER SCHEDULE:	
WINDOWS & PATIO DOORS MANUFACTURER:	
WINDOWS IN 8'-1 1/8" WALLS	83 3/8"
WINDOWS IN 9'-1 1/8" WALLS	90"
EXTERIOR SWING DOORS	81"
INTERIOR SWING DOORS	81 1/2"
BI-FOLD DOORS *FRAME 1 1/4" WIDER THAN STATED DOOR WIDTH	80 1/2"
POCKET DOORS *FRAME DOUBLE THE STATED DOOR WIDTH *IF PKT. FRAME IS NOT ON SITE, LEAVE FRAMING OPEN ABOVE & FRAME DOWN TO IT AFTERWARDS	

EXTERIOR MATERIAL COLORS:	
SHINGLES	N/A
MAIN LAP SIDING	N/A
VERTICAL SIDING	N/A
SHAKE SIDING	N/A
DOOR TRIM	N/A
FRONT DOOR COLOR	N/A
WINDOW TRIM	N/A
FRIEZE TRIM	N/A
4" CORNER TRIM	N/A
12" CORNER TRIM	N/A
DECKING	N/A
RAILINGS	N/A
DECK TRIM	N/A

INTERIOR MATERIAL COLORS:	
INTERIOR MILL WORK	
INTERIOR STAIN	
INTERIOR HARDWARE	
INTERIOR WALL PAINT	

EXTERIOR TRIM SCHEDULE:		
TRIM A	5/4x4 LP	WHITE
TRIM B	5/4x6 LP	WHITE
TRIM C	5/4x8 LP	WHITE
TRIM D	5/4x10 LP	WHITE
TRIM E	5/4x12 LP	WHITE
TRIM F	4/4x6 LP	WHITE
TRIM G	4/4x8 LP	WHITE

FACE FRAME ROUGH-IN SCHEDULE:	
12" F.F.	10"x84" R.O.
15" F.F.	13"x84" R.O.
18" F.F.	16"x84" R.O.
21" F.F.	19"x84" R.O.
24" F.F.	22"x84" R.O.
30" F.F.	28"x84" R.O.



FRONT ELEVATION 1/4"=1'-0"

MIDDLE UNIT:	END UNIT:	ENTIRE BUILDING:
779 SQ. FT. FIRST FLOOR	824 SQ. FT. FIRST FLOOR	3206 SQ. FT. FIRST FLOOR
1123 SQ. FT. SECOND FLOOR	1147 SQ. FT. SECOND FLOOR	4540 SQ. FT. SECOND FLOOR
1902 SQ. FT. TOTAL LIVABLE	1971 SQ. FT. TOTAL LIVABLE	7746 SQ. FT. TOTAL LIVABLE
400 SQ. FT. GARAGE	420 SQ. FT. GARAGE	1640 SQ. FT. GARAGE

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CLIENT:
ROGERS, MN

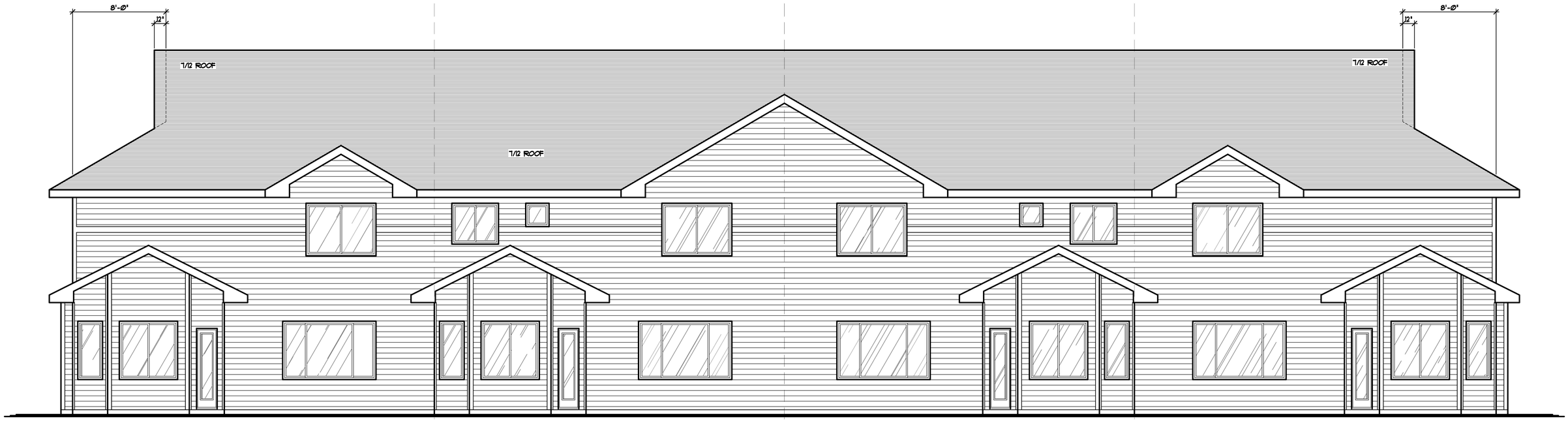
BUILT BY:
DEAN JOHNSON HOMES, INC.

PROJECT ADDRESS:
RAMBLER MODEL
HANOVER, MN

DRAFTING DATE: 3/21/2024 PRELIM
BY: S.E.

AS NOTED SCALE:
S.E. DRAWN
PRE-3671 CADD FILE #
DEAN CHECKED

SHEET 1 OF 6



REAR ELEVATION 1/4"=1'-Ø"

LEFT ELEVATION 1/4"=1'-Ø"

RIGHT ELEVATION 1/4"=1'-Ø"

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• ARCHITECTURAL DESIGN and DRAFTING SERVICE •
• HOME PLAN SERVICE • CUSTOM HOMES • REMODELING •
• PHONE: 763.757.5997 • ANDOVER, MINNESOTA •
WWW.CROIXDESIGN.COM•

CLIENT:
ROGERS, MN

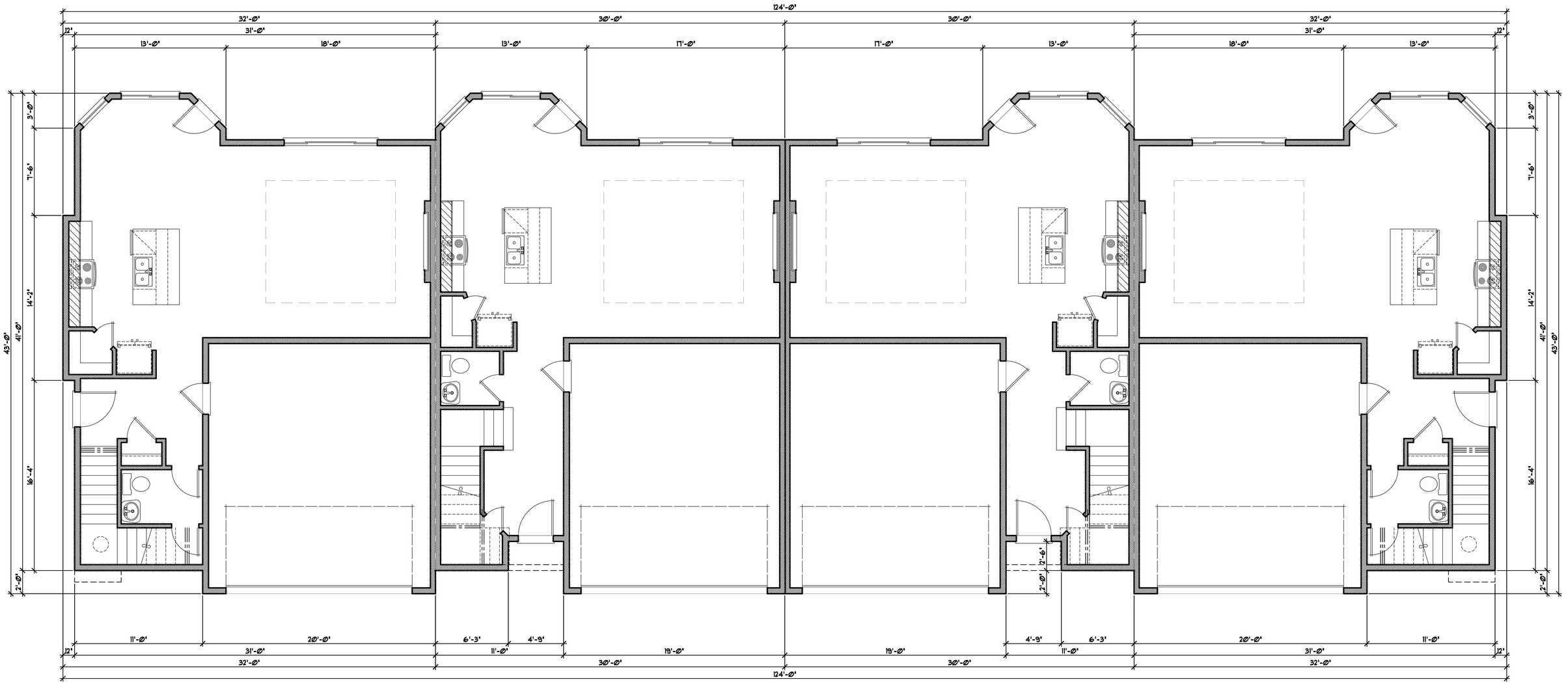
BUILT BY:
DEAN JOHNSON HOMES, INC.

DRAFTING DATE BY
3/21/2014 PRELIM SE.

PROJECT ADDRESS:
STREET
ROGERS, MN

CADD FILE # PRE-3671

SHEET 2 OF 6



FIRST FLOOR PLAN

1/4"=1'-0"

3206 SQ. FT. ENTIRE FIRST FLOOR
1640 SQ. FT. ALL GARAGE'S

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3/21/2024 PRELIM | S.E.

PROJECT ADDRESS:
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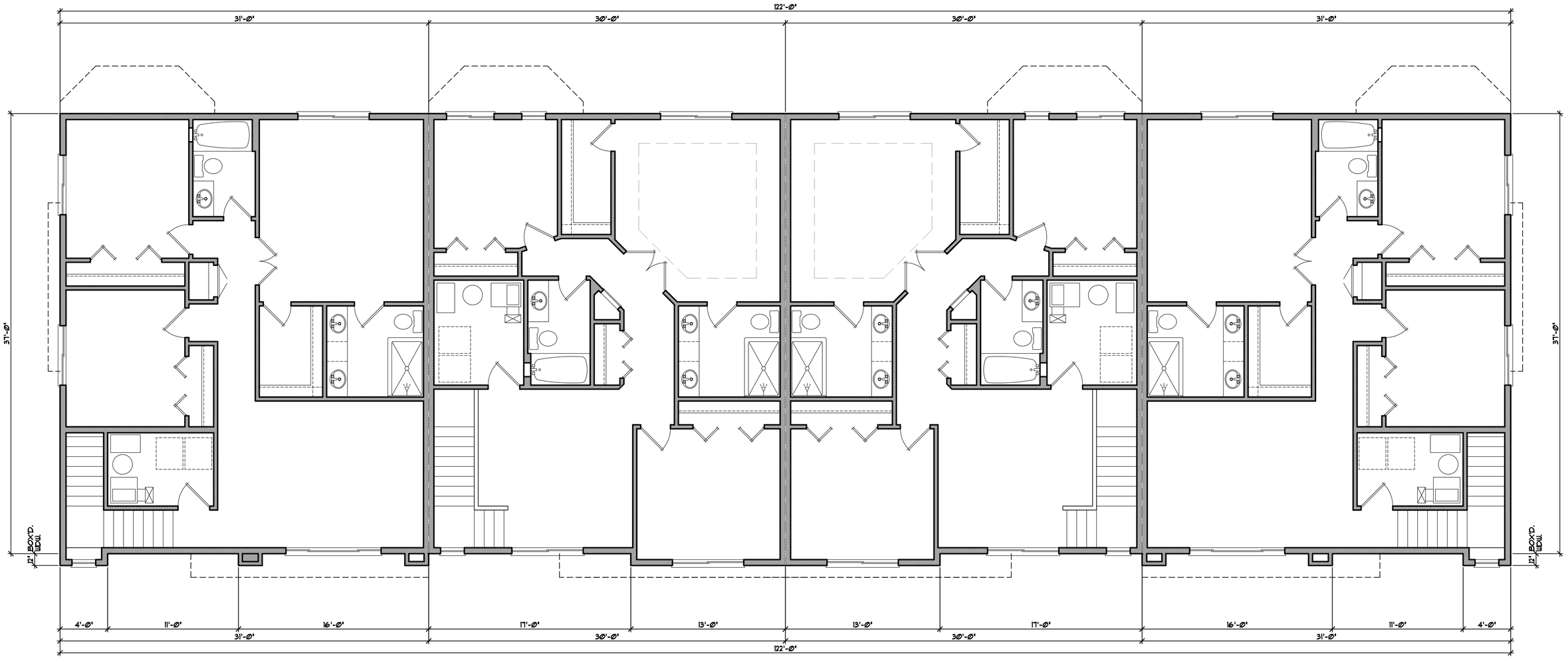
CADD FILE #
PRE-3671

SHEET 3 OF 6



SECOND FLOOR PLAN 1/4"=1'-0"

4540 SQ. FT. ENTIRE SECOND FLOOR

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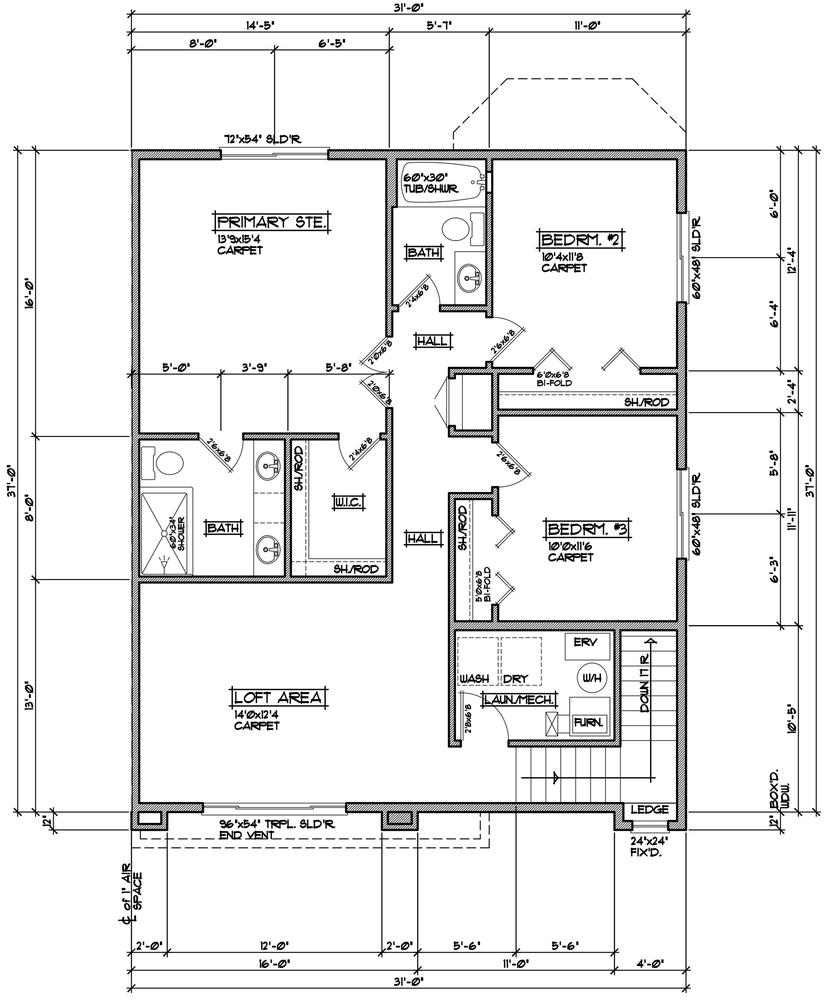
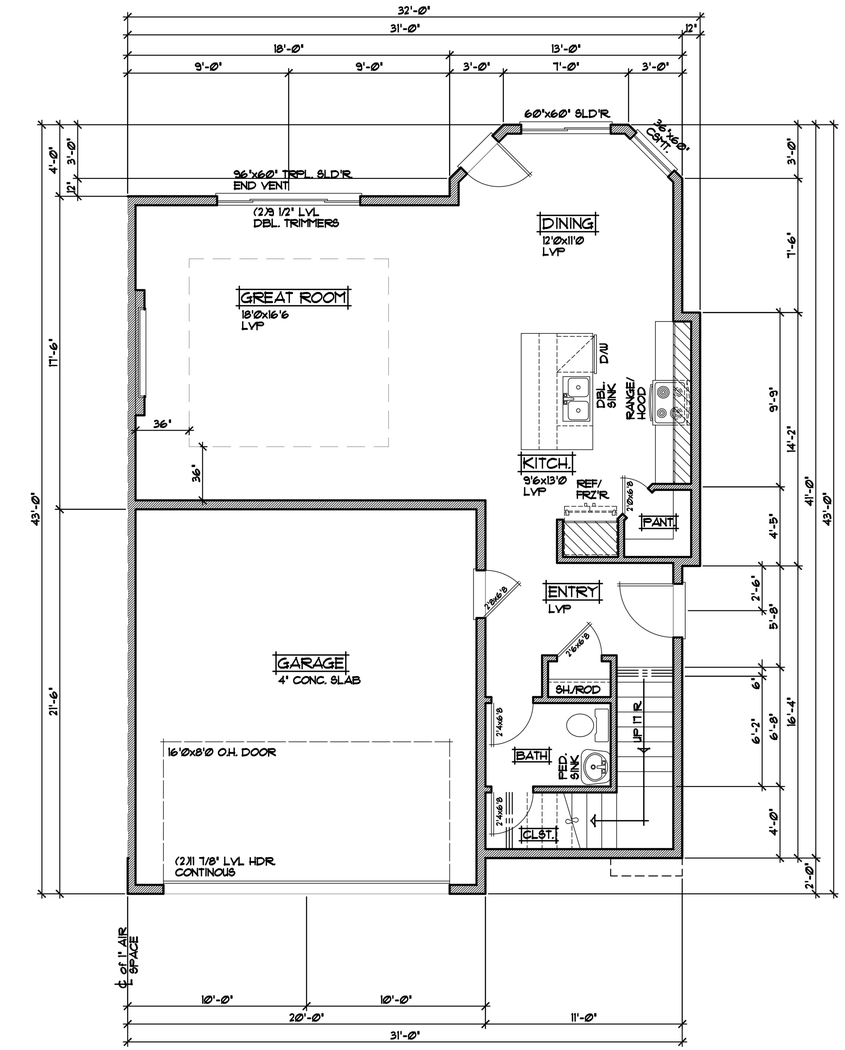
SHEET 4 OF 6



END UNIT
SECOND FLOOR PLAN 1/4"=1'-0"
1141 SQ. FT. SECOND FLOOR



END UNIT
FIRST FLOOR PLAN 1/4"=1'-0"
824 SQ. FT. FIRST FLOOR
420 SQ. FT. GARAGE

END UNIT
824 SQ. FT. FIRST FLOOR
1141 SQ. FT. SECOND FLOOR
1971 SQ. FT. TOTAL LIVABLE
420 SQ. FT. GARAGE

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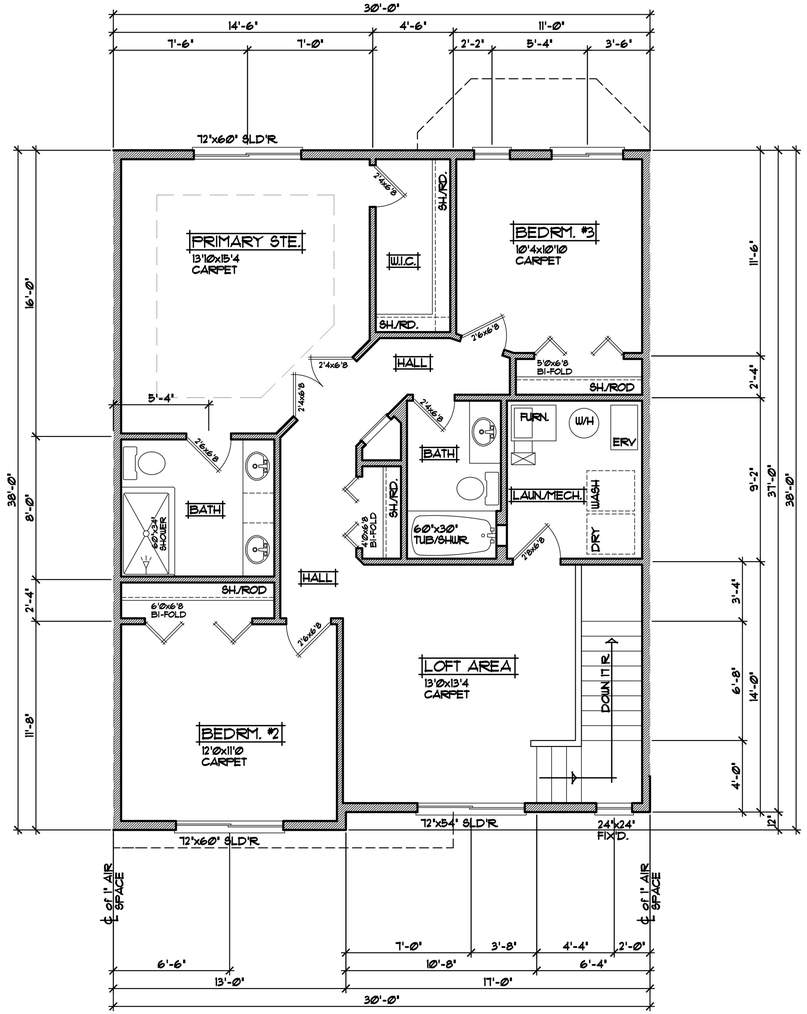
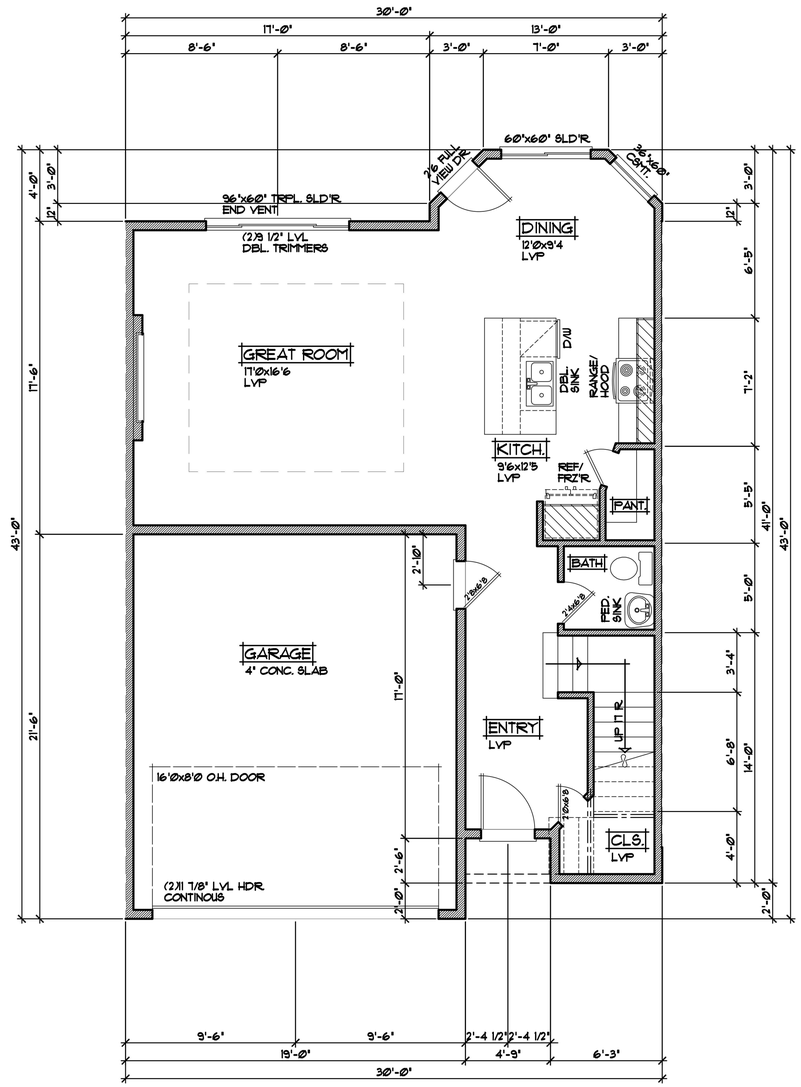
PRE-367

SHEET 5 OF 6



MIDDLE UNIT
SECOND FLOOR PLAN 1/4"=1'-0"
1123 SQ. FT. SECOND FLOOR



MIDDLE UNIT
FIRST FLOOR PLAN 1/4"=1'-0"
779 SQ. FT. FIRST FLOOR
400 SQ. FT. GARAGE

MIDDLE UNIT
779 SQ. FT. FIRST FLOOR
1123 SQ. FT. SECOND FLOOR
1902 SQ. FT. TOTAL LIVABLE
400 SQ. FT. GARAGE

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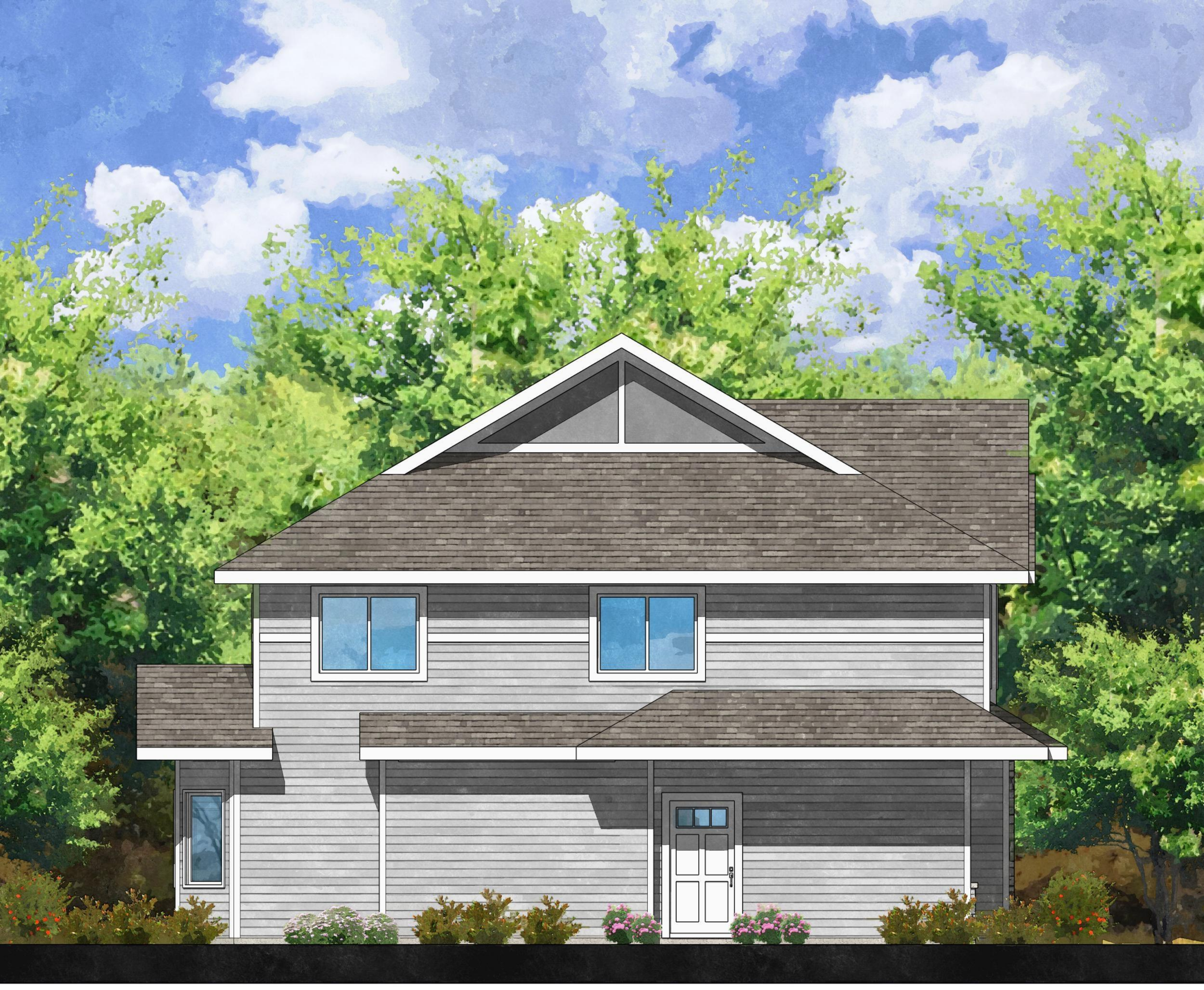
ROGERS, MN

CADD FILE # PRE-367

SHEET 6 OF 6

Front Elevation

Rear Elevation



Left Elevation

Right Elevation

ZONING & LAND USE APPLICATION
VARIANCE

PROPERTY INFORMATION	
Property Address	13020 Hawkins Drive
Parcel ID Number	22-120-23-23-0001

APPLICANT INFORMATION	
Name	Dean Johnson Homes
Address	4700 County Road 19, Medina MN 55357
Phone	763-479-4820
Email	djohnson@deanjohnsonhomes.com

OWNER INFORMATION	
Name	Clover Run, LLC.
Address	5832 Linclon Drive Suite 328 Edina
Phone	612-706-8266
Email	phil@pljrealty.com

VARIANCE REQUEST
Please provide specific detail regarding the specific deviations and requested variances on the worksheet below. If there is not enough room, please provide a separate narrative. Staff may request additional information.

FEES			
Application	$400	Escrow	$0

ACKNOWLEDGEMENT

APPLICANT STATEMENT

This application should be processed in my name, and I am the party whom the City of Rogers should contact about this application. I have completed all of the applicable filing requirements and, to the best of my knowledge, the documents and information I have submitted are true and correct.

Dean Johnson — *Applicant Signature*

5.14.24 — *Date*

OWNER STATEMENT

I am the owner of the above described property and I agree to this application. By signing this application, I certify that all fees, charges, utility bills, taxes, special assessments and other debts or obligations due to the City of Rogers by me or for this property have been paid. I further certify that I am in compliance with all ordinance requirements and conditions regarding other city approvals that have been granted to me for any matter. (If the owner is a corporation or partnership, a resolution authorizing this action on behalf of the board or partnership must be attached.)

_____ — *Owner Signature*

_____ — *Date*

VARIANCE WORKSHEET

1. Detail specifically the deviation(s) from code proposed (e.g. code requires X ft setback, requesting X ft setback).

Request a variance from the requirement of a 10' utility easement along the east side of the Hawkins Drive right of way

Request a variance of the site boundry setback along the east side of Hawkins Drive to 7.5 feet

125-55 C and 125-83 (f) 1.

2. Describe how the request is in harmony with the general purpose and intent of zoning for the property.

The property is zoned for a minimum of 6 units per acre. Without the variances requested, the project would not meet the minimum unit count required by the zoning classification.

3. Describe how the request is consistent with the Comprehensive Plan.

This is guided for multifamily use, which is what we are proposing on the site.

townhome us

4. Describe why the proposed use is reasonable.

While Hawkins Drive is a public road, it is limited in length and will be predominantly used by this development. The variance requests will allow the distance between the curb and the buildings to be uniform through the entire project.

5. Describe the following: *circumstances unique to the property, why the need for the variance was not created by the property owner, and why the need is not solely based on economic considerations.*

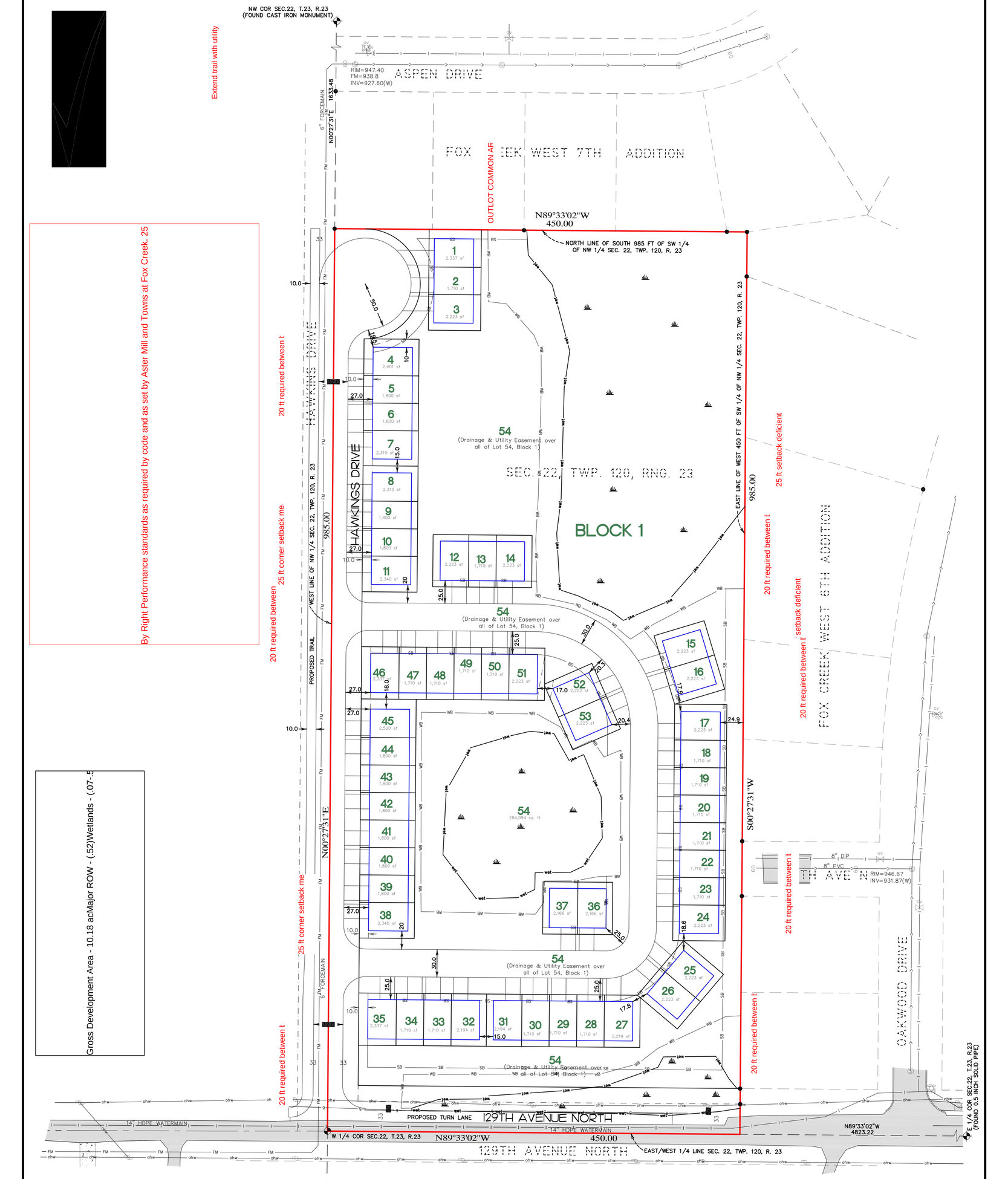
The size and locations of the wetlands severly limit layout and spacing of any design on this parcel of ground.

6. Describe why the variance would not alter the essential character of the neighborhood.

We believe this request will keep the layout of the units consistent throughout the development, by allowing buildings to be set back uniformly from the roads, both public and private.

SITE PLAN

~for~ HAWKINS DRIVE TOWNHOMES
PROPERTY ADDRESS: 13020 HAWKINS DRIVE, ROGERS, MN 55374



NOTES

- BEARING'S SHOWN ARE BASED ON "HENNEPIN COUNTY COORDINATE SYSTEM".
- ELEVATIONS SHOWN ARE BASED ON NAVD88 DATUM.
- LEGAL DESCRIPTION TAKEN FROM TITLE COMMITMENT NO. 23-87622, PREPARED BY EDGEWATER TITLE GROUP, LLC, DATED OCTOBER 31, 2023
- TOTAL AREA: ±443,250 SF (±10.18 ACRES)
- FRONT AND SIDE SETBACKS MEASURED FROM TOP/BACK OF PROPOSED CURB.
- CITY WOULD NEED TO APPROVE SETBACKS, BUILDING PLACEMENT.
- PROPOSED FORCEMAIN & WATERMAIN SCALED FROM PLANS FOR "BIG WOODS".
- VARIENCE NEEDED TO REDUCE THE DRAINAGE AND UTILITY EASEMENT ALONG HAWKINS DRIVE FROM 10 FEET TO 7 FEET.
- VARIENCE NEEDED TO REDUCE THE FRONT YARD SETBACK ALONG HAWKINS DRIVE.

BENCHMARK

- MNDOT HARN POINT "MEMORIAL" NAVD88 ELEVATION=964.07

ZONING:

- R-3 (MIXED DENSITY RESIDENTIAL)

LEGAL DESCRIPTION

The West 450 feet of the South 985 feet of the Southwest 1/4 of the Northwest 1/4 of Section 22, Township 120 North, Range 23 West, Hennepin County, Minnesota.
Abstract Property
PID# 22-120-23-23-0001

SITE DATA:

TOTAL PROPERTY AREA: ±443,250 sf (±10.18 acres)
EXISTING HARD SURFACE: ±4,730 sf
PROPOSED HARD SURFACE: ±151,582 sf
PROPOSED HARD SURFACE PERCENTAGE: ±34.2%
PROPOSED NUMBER OF UNITS: 53 UNITS
UNITS PER ACRE: 5.2

ZONING: R-3
MAXIMUM HARD SURFACE: 75%
SETBACK, FRONT: 25 FT
SETBACK, REAR: 20 FT
SETBACK, SIDE: 10 FT
LOT WIDTH (MIN): 110 FT (DUPLEX, TRIPLEX, QUAD)

LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES UTILITY POLE
- DENOTES TELEPHONE BOX
- DENOTES SANITARY SEWER MANHOLE
- DENOTES STORM SEWER MANHOLE
- DENOTES CATCH BASIN
- DENOTES GATE VALVE
- DENOTES FIRE HYDRANT
- DENOTES EXISTING CONTOUR
- DENOTES UNDERGROUND ELECTRIC
- DENOTES UNDERGROUND GAS
- DENOTES OVERHEAD WIRE
- DENOTES WATERMAIN
- DENOTES SANITARY SEWER
- DENOTES STORM SEWER
- DENOTES EDGE OF WETLAND
- DENOTES WETLAND BUFFER
- X1011.2 DENOTES EXISTING ELEVATION
- DENOTES CONCRETE
- DENOTES BITUMINOUS
- DENOTES COUNTY MONUMENT
- DENOTES PROPOSED BUILDING
- DENOTES BOUNDARY LINE
- DENOTES PROPOSED SETBACK

NORTH

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

I hereby certify that this plan, survey or report 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.

JOSHUA P. SCHNEIDER

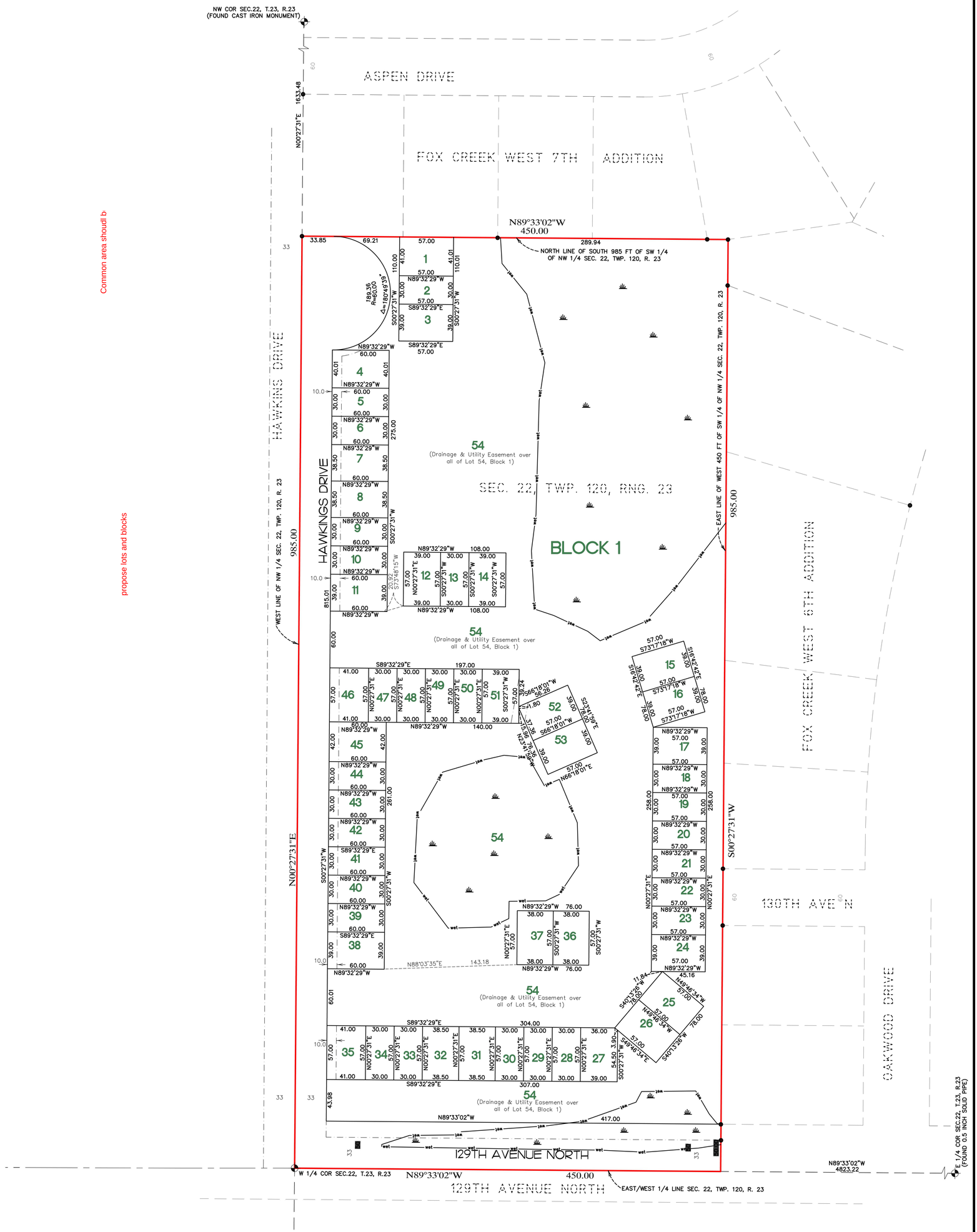
Revised: 6-7-24
Revised: 5-3-24
Revised: 2-13-24 (utilities)
Date: 2-5-24 Reg. No. 44655

ACRE LAND SURVEYING
9140 Baltimore Street NE
Suite 100, Blaine, MN
763-238-6278 js.acrelandsurvey@gmail.com

JOB #23120

PRELIMINARY PLAT

~for~ HAWKINS DRIVE TOWNHOMES
PROPERTY ADDRESS: 13020 HAWKINS DRIVE, ROGERS, MN 55374



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BENCHMARK

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MAXIMUM HARD SURFACE: 75%
SETBACK, FRONT: 25 FT
SETBACK, REAR: 20 FT
SETBACK, SIDE: 10 FT
LOT WIDTH (MIN): 110 FT (DUPLEX, TRIPLEX, QUAD)

LEGEND

- DENOTES IRON MONUMENT FOUND
- DENOTES UTILITY POLE
- DENOTES TELEPHONE BOX
- DENOTES SANITARY SEWER MANHOLE
- DENOTES STORM SEWER MANHOLE
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- DENOTES FIRE HYDRANT
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- X1011.2 DENOTES EXISTING ELEVATION
- DENOTES CONCRETE
- DENOTES BITUMINOUS
- DENOTES COUNTY MONUMENT
- DENOTES BOUNDARY LINE

NORTH

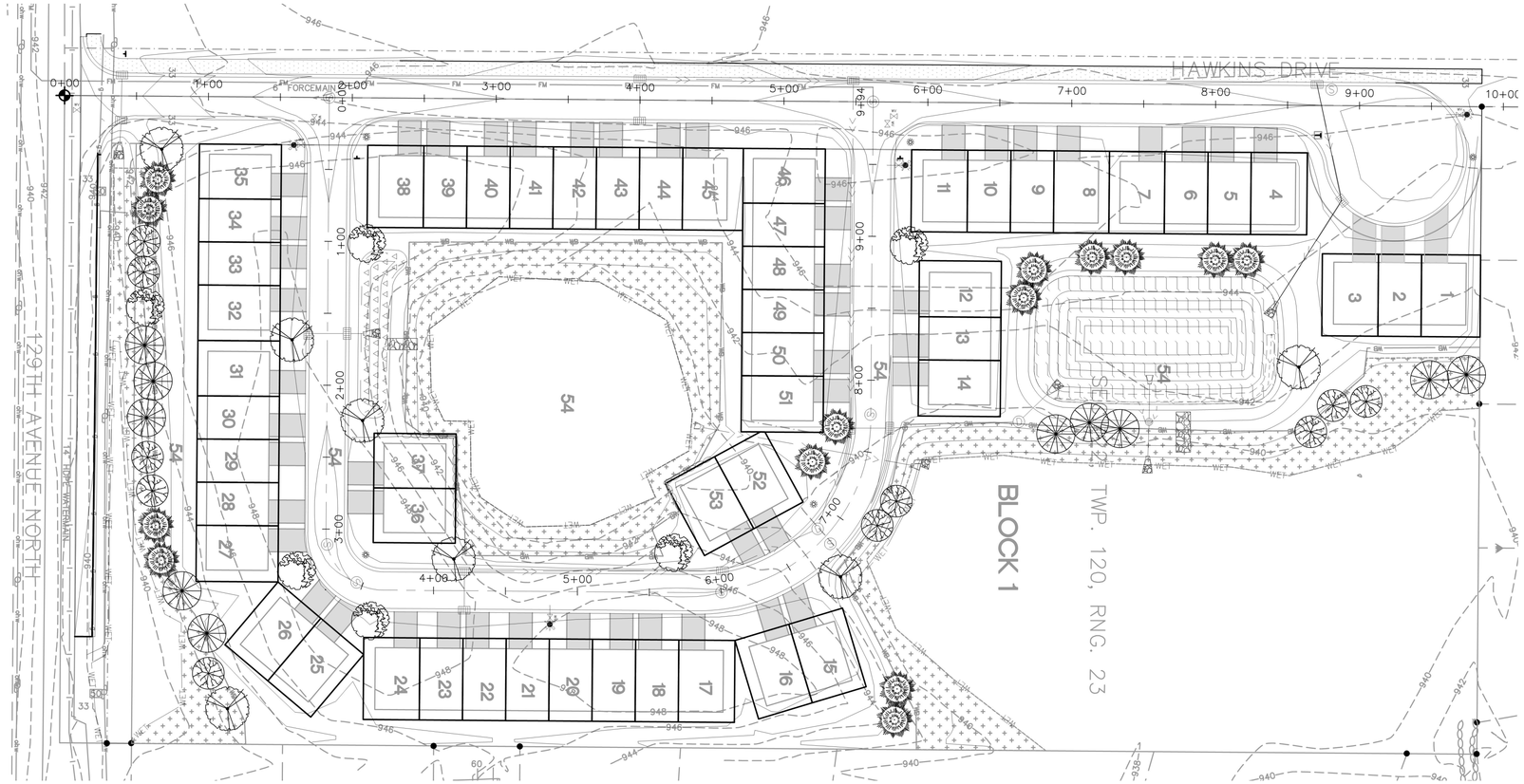
GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

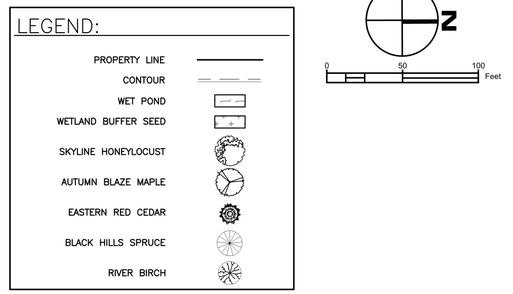
I hereby certify that this plan, survey or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

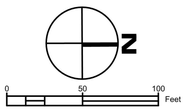
JOSHUA P. SCHNEIDER
Revised: 6-7-24
Revised: 5-3-24
Date: 2-5-24 Reg. No. 44655

ACRE LAND SURVEYING
9140 Baltimore Street NE
Suite 100, Blaine, MN
763-238-6278 js.acrelandsurvey@gmail.com

JOB #23120







BENCHMARK
MNDOT HARN POINT "MEMORIAL"
NAVD88 ELEV=964.07

PLANT SCHEDULE

TREES

KEY	QTY	COMMON NAME	BOTANICAL NAME	ROOT	CAL/SIZE
SH	6	Skyline Honeylocust	Gleditsia triacanthos 'Skycole'	B&B	2.5"
AM	7	Autumn Blaze Maple	Acer x freemanii 'Jeffersred'	B&B	2.5"
RB	10	River Birch	Betula Nigra	B&B	2.5"
EC	14	Eastern Red Cedar	Juniperus virginiana	B&B	6'
WS	10	Black Hills (White) Spruce	Picea glauca 'Densata'	B&B	6'
TOTAL:	47				

NOTES:

1. SEE EROSION CONTROL PLAN FOR ADDITIONAL TURF RESTORATION INFORMATION.
2. TREES MAY BE SUBSTITUTED WITH SIMILAR SPECIES GIVEN AVAILABILITY. CONTAINER STOCK MAY BE SUBSTITUTED FOR B&B AS APPROPRIATE.
3. CONIFEROUS TREES SHALL BE 6' TALL & DECIDUOUS TREES 2.5" DIAMETER UPON INSTALLATION.
4. WETLAND BUFFER AREA SHALL BE SEEDED WITH APPROPRIATE SEED MIX (SEE EROSION CONTROL PLAN) AND ALL OTHER AREAS SHALL BE SODDED.
5. TREES SHALL BE WARRANTED FOR A PERIOD OF 1 YEAR AFTER INSTALLATION. DEAD OR DISEASED PLANTS WITHIN THIS PERIOD SHALL BE REPLACED AT CONTRACTOR EXPENSE.
6. THE PLANTING DETAILS REPRESENT ADEQUATELY DRAINED SOIL CONDITIONS. THE CONTRACTOR SHOULD EXERCISE DISCRETION IN SETTING PLANTS 1"–3" HIGHER IN POORLY DRAINED SOILS.
7. ON 2:1 SLOPES OR GREATER, DO NOT CONSTRUCT THE UPHILL HALF OF THE WATERING BASIN.
8. ON WET, POORLY DRAINED SOILS, DO NOT CONSTRUCT WATERING BASIN.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE DRAINAGE IN HEAVY POORLY DRAINED OR IMPERVIOUS SOILS.
10. PLANTS SHOULD BE SET AT THE PROPER DEPTH WHEREBY THE BEGINNING TAPER OF THE ROOT FLARE IS AT THE SAME ELEVATION AS THE FINISHED SOIL GRADE. THIS SHOULD BE THE SAME DEPTH AS THE PLANTS WERE GROWN AT IN THE NURSERY. NOTE THAT THE ROOTS OF BALLED AND BURLAPPED PLANTS ARE UNACCEPTABLE WHEN THEY ARE COVERED BY MORE THAN 4" OF SOIL IN THE TOP OF THE BALL.
11. DELAY MULCH PLACEMENT IF NECESSARY TO ALLOW MORE TIME FOR EXCESS SOIL MOISTURE TO EVAPORATE FROM PLANTING AREAS BEFORE PLACING MULCH.

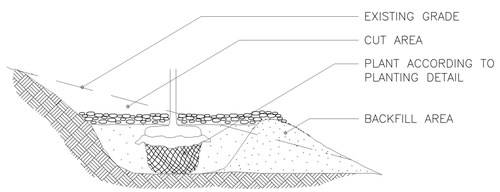
BALLED & BURLAPPED STOCK

1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING AS REQUIRED, REMOVING ANY WINDING OR GIRDING ROOTS.
3. SET PLANT ON UNDISTURBED NATIVE SOIL, OR THOROUGHLY COMPACTED BACKFILL SOIL AT THE SAME DEPTH (IF PROPER) AS IT WAS GROWN IN THE NURSERY.
4. EXPOSE ROOT FLARE AND SET AT GRADE. REMOVE ALL BURLAP AND ROPES FROM TOP ⅓ OF ROOT BALL, CUT WIRE BASKET DOWN TO SECOND HORIZONTAL WIRE FROM THE BOTTOM, AND DISPOSE OF OFF–SITE. CONTRACTOR IS RESPONSIBLE TO MAINTAIN PLUMB POSITION THROUGHOUT THE MAINTENANCE PERIOD. STAKE AS NECESSARY.
5. APPLY WATER TO SETTLE PLANTS AND FILL VOIDS THEN CONSTRUCT 3" DEPTH WATERING BASIN.
6. WATER THOROUGHLY WITHIN 2 HOURS.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.
8. BIODEGRADABLE TWINE MAY BE LEFT ON AS SUPPORT BETWEEN THE ROOT BALL AND ROOT COLLAR UNTIL THE END OF THE PLANT ESTABLISHMENT PERIOD AT WHICH TIME IT MUST BE CUT AND TOTALLY REMOVED FROM THE ROOT COLLAR. THE TWINE MUST BE TIED OR RETIED TO MID–LEVEL LOOPS OR POINTS ON THE BASKET. USE OF NONBIODEGRADABLE TWINE IS PROHIBITED.

CONTAINER STOCK

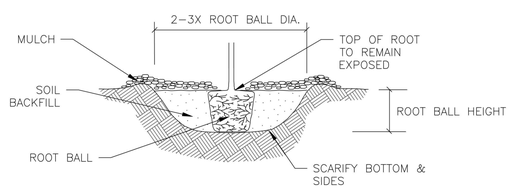
1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING.
3. REMOVE CONTAINER AND SCORE OR PRUNE OUTSIDE OF SOIL MASS TO REDIRECT CIRCLING FIBROUS ROOTS AS NECESSARY.
4. SET PLANT ON UNDISTURBED NATIVE SOIL, OR THOROUGHLY COMPACTED BACKFILL SOIL AT THE SAME DEPTH (IF PROPER) AS IT WAS GROWN IN THE NURSERY.
5. APPLY WATER TO SETTLE PLANTS AND FILL VOIDS THEN CONSTRUCT 3" DEPTH WATERING BASIN.
6. WATER THOROUGHLY WITHIN 2 HOURS.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

Screening trees or shrubs on e



NOTE:
1. EXTENDED EXCAVATION AND BACKFILL SOIL TO A POINT DOWNSLOPE EQUAL TO OR LOWER IN ELEVATION THAN THE BOTTOM OF THE HOLE DIRECTLY BENEATH THE PLANT TO INSURE ADEQUATE DRAINAGE IN HEAVY SOILS. GRANULAR SOIL MUST BE ADDED AS BACKFILL IN AREAS OF POOR DRAINAGE.

FOR STEEP SLOPES



1 ISOLATED TREE PLANTINGS
BALLED & BURLAPPED OR CONTAINER STOCK

CIVIL METHODS, INC.
P.O. Box 28038
St. Paul, MN 55128
o:763.210.5713 | www.civilmethods.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.

DAVID M. POGGI
DATE: 06-11-2024
LIC. NO.: 44573

DESIGNED: DMP
DRAWN: DMP
CHECKED: KEB

DATE / REVISION:
03-18-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
05-04-2024 Preliminary Plat Review Set. NOT FOR CONSTRUCTION
06-11-2024 Revised per City comment. NOT FOR CONSTRUCTION

HAWKINS DRIVE TOWNHOMES
DEAN JOHNSON HOMES
ROGERS, MN

LANDSCAPING

SHEET NO:
C801

Print Date: 6/11/2024 9:25 AM
File Loc: C:\CM\Civil Methods, Inc\CMI - Documents\7 Projects\23028_Rogers Hawkins Townhomes\08_DRAWINGS AND SPECIFICATIONS\C3DSheets\PRELIMINARY\C801_LANDSCAPING.dwg

Alec Henderson

From: Jerome Gooley
Sent: Monday, June 24, 2024 10:33 AM
To: Alec Henderson
Subject: 53 Unit Townhome Development Written Testimony

Hi Alec,

1. Dean Johnson Homes is affiliated with Housing First Minnesota, what information can you share about this organization? Have home builders in Rogers affiliated with this group built in Rogers before?
2. What impact will the additional traffic have on pedestrian safety, especially for children?
3. How much additional traffic is expected on Oakwood Drive?
4. Is Oakwood Drive designed to handle the expected increase in traffic?
5. What measures will the city of Rogers take to mitigate increased noise and speeds on Oakwood Drive?
6. With your experience and education in city planning, how many additional vehicles do you anticipate in a 53-Unit Townhome development?
7. Every major builder in Rogers, M&I, Lennar, etc has a website. Where is the website for Dean Johnson Homes?

I look forward to hearing from you.

Best Regards,

Jerome Gooley
13076 Oakwood Dr, Rogers, MN 5537
763-333-4398

Alec Henderson

From: Alec Henderson
Sent: Monday, June 24, 2024 1:00 PM
To: Jerome Gooley
Cc: Brett Angell
Subject: RE: 53 Unit Townhome Development Written Testimony

Hi Jerome,
See the below responses in red (in your original email). The public hearing for this item will be on July 1st with the Planning Commission. Just an FYI, the development is not proposing to connect to 130th or into oakwood drive. They are using the Hawkins Drive to access 129th as a single access to the development.

Best,

Alec Henderson, AICP
CITY PLANNER

ahenderson@rogersmn.gov
22350 S. Diamond Lake Rd.
Rogers, MN 55374
Office: 763-428-0912

From: Jerome Gooley
Sent: Monday, June 24, 2024 10:33 AM
To: Alec Henderson <ahenderson@rogersmn.gov>
Subject: 53 Unit Townhome Development Written Testimony

Hi Alec,

1. Dean Johnson Homes is affiliated with Housing First Minnesota, what information can you share about this organization? Have home builders in Rogers affiliated with this group built in Rogers before? Housing First Minnesota is basically a lobbying organization. I would assume most builders who build in the Twin Cities are affiliated with this group. Housing First's main focus is to push legislative or city policy in the interest of builders. They also litigate issues in the interest of builders in the twin cities.
2. What impact will the additional traffic have on pedestrian safety, especially for children? They are proposing extending trail along the west side of Hawkins. This is a trail segment at this point without additional connectivity. It is expect that future development will extend the trail connect as development occurs to the northwest.

3. How much additional traffic is expected on Oakwood Drive? There is no direct access to Oakwood Drive. I would not expect traffic to back track through oakwood. The vast majority of traffic would most likely use 129th to get access to 94, or get to Territorial.
4. Is Oakwood Drive designed to handle the expected increase in traffic? No traffic issues related to Oakwood Drive have been identified by our public works department.
5. What measures will the city of Rogers take to mitigate increased noise and speeds on Oakwood Drive? Any noise issues are regulated by noise ordinance.
6. With your experience and education in city planning, how many additional vehicles do you anticipate in a 53-Unit Townhome development? The most accurate assessment is through real count post construction, but using engineers manuals, there may be 8-9 trips a day added to 129th per unit estimated. Really If most owners of possible future townhomes own two cars both would most likely leave and return to commute to work, then make any necessary trips to services or retail or entertainment venues like any other single family home.
7. Every major builder in Rogers, M&I, Lennar, etc has a website. Where is the website for Dean Johnson Homes? I do not know if Dean Johnson has a website. He does have some single family on parade of homes, but he is not a large builder.

I look forward to hearing from you.

Best Regards,

Jerome Gooley
13076 Oakwood Dr, Rogers, MN 5537
763-333-4398

Alec Henderson

From: Jenna Ness
Sent: Monday, June 24, 2024 9:55 PM
To: Alec Henderson
Cc: Erik Ness
Subject: Public Hearing Questions/Testimony for July 1st 2024 (13020 Hawkins Drive)

Dear Alec,

My husband and I received a notice for a request for a variance for the parcel located at 13020 Hawkins Drive, Rogers, MN 55374 with the PID 2212023230001 on Thursday June 20, 2024 which indicated a response in writing was required by June 24, 2024 if we were unable to attend the scheduled meeting you were holding for this on Monday, July 1, 2024. This is not enough time to properly research this and respond. I am emailing you now in hopes that you will still take our comments and thoughts as testimony for the public hearing, as we were given two business days to respond and deliver our testimony to City Hall while working and raising three young children. I would have had to personally drop this off at City Hall to be able to get this in your hands, as mailing this would not get to you by your requested deadline. I am disappointed that this has been handled in this way.

In the information provided to us last week, there was no information provided regarding the type of townhomes to be built on this site or information on the type of townhomes this developer has built in the past – there is no information on his website either. What price range are they going to be valued at? Will they be one story or 3 story? Looking out our windows at 53 units that are 3 stories tall would not be attractive. How will they affect our own property values? **Why would the City of Rogers consider losing a wetlands in order for a developer to profit from and move on to their next project, and leave the homeowners with a lesser valued property?** We purchased our property knowing that the wetlands were there and our original purchase price reflected that type of property. We do not foresee adding townhomes instead of keeping wetlands would improve our community or add to our property value.

As part of the Rogers community, we, as well as the other homeowners affected by this possible variance, purchased our home with the thought that we would raise our families here – investing in Rogers and be a part of this growing family oriented community. It seems Rogers is having an over abundance of townhomes being built right in our own neighborhood. This does not reflect the community we thought we bought into. **Adding an additional 53 townhomes where only a portion of that amount should be allowed without a variance seems unnecessary at this time.**

I would hope that you would not approve this request for a variance the seems to have been rushed though. It is very unlikely that many of the families could attend the meeting on the week of the 4th of July holiday, as they (like us) most likely have put of town that have been made for months. Again, I would have had to personally drop this off at City Hall to be able to get this in your hands, as mailing this would not get to you by your requested deadline. I find this to be an interesting, unfortunate and frustrating way of handling this request with the proposed dates you have offered.

Sincerely,

Jenna and Erik Ness
23815 Aspen Drive, Rogers, MN 55374
612-581-8276 (Jenna), 763-234-4139 (Erik)

Alec Henderson

From: Alec Henderson
Sent: Tuesday, June 25, 2024 1:06 PM
To: Jenna Ness
Cc: Erik Ness; Brett Angell
Subject: RE: Public Hearing Questions/Testimony for July 1st 2024 (13020 Hawkins Drive)
Attachments: Site Plan Pages from 23028_Hawkins Dr Townhomes_Prelim_06-11-2024_22x34 - reduced size.pdf; ROGERS TOWN HOMES 4 Plex 3-21-2024.pdf; Rogers Town Homes Front Elevation wc.jpg; Rogers Town Homes Left Elevation wc (1).jpg; Rogers Town Homes Rear Elevation wc.jpg; Rogers Town Homes Right Elevation wc.jpg

Jenna and Erik,
We will include this letter with the packet. No need for a mailed letter. We will revise the template notice to clarify that emailed letters or comments are completely fine. We appreciate you providing comments.
Couple items: the wetlands are being conserved on site and buffers around the wetlands are being provided. Wetland impacts and stormwater management are reviewed by wetland authorities and the elm creek watershed. In any case, the developer is not proposing to simply fill or remove wetlands since rule one when dealing with wetlands is to avoid, and if there are unavoidable impacts, mitigate the impact. Additionally, no access is proposed to Oakwood Drive or Aspen Drive.

The attached plans show the site plan pages, and information regarding the type of townhome proposed on site. The proposed townhomes are two-story. While we do not have starting prices from the builder/developer, they may be around $300,000 a unit.

The Hawkins property is in a separate R3 – townhome zoning district allowing 5 to 11 units a net acre. The variance is for the site boundary setback on the west side of the property due to the wetlands onsite. No variance is being requested for the type of housing product, use on site or density. Regardless of which developer/builder develops this site, there would be considerable challenges due to the wetlands on site. The developer proposes a gross density of 5 units/acre and net density of 7 units/acre (which excludes the nearly 2.5 acres of wetlands and right of way of 129th from the calculation). If a developer were to request to fill the wetlands on this site (which is a near zero percent chance of happening) the development would certainly be at a density much closer to the maximum 11 units an acre (which would be nearly double the units).

This property was guided for medium density development and zoned R3 during the update of the comp plan 4 years ago and we have to respond to all development applications and follow legal and development procedure as prescribed by State Statute, at a density/layout that meets the requirement our own plans/code and the overall plans of the Met Council when in a sewered area. So in this case the Commission/Council are basically responding to these questions: Does the proposed development meet the intent of the townhome district? Are they meeting the performance standards of the district (eg impervious surface, setbacks, etc)? And if they are requesting a variance (eg. the west site boundary setback variance), what are the difficulties on site that prevent them from meeting the setback?

Regarding timing, when we receive an application for development we have to review it in the time limit imposed by the State of Minnesota. We have 120 days (regardless of holidays) to act on any preliminary subdivision application. Any non-action or delayed action unfortunately, without voluntary waivers granted by the applicant, would see automatic approval of the application after 120 days. The reason for getting this on the July schedule is to ensure that if there are any delays or tabling for additional information from the Planning Commission or Council we have adequate time to ensure this item has official action (either approval or denial) by the end of August (which is basically the drop dead date due to regular meeting schedules).

Please let me know if you have additional questions.
Best,

Alec Henderson, AICP
CITY PLANNER

ahenderson@rogersmn.gov
22350 S. Diamond Lake Rd.
Rogers, MN 55374
Office: 763-428-0912

From: Jenna Ness
Sent: Monday, June 24, 2024 9:55 PM
To: Alec Henderson <ahenderson@rogersmn.gov>
Cc: Erik Ness
Subject: Public Hearing Questions/Testimony for July 1st 2024 (13020 Hawkins Drive)

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property knowing that the wetlands were there and our original purchase price reflected that type of property. We do not foresee adding townhomes instead of keeping wetlands would improve our community or add to our property value.

As part of the Rogers community, we, as well as the other homeowners affected by this possible variance, purchased our home with the thought that we would raise our families here – investing in Rogers and be a part of this growing family oriented community. It seems Rogers is having an over abundance of townhomes being built right in our own neighborhood. This does not reflect the community we thought we bought into. **Adding an additional 53 townhomes where only a portion of that amount should be allowed without a variance seems unnecessary at this time.**

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Sincerely,

Jenna and Erik Ness
23815 Aspen Drive, Rogers, MN 55374
612-581-8276 (Jenna), 763-234-4139 (Erik)

Alec Henderson

From: Steve Rosemeier
Sent: Tuesday, June 18, 2024 2:31 PM
To: Alec Henderson
Subject: Public Hearing - Hawkins Drive

Hi Alec,

I am emailing you about the 53-unit townhome development on Hawkins Road. A couple of questions and concerns. We will not be able to make the public hearing sense we will be out of town.

1. Are 53 townhomes really going to fit on the property? Condo's sure no problem but 53 townhomes that seems like a lot. Is the farmer going to sell/lose some land? Even filling in Hawkins Road how would 53 units fit without effecting the water flow and flooding. With R3, Mid-Density Zoning isn't it off the buildable area not the whole lot size? So with 4 acres that is buildable that would be 44 townhomes, which is so small. Why not condos?
2. Watershed displacement. With the huge water issue/flooding change that Rogers has seen the last few years how is the water displacement going to be handled? Is it going to flow down to Aspen to 133rd and so on to fill the ponds even more? Not sure if they can handle anymore. Even with leaving the wetlands in place there is still going to be water displacement. Look at 2385 129th Ave the water is close to running over the driveway, on both sides, this was happening last year when we had no rain. Even my house with our lawn, 13137 Curry Court is now completely covered in water. Its an overflow from the ponds but its constantly had water in it for the last 2 year, not like the original survey and plans state. Where is all the water going to go? Did the MN Board of Soil and Resources have input? The DNR? Need a fair amount of clarification on this.
3. What is going to happen to the rest of Hawkins Drive. From Aspen to 133rd? Is it going to sit as a muddy trail and dog shit collecting road it has been for the last 20 years? Or is something finally going to be done with it? An actual trail? Road? Given back to the original owners? Clarification on this would also be nice?
4. Entrance and exits from the new development. Just one access point on 129th Or is the plan to run 53 townhomes of traffic down residential streets and through people yards?
5. Maybe all a moot point if the city cleaned the watershed ponds and redid some of the roads. The ponds are full of trees and vegetation and yards are full of water. Maybe cleaning those out might help with the water problem.

I understand that building new homes is a natural progression of a cities growth and it will happen no matter what, just like the townhomes will be built no matter what happens at this meeting. But, 53 townhomes? Why not 53 condos? Condos would look better than 53 town homes. What is the city going to about the water problem that it is creating?

Does the city have no say on how many house can go on the property? Why not 25?

Thanks
Steve Rosemeier

952-201-3913

Alec Henderson

From: Alec Henderson
Sent: Tuesday, June 18, 2024 3:23 PM
To: Steve Rosemeier
Cc: Brett Angell; Mike Albers; Andrew Simmons (asimmons@rogersmn.gov)
Subject: RE: Public Hearing - Hawkins Drive
Attachments: 23028_Hawkins Dr Townhomes_Prelim_06-11-2024_22x34 - reduced size.pdf

Hi Steve,
Thank you for your interest in the Hawkins Drive development. I will respond the questions in red. Please see the most recent attached plan set currently under review by our departments. All stormwater is being treated on site and is being reviewed by the watershed authority for regional stormwater requirements.

1. Are 53 townhomes really going to fit on the property? Condo's sure no problem but 53 townhomes that seems like a lot. Is the farmer going to sell/lose some land? Even filling in Hawkins Road how would 53 units fit without effecting the water flow and flooding. With R3, Mid-Density Zoning isn't it off the buildable area not the whole lot size? So with 4 acres that is buildable that would be 44 townhomes, which is so small. Why not condos? Townhome style housing units are permitted in the R3 – mid density district. While condos or multi-family style housing may have the ability to meet general density requirements, they are not a permitted use in the R3 district. The developer would have had to request a land use amendment and rezoning. All developments are required to treat stormwater onsite and meet regional stormwater requirements on site (basically control run off rates to not be more post development as they are today as well as treat stormwater quality). The only parcel involved in the development is the Hawkins drive parcel. Density wise, they are sitting at 5.2 units/acre (taking into account all the acreage) and a net density of 7.3 units/acre excluding wetlands. R3 allows between 5 and 11 units/net acre (excludes the wetlands on site).
2. Watershed displacement. With the huge water issue/flooding change that Rogers has seen the last few years how is the water displacement going to be handled? Is it going to flow down to Aspen to 133rd and so on to fill the ponds even more? Not sure if they can handle anymore. Even with leaving the wetlands in place there is still going to be water displacement. Look at 2385 129th Ave the water is close to running over the driveway, on both sides, this was happening last year when we had no rain. Even my house with our lawn, 13137 Curry Court is now completely covered in water. Its an overflow from the ponds but its constantly had water in it for the last 2 year, not like the original survey and plans state. Where is all the water going to go? Did the MN Board of Soil and Resources have input? The DNR? Need a fair amount of clarification on this. DNR is not a reviewer on these plats. The Elm Creek watershed is the stormwater authority and manages the rule book for stormwater requirements in this watershed. Please have a conversation with our engineers to learn more about what is generally required and for specific questions on this particular development (I have cc'd Mike and Andrew from public works). Basically the requirements is to control runoff so it does not exceed current rates/quality pre-development vs post-development.
3. What is going to happen to the rest of Hawkins Drive. From Aspen to 133rd? Is it going to sit as a muddy trail and dog shit collecting road it has been for the last 20 years? Or is something finally going to be done with it? An actual trail? Road? Given back to the original owners? Clarification on this would also be nice? The east half of Hawkins was vacated a number of years ago. There is a trail shown on the city trail plan to ultimately make its way to Edgewater parkway. That would be constructed as land to the NW develops over time.
4. Entrance and exits from the new development. Just one access point on 129th Or is the plan to run 53 townhomes of traffic down residential streets and through people yards? They are showing a single access point to 129th. They had issues trying to get a connection to other local streets due to the wetland complexes. All buildings will be required to have fire suppression.
5. Maybe all a moot point if the city cleaned the watershed ponds and redid some of the roads. The ponds are full of trees and vegetation and yards are full of water. Maybe cleaning those out might help with the water

problem. Ponds maintenance is an area for public works. Mike and Andrew would have additional information on current and planned maintenance of stormwater infrastructure in this area.

Thank you,
Alec

Alec Henderson, AICP
CITY PLANNER

ahenderson@rogersmn.gov
22350 S. Diamond Lake Rd.
Rogers, MN 55374
Office: 763-428-0912

From: Steve Rosemeier
Sent: Tuesday, June 18, 2024 2:31 PM
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Does the city have no say on how many house can go on the property? Why not 25?

Thanks
Steve Rosemeier
952-201-3913

Dean Johnson Homes

4700 County Road 19
Medina, MN 55357
763-479-4820

City of Rogers

Planning Commission

RE: Hawkins Place Variance July 1, 2024

To whom it May Concern,

We have been working with the City of Rogers to seek approval of a row home townhome project at 13020 Hawkins Drive, called Hawkins Place/Hawkins Drive Townhomes. The site has provided some practical difficulty because it has over 25% wetlands to consider. Because of the wetlands this is causing us some financial difficulty as well, which has reduced the units from 60 units to 53 units. Because of these difficulties, we requested a variance to accommodate the current site plan of 53 units.

Last week we received a letter from the City Planner with our site plan marked with a number of additional variance issues. This letter is our effort to explain our position on the situation and submit our request for approval. We would like alter our variance request so we can get the Planning Commission approval and forward this on to City Counsel.

There are three side yard setback concerns on the units that abut the Eastern property line. We believe we can solve these set back issues without a variance. We would make these changes to the site plan.

The City has also requested that we label the common areas as outlots, instead of Lot 54. We can have that resolved as well.

The townhomes on Lot 52 and 53 have been marked as having front and side yard setback infractions. We designed these units to have the same 25’ driveway as the rest of the development, but because they are on the inside of a curve, the corners on the front of the units are closer. If we move these

two units to remedy the side yard and front yard setbacks, it would increase the encroachment into the wetlands and we intentionally did not do this to limit that concern. We would prefer not to encroach any further into the wetlands, and would like to leave these units as is.

The units on the public street in the building labeled 4-11, were marked as having side yard setback variances. The public street was originally designed with a hammerhead turn around, but the City decided they wanted a cul de sac turnaround at the end of the road. Rather than losing another 2 units, we chose to reduce the side yard setbacks in some areas. We would prefer to leave this layout in place.

The side yards between 44 and 46, at the end of 38, and between 31 and 32 were reduced in an effort to keep more units to keep the project from financial difficulty. In order to meet the ordinance we would lose at least two units or more. We would appreciate keeping these units as placed on the site plan.

We feel that we have platted this for the proper product for the neighborhood, and maximized the buildable space, while preserving the wetlands and providing proper storm retention to protect the wetlands.

We would like to amend the site plat to incorporate the fixes that we have suggested but we also need to amend the variance request to include the side yard variances that become necessary in the areas that we have stated that we do not wish to change. If this is acceptable we will amend the plan for the upcoming City Counsel meeting.

Respectfully Submitted,

Dean Johnson

Dean Johnson Homes

763-242-7301

Meeting Date: July 1, 2024

REQUEST FOR ACTION
ROGERS PLANNING COMMISSION

Agenda Item: No. 5.2

Subject: Application by the City for Preliminary and Final Plat for Rogers CR81 Addition

Prepared By: Jesus Cazares-Reyes, Community Development Intern

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Recommended Planning Commission Action

Motion to open the public hearing to take public comment on the proposed Rogers CR81 plat.

Motion to close the public hearing.

Motion to recommend approval of the Preliminary Plat and the Final Plat of Rogers CR81 Addition with conditions.

Overview / Background

The City of Rogers has submitted a Zoning and Land Use application, requesting the approval of the Replat of County Road 81 with the PID 23-120-23-41-0002 (Southwest of County Road No. 81), 23-120-23-41-0006 (Southwest and Northeast of County Road No. 81 and South of Church Avenue), 24-120-23-32-0015 (Northeast of County Road No. 81 and South of I-94), and 24-120-23-33-0006 (East of County Road No. 81). The proposed plat divides the property into four parcels, 2 lots (1 lot, block 1 and 1 lot, block 2) and two outlots. No development is being proposed at this time. Staff is recommending approval of the application.

Primary Issues to Consider

1. Land Use & Zoning
2. Preliminary & Final Plats

Analysis of Primary Issues

1. Land Use & Zoning

The Subject Property, a 46-acre site, has several guidance's: as **Downtown** and **General Industrial**, per the City of Rogers Zoning Map and Land Use Plan.

The corresponding zoning for the property is both DT – Downtown (property South of 81) and GI, General Industrial (property North of 81).

No development is currently proposed. Due to the high presence of wetland in the area, future developments will need to provide wetland buffers. The upland on Lot 1 is the area most clear of wetlands and can support limited development (South of Church Ave and Miller Chevrolet). The intent of the plat is to prepare the real estate sell.

Land Use and Zoning conditions are satisfied for use of the property.

2. Preliminary & Final Plats

The Applicant is proposing to replat the 46 acre of land around County Road No. 81. The replat proposes two lots: Lot 1, Block 1 and Lot 1, Block 2 and 2 outlots. Outlots are typically platted when either development is not yet proposed or known (meaning future development plans will be needed), or for other uses such as stormwater, floodplain mitigation and conservation of natural resources such as wetlands or woodlands. The reason for this plat is to prepare for future sale of the land. Outlot A is 13.94 acres and will be retained to conserve the existing wetlands. Outot B is 9.75 acres and is partially wetland but may have the opportunity to be partially developed in the future.

Lot 1, Block 1 is zoned GI and meets the minimum lot size of 20,000 square feet and is approximately 91,000 square feet (2.1 acres) and is primarily an upland area which can be developed. Lot 1, Block 2 is zoned DT approximately 587,000 square feet (13.49 acres) and meets the minimum standards for the DT district. Lot 1, Block 2 is a city well site that has the cities pumphouse and is primarily wetland and contains an antenna tower.

The Preliminary Plat satisfies City requirements for platting.

Platting conditions are satisfied.

Staff Recommendation
Planning Commission action is to hold a public hearing, and review and recommend approval/denial of the Preliminary Plat; the City Council reviews and approves Final Plats.

City staff recommends approval of the Preliminary Plat and the Final Plat of County Road No. 81 with the following conditions:

1. The preliminary plat and final plat shall meet the requirements of the City Engineers, and City Planner reviews and subsequent reviews of any revised preliminary plat and final plat to the satisfaction of the City.
2. Title work for the Plat shall be provided to and conform to any requirements resulting from City Staff and the City Attorney's review of the title work and plat opinion.
3. Future development plans and preliminary plat review may be necessary prior to any redevelopment of Outlot A and B.
4. Subject to the review and comments by Hennepin County and the Minnesota Department of Transportation.

A draft resolution has been provided with the same conditions.

ATTACHMENTS:

Description

Resolution 2024-61
Aerial of Property
Existing Conditions Survey
Preliminary Plat
Final Plat

RESOLUTION NO. 2024 - 61

A RESOLUTION GRANTING APPROVAL OF THE PRELIMINARY AND FINAL PLAT FOR ROGERS CR81 ADDITION

WHEREAS, the City of Rogers (Applicant) submitted an application to the City of Rogers ("City") requesting approval of a Preliminary Plat and Final Plat for Rogers CR81 Addition ("Plat") for the parcel at with the PID 23-120-23-41-0002, 23-120-23-41-0006, 24-120-23-32-0015, and 24-120-23-33-0006 and legally described on Exhibit A (the "Subject Property/Property"); and,

WHEREAS, the Applicant is proposing to subdivide the subject property four parcels compromised of two (2) outlots and two (2) lots as shown in Exhibit B; and,

WHEREAS, the Subject Property contains approximately 46 acres is guided both Downtown DT and GI, General Industrial; and

WHEREAS, the proposed Preliminary Plat and Final Plat are consistent with 2040 Comprehensive Plan and current zoning regulations for the City; and

WHEREAS, pursuant to Minnesota Statute §462.357 the Planning Commission ("Commission") conducted a public hearing to receive public comment on the proposed Plat on July 1st, 2024; and

WHEREAS, notice of the Hearing was posted, published in the City's official newspaper, and mailed to any and all owners of affected properties, as required by State Statute; and,

WHEREAS, written and verbal comment were received and considered by the Commission; and,

WHEREAS, following the Hearing, the Commission recommended approval of the Rogers CR81 Addition Preliminary Plat and Final Plat.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, that the Preliminary Plat and Final Plat for Rogers County Road No. 81 is hereby approved subject to the following conditions:

1. The preliminary plat and final plat shall meet the requirements of the City Engineers, and City Planner reviews and subsequent reviews of any revised preliminary plat and final plat to the satisfaction of the City.
2. Title work for the Plat shall be provided to and conform to any requirements resulting from City Staff and the City Attorney's review of the title work and plat opinion.
3. Future development plans and preliminary plat review may be necessary prior to any redevelopment of Outlot A and B.
4. Subject to the review and comments by Hennepin County and the Minnesota Department of Transportation.

Moved by Councilmember , seconded by Councilmember

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the Clerk dated this 23rd day of July, 2024.

_____
Rick Ihli, Mayor

ATTEST:

_____
Stacie Brown, City Clerk

EXHIBIT A

LEGAL DESCRIPTION

Existing Legal Description

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

AND

The Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 except highways and roads of record as of the date hereof and except that part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 described as follows:

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

AND

That part of the Southwest Quarter of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying northeasterly of the centerline of County Road No. 81 and lying northwesterly of a line bearing South 50 degrees, 16 minutes 41 seconds West from a point of the north line of said Southwest Quarter of the Southwest Quarter distance 346.08 feet easterly along said north line from the northwest corner of said Southwest Quarter of the Southwest Quarter (for the purpose of this description the north line of said Southwest

Quarter of the Southwest Quarter being assumed to bear South 88 degrees, 53 minutes, 10 seconds East).
AND
That part of the North Half of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying southwesterly of the southwesterly line of Interstate Highway No. 94, except that part thereof lying southeasterly of a line bearing North 50 degrees, 16 minutes, 41 seconds East from a point on the south line of the Northwest Quarter of the Southwest Quarter of said Section, distant 346.08 feet easterly along said south line from the southwest corner of said Northwest Quarter of the southwest Quarter.

Proposed Legal Description

Lot 1, Block 1, Rogers CR81 Addition, Hennepin County, Minnesota

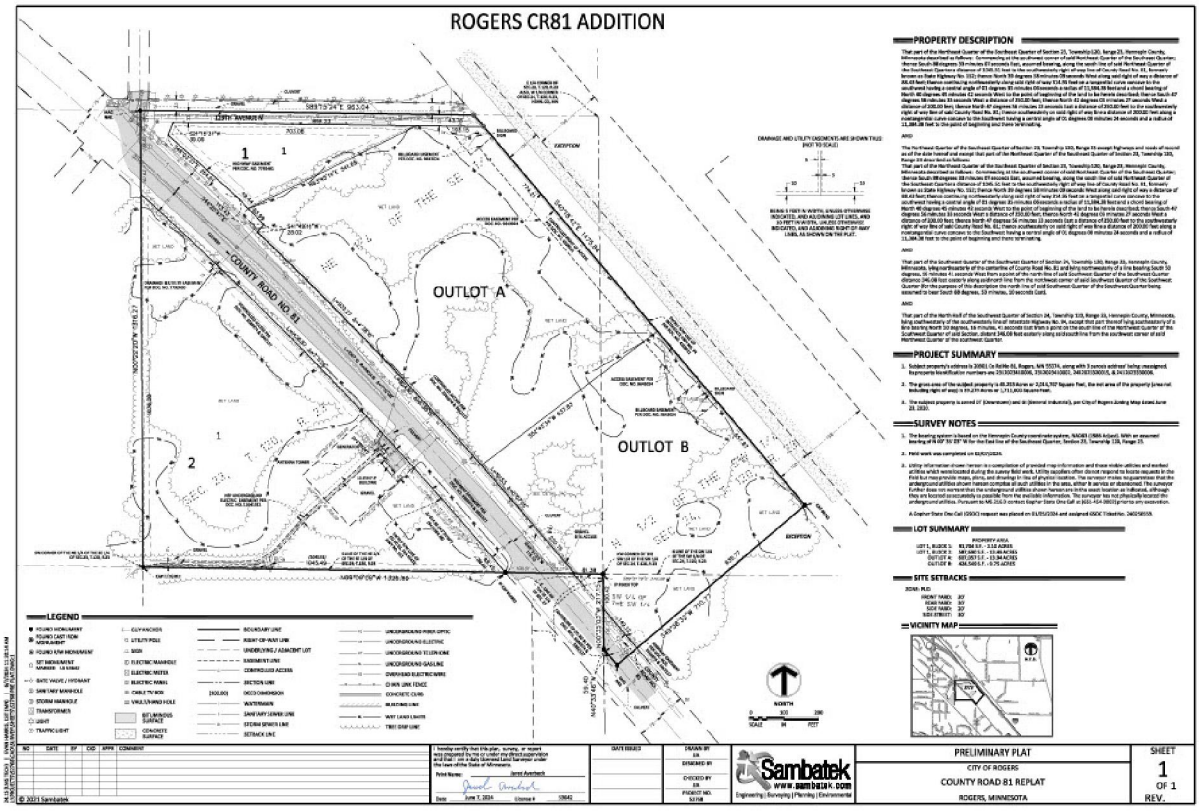
Lot 1, Block 2, Rogers CR81 Addition, Hennepin County, Minnesota

Outlot A, Rogers CR81 Addition, Hennepin County, Minnesota

Outlot B, Rogers CR81 Addition, Hennepin County, Minnesota

EXHIBIT B

PRELININARY PLAT AND FINAL PLAT



ROGERS CR81 ADDITION

C.R. DOC. NO. _____

KNOW ALL PERSONS BY THESE PRESENTS: That The City of Rogers, a Minnesota municipal corporation, fee owner of the following described property:

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 27 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1040.16 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 26 degrees 38 minutes 08 seconds West along said right of way a distance of 808.69 feet; thence continuing northwesterly along said right of way 814.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 55 minutes 30 seconds a radius of 15,204.38 feet and a chord bearing of North 45 degrees 45 minutes 43 seconds West to the point of beginning of the land to be herein described; thence South 41 degrees 16 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 35 minutes 27 seconds West a distance of 200.00 feet; thence North 41 degrees 55 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the southwest having a central angle of 01 degrees 08 minutes 24 seconds and a radius of 15,204.38 feet to the point of beginning and there terminating.

AND

The Northwest Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 except Highways and roads of record as of the date hereof and except that part of the Northwest Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 described as follows:

That part of the Northwest Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northwest Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 27 seconds East, assumed bearing, along the south line of said Northwest Quarter of the Southeast Quarter a distance of 1040.16 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 58.45 feet; thence continuing northwesterly along said right of way 334.26 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,584.56 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 31 seconds West a distance of 150.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 202.82 feet; thence North 47 degrees 56 minutes 31 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the southwest having a central angle of 01 degrees 08 minutes 24 seconds and a radius of 11,584.56 feet to the point of beginning and there terminating.

AND

That part of the Southwest Quarter of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying northeasterly of the centerline of County Road No. 81 and lying northwesterly of a line bearing South 30 degrees, 56 minutes 41 seconds West from a point of the north line of said Southwest Quarter of the Southwest Quarter distance 648.28 feet easterly along said north line from the northwest corner of said Southwest Quarter of the Southwest Quarter (for the purpose of this description the north line of said Southwest Quarter of the Southwest Quarter being assumed to bear South 88 degrees, 55 minutes, 50 seconds East).

AND

That part of the North Half of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying southwesterly of the southeasterly line of Minnesota Highway No. 94, except that part thereof lying southeasterly of a line bearing North 56 degrees, 35 minutes, 41 seconds East from a point on the south line of the Northwest Quarter of the Southwest Quarter of said Section, distant 346.08 feet easterly along said south line from the southwest corner of said Northwest Quarter of the Southwest Quarter.

Has caused the same to be surveyed and platted as ROGERS CR81 ADDITION, and does hereby dedicate to the public for the public way and the drainage and utility easements created by this plat.

In witness whereof said City of Rogers, a Minnesota municipal corporation, has caused these presents to be signed by its proper officer this _____ day of _____, 20____.

The City of Rogers

By: _____, Its Mayor
Rick Bil

STATE OF MINNESOTA
COUNTY OF HENNEPIN

This instrument was acknowledged before me on this _____ day of _____, 20____ by Rick Bil as Mayor , for The City of Rogers, a Minnesota municipal corporation, on behalf of the municipality.

_____
Notary Public, _____ County, Minnesota
My Commission Expires _____

_____
Notary Printed Name

Jared Averbeck do hereby certify that this plat was prepared by me or under my direct supervision; that I am a duly Licensed Land Surveyor in the State of Minnesota; that this plat is a correct representation of the boundary survey; that all mathematical data and labels are correctly designated on this plat; that all monuments depicted on this plat have been, or will be correctly set within one year; that all water boundaries and wet lands, as defined in Minnesota Statutes, Section 505.02, Subd. 8, as of the date of this certificate are shown and labeled on this plat; and all public ways are shown and labeled on this plat.

Dated this _____ day of _____, 20____.

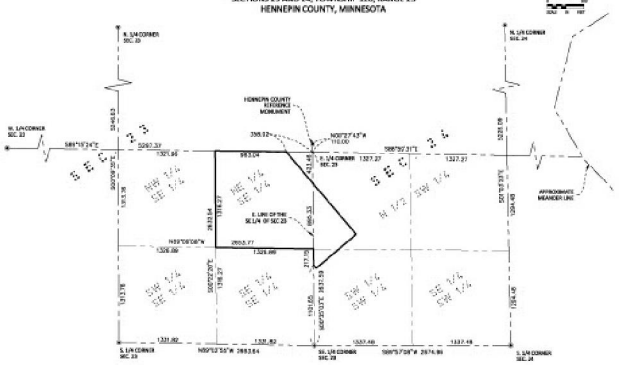
_____
Jared Averbeck, Licensed Land Surveyor,
Minnesota License No. 53482

STATE OF MINNESOTA
COUNTY OF HENNEPIN
This instrument was acknowledged before me this _____ day of _____, 20____, by Jared Averbeck.

_____
Notary Public, _____ County, Minnesota
My Commission Expires _____

_____
Notary Printed Name

SECTION BREAKDOWN
SECTIONS 23 AND 24, TOWNSHIP 120, RANGE 23
HENNEPIN COUNTY, MINNESOTA



Hennepin County Geo Net Monument

The bearing system is based on the Hennepin County coordinate system, NAD83 (1996 adjust), with an assumed bearing of N 00° 08' 08" W for the East line of the Southeast Quarter, Section 23, Township 120, Range 23.

CITY COUNCIL, CITY OF ROGERS, MINNESOTA

This plat of ROGERS CR81 ADDITION was approved and accepted by the City Council of the City of Rogers, Minnesota at a regular meeting thereof held this _____ day of _____, 20____, and said plat is in compliance with the provisions of Minnesota Statutes, Section 505.03, Subd. 2.

City Council, City of Rogers, Minnesota

By: _____ Mayor By: _____ Clerk
Rick Bil Stacie Brown

COUNTY AUDITOR, Hennepin County, Minnesota

I hereby certify that taxes payable in 20____ and prior years have been paid for land described on this plat, dated this _____ day of _____, 20____.

Daniel Rogan, County Auditor By: _____, Deputy

SURVEY DIVISION, Hennepin County, Minnesota

Pursuant to Minnesota Statutes Section 383B.565 (1969), this plat has been approved this _____ day of _____, 20____.

Chris F. Mavis, County Surveyor By: _____

COUNTY RECORDER, Hennepin County, Minnesota

I hereby certify that the within plat of ROGERS CR81 ADDITION was recorded in this office this _____ day of _____, 20____, at _____ o'clock ___ M.

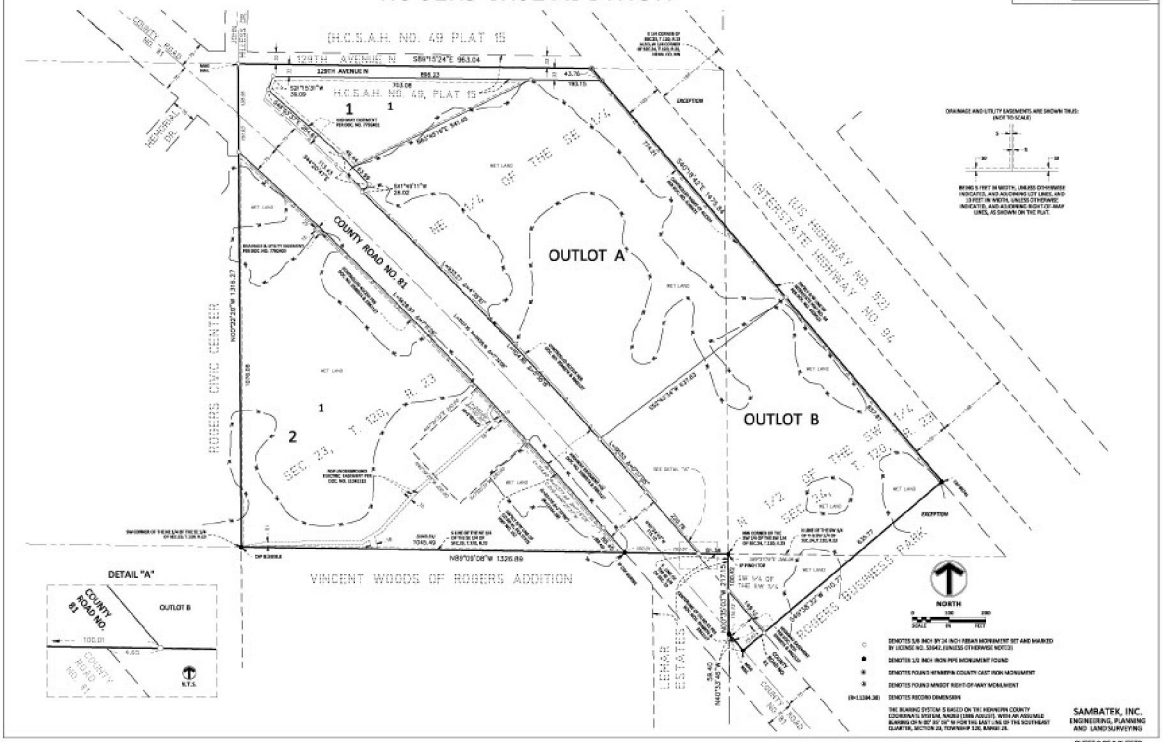
Amber Dougherty, County Recorder By: _____, Deputy

SAMBATEK, INC.
ENGINEERING, PLANNING
AND LAND SURVEYING

SHEET 1 OF 2 SHEETS

ROGERS CR81 ADDITION

C.R. DOC. NO. _____



DENOTES 5/8 INCH BY 24 INCH REBAR MONUMENT SET AND MARKED BY LICENSE NO. 53482, (UNLESS OTHERWISE NOTED)

DENOTES 1/2 INCH IRON PIPE MONUMENT FOUND

DENOTES FOUND HENNEPIN COUNTY CAST IRON MONUMENT

DENOTES FOUND MNDOT RIGHT-OF-WAY MONUMENT

(N=1334.38) DENOTES RECORD DIMENSION

THE BEARING SYSTEM IS BASED ON THE HENNEPIN COUNTY COORDINATE SYSTEM, NAD83 (1996 ADJUST), WITH AN ASSUMED BEARING ON N 00° 08' 08" W FOR THE EAST LINE OF THE SOUTHEAST QUARTER, SECTION 23, TOWNSHIP 120, RANGE 23.

SAMBATEK, INC.
ENGINEERING, PLANNING
AND LAND SURVEYING

SHEET 2 OF 2 SHEETS

Hennepin County Natural Resources Map

Date: 6/27/2024

Legend

Aerial imagery flown 2021

Text

Comments:

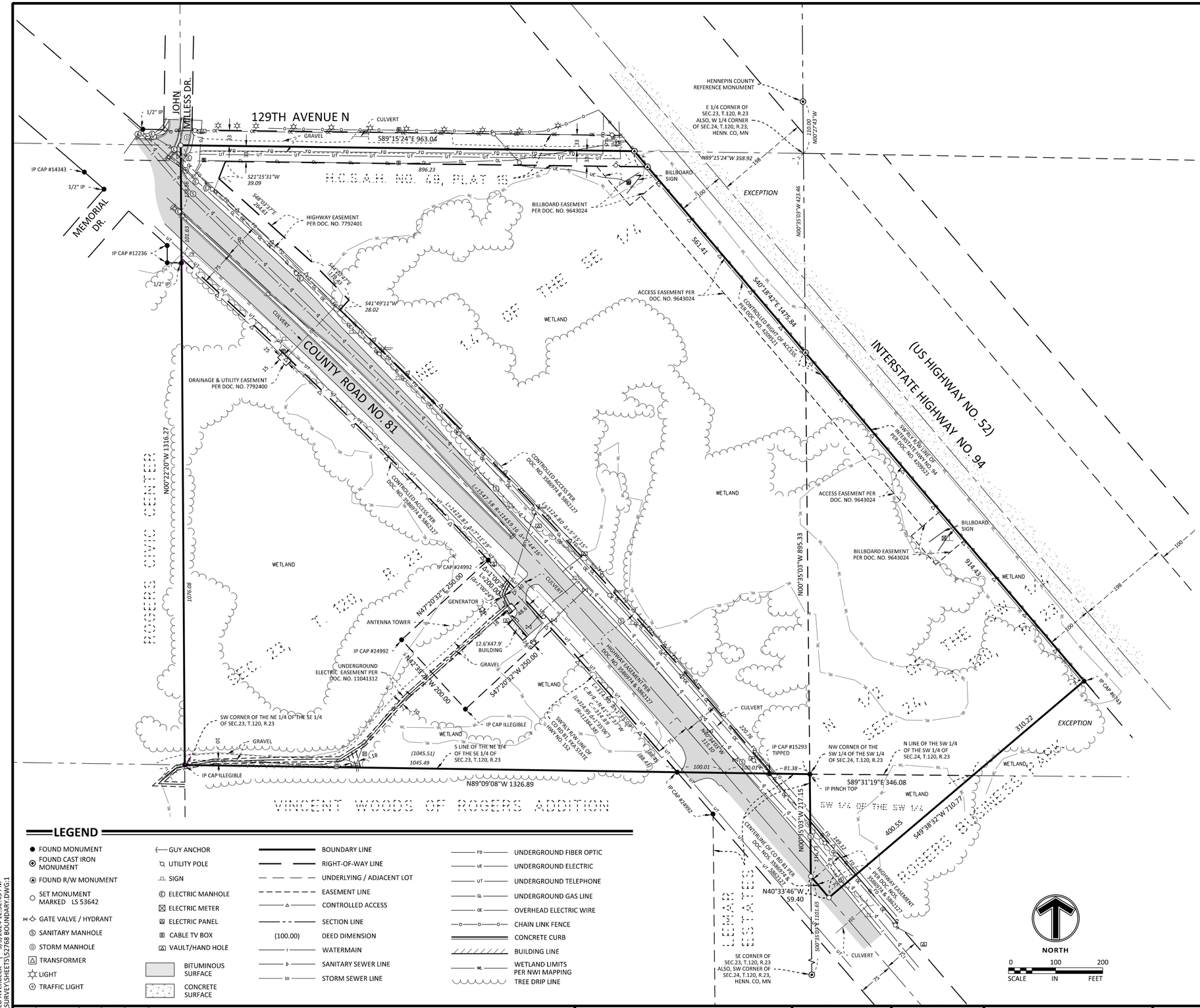
Text

1:4,800

N

This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

COPYRIGHT © HENNEPIN COUNTY 2024



LEGEND

- FOUND MONUMENT
- FOUND CAST IRON MONUMENT
- FOUND R/W MONUMENT
- SET MONUMENT MARKED LS 53642
- GATE VALVE / HYDRANT
- SANITARY MANHOLE
- STORM MANHOLE
- TRANSFORMER
- LIGHT
- TRAFFIC LIGHT
- GUY ANCHOR
- UTILITY POLE
- SIGN
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PANEL
- CABLE TV BOX
- VAULT/HAND HOLE
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- UNDERLYING / ADJACENT LOT
- EASEMENT LINE
- CONTROLLED ACCESS
- SECTION LINE
- (100.00) DEED DIMENSION
- WATERMAIN
- SANITARY SEWER LINE
- STORM SEWER LINE
- UNDERGROUND FIBER OPTIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND GAS LINE
- OVERHEAD ELECTRIC WIRE
- CHAIN LINK FENCE
- CONCRETE CURB
- BUILDING LINE
- WETLAND LIMITS PER NWI MAPPING
- TREE DRIP LINE

PROPERTY DESCRIPTION

Description from Title Commitment No. 67888 by Guaranty Commercial Title, Inc as issuing agent for Old Republic National Title Insurance Company , bearing a commitment date of 02/04/2024:

Land conveyed by Warranty Deed Document No. 7035750:

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

(Abstract Property)

Land conveyed by Warranty Deed Document No. 9627843:

Parcel 1:

The Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 except highways and roads of record as of the date hereof and except that part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 described as follows:
That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

(Abstract Property)

Parcel 2:

That part of the Southwest Quarter of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying northeasterly of the centerline of County Road No. 81 and lying northwesterly of a line bearing South 50 degrees, 16 minutes 41 seconds West from a point of the north line of said Southwest Quarter of the Southwest Quarter distance 346.08 feet easterly along said north line from the northwest corner of said Southwest Quarter of the Southwest Quarter (for the purpose of this description the north line of said Southwest Quarter of the Southwest Quarter being assumed to bear South 88 degrees, 53 minutes, 10 seconds East).

(Abstract Property)

Land conveyed by Warranty Deed Document No. 9643023:

That part of the North Half of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying southwesterly of the southwesterly line of Interstate Highway No. 94, except that part thereof lying southeasterly of a line bearing North 50 degrees, 16 minutes, 41 seconds East from a point on the south line of the Northwest Quarter of the Southwest Quarter of said Section, distant 346.08 feet easterly along said south line from the southwest corner of said Northwest Quarter of the southwest Quarter.

(Abstract Property)

PROJECT SUMMARY

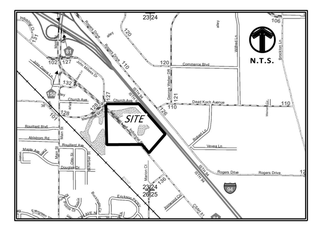
1. Subject property's address is 20901 Co Rd No 81, Rogers, MN 55374, along with 3 parcels address' being unassigned, its property identification numbers are 2312023410006, 2312023410002, 2412023320015, & 2412023330006.
2. The gross area of the subject property is 46.253 Acres or 2,014,767 Square Feet.
3. The subject property is zoned DT (Downtown) and GI (General Industrial), per City of Rogers Zoning Map dated June 23, 2020.

SURVEY NOTES

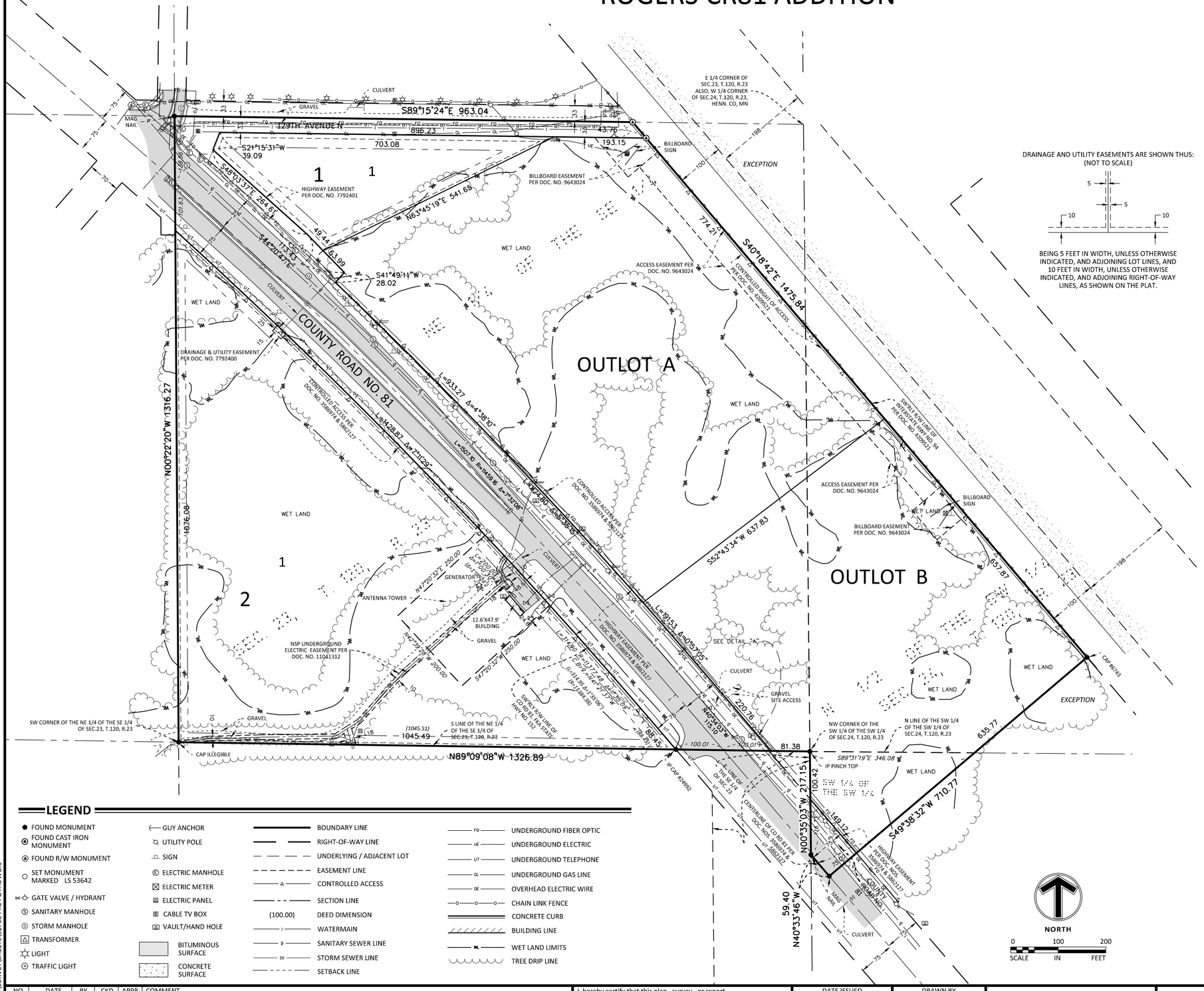
1. The bearing system is based on the Hennepin County coordinate system, NAD83 (1986 Adjust). With an assumed bearing of N 00° 35' 03" W for the East line of the Southeast Quarter, Section 23, Township 120, Range 23.
2. Field work was completed on 02/07/2024.
3. Utility information shown hereon is a compilation of provided map information and those visible utilities and marked utilities which were located during the survey field work. Utility suppliers often do not respond to locate requests in the field but may provide maps, plans, and drawings in lieu of physical location. The surveyor makes no guarantees that the underground utilities shown hereon comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown hereon are in the exact location as indicated, although they are located as accurately as possible from the available information. The surveyor has not physically located the underground utilities. Pursuant to MS 216.D contact Gopher State One Call at (651-454-0002) prior to any excavation.

   A Gopher State One Call (GSOC) request was placed on 01/25/2024 and assigned GSOC Ticket No. 240250559.

VICINITY MAP


SITE
N.T.S.
Coon Creek Blvd
Commerce Blvd
Rogers Drive
Main St
Jason Ave
Hemlock Ln
Wedgewood Ln
Jonquil Ln
Jonquil Pkwy
Jonquil Cir
Jonquil Ct
Jonquil Trail
Jonquil Terrace
Jonquil Way
Jonquil Lane
Jonquil Place
Jonquil Court
Jonquil Circle
Jonquil Avenue
Jonquil Drive
Jonquil Boulevard
Jonquil Parkway
Jonquil Street
Jonquil Road
Jonquil Alley
Jonquil Path

ROGERS CR81 ADDITION



DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS: (NOT TO SCALE)

BEING 5 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING LOT LINES, AND 10 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING RIGHT-OF-WAY LINES, AS SHOWN ON THE PLAT.

PROPERTY DESCRIPTION

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

AND

The Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 except highways and roads of record as of the date hereof and except that part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 described as follows:
That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

AND

That part of the Southwest Quarter of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying northeasterly of the centerline of County Road No. 81 and lying northwesterly of a line bearing South 50 degrees, 16 minutes 41 seconds West from a point of the north line of said Southwest Quarter of the Southwest Quarter distance 346.08 feet easterly along said north line from the northwest corner of said Southwest Quarter of the Southwest Quarter (for the purpose of this description the north line of said Southwest Quarter of the Southwest Quarter being assumed to bear South 88 degrees, 53 minutes, 10 seconds East).

AND

That part of the North Half of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying southwesterly of the southwesterly line of Interstate Highway No. 94, except that part thereof lying southeasterly of a line bearing North 50 degrees, 16 minutes, 41 seconds East from a point on the south line of the Northwest Quarter of the Southwest Quarter of said Section, distant 346.08 feet easterly along said south line from the southwest corner of said Northwest Quarter of the southwest Quarter.

PROJECT SUMMARY

1. Subject property's address is 20901 Co Rd No 81, Rogers, MN 55374, along with 3 parcels address' being unassigned, its property identification numbers are 2312023410006, 2312023410002, 2412023320015, & 2412023330006.
2. The gross area of the subject property is 46.253 Acres or 2,014,767 Square Feet, the net area of the property (area not including right of way) is 39.279 Acres or 1,711,000 Square Feet.
3. The subject property is zoned DT (Downtown) and GI (General Industrial), per City of Rogers Zoning Map dated June 23, 2020.

SURVEY NOTES

1. The bearing system is based on the Hennepin County coordinate system, NAD83 (1986 Adjust). With an assumed bearing of N 00° 35' 03" W for the East line of the Southeast Quarter, Section 23, Township 120, Range 23.
2. Field work was completed on 02/07/2024.
3. Utility information shown hereon is a compilation of provided map information and those visible utilities and marked utilities which were located during the survey field work. Utility suppliers often do not respond to locate requests in the field but may provide maps, plans, and drawings in lieu of physical location. The surveyor makes no guarantees that the underground utilities shown hereon comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the underground utilities shown hereon are in the exact location as indicated, although they are located as accurately as possible from the available information. The surveyor has not physically located the underground utilities. Pursuant to MS 216.D contact Gopher State One Call at (651-454-0002) prior to any excavation.

   A Gopher State One Call (GSOC) request was placed on 01/25/2024 and assigned GSOC Ticket No. 240250559.

LOT SUMMARY

	PROPERTY AREA
LOT 1, BLOCK 1:	91,704 S.F. - 2.10 ACRES
LOT 1, BLOCK 2:	587,690 S.F. - 13.49 ACRES
OUTLOT A:	607,057 S.F. - 13.94 ACRES
OUTLOT B:	424,549 S.F. - 9.75 ACRES

SITE SETBACKS

ZONE: PUD

FRONT YARD:	30'
REAR YARD:	30'
SIDE YARD:	20'
SIDE STREET:	30'

VICINITY MAP

LEGEND

- FOUND MONUMENT
- FOUND CAST IRON MONUMENT
- FOUND R/W MONUMENT
- SET MONUMENT MARKED LS 53642
- GATE VALVE / HYDRANT
- SANITARY MANHOLE
- STORM MANHOLE
- TRANSFORMER
- LIGHT
- TRAFFIC LIGHT
- GUY ANCHOR
- UTILITY POLE
- SIGN
- ELECTRIC MANHOLE
- ELECTRIC METER
- ELECTRIC PANEL
- CABLE TV BOX
- VAULT/HAND HOLE
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- UNDERLYING / ADJACENT LOT
- EASEMENT LINE
- CONTROLLED ACCESS
- SECTION LINE
- (100.00) DEED DIMENSION
- WATERMAIN
- SANITARY SEWER LINE
- STORM SEWER LINE
- SETBACK LINE
- UNDERGROUND FIBER OPTIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND GAS LINE
- OVERHEAD ELECTRIC WIRE
- CHAIN LINK FENCE
- CONCRETE CURB
- BUILDING LINE
- WET LAND LIMITS
- TREE DRIP LINE

NO	DATE	BY	CKD	APPR	COMMENT

© 2021 Sambatek

I hereby certify that this plan, survey, or report 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.

Print Name: Jared Averbeck

Date June 7, 2024 License # 53642

DATE ISSUED	DRAWN BY	DESIGNED BY	CHECKED BY	PROJECT NO.
	JJA		JJA	52768

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PRELIMINARY PLAT

CITY OF ROGERS

COUNTY ROAD 81 REPLAT

ROGERS, MINNESOTA

SHEET 1 OF 1 REV.

24.35 (LMS TECH) | EVAN HARRIS, LSIT (MN) | 6/7/2024 11:20:14 AM
L:\PROJECTS\52768\CAD\SURVEY\SHEETS\52768 PRE PLAT.DWG1

ROGERS CR81 ADDITION

C.R. DOC. NO. _____

KNOW ALL PERSONS BY THESE PRESENTS: That The City of Rogers, a Minnesota municipal corporation, fee owner of the following described property:

That part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23, Hennepin County, Minnesota described as follows: Commencing at the southwest corner of said Northeast Quarter of the Southeast Quarter; thence South 88 degrees 33 minutes 07 seconds East, assumed bearing, along the south line of said Northeast Quarter of the Southeast Quarter a distance of 1045.51 feet to the southwesterly right of way line of County Road No. 81, formerly known as State Highway No. 152; thence North 39 degrees 58 minutes 09 seconds West along said right of way a distance of 88.43 feet; thence continuing northwesterly along said right of way 314.95 feet on a tangential curve concave to the southwest having a central angle of 01 degrees 35 minutes 06 seconds a radius of 11,384.38 feet and a chord bearing of North 40 degrees 45 minutes 42 seconds West to the point of beginning of the land to be herein described; thence South 47 degrees 56 minutes 33 seconds West a distance of 250.00 feet; thence North 42 degrees 03 minutes 27 seconds West a distance of 200.00 feet; thence North 47 degrees 56 minutes 33 seconds East a distance of 250.00 feet to the southwesterly right of way line of said County Road No. 81; thence southeasterly on said right of way line a distance of 200.00 feet along a nontangential curve concave to the Southwest having a central angle of 01 degrees 00 minutes 24 seconds and a radius of 11,384.38 feet to the point of beginning and there terminating.

AND

The Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 except highways and roads of record as of the date hereof and except that part of the Northeast Quarter of the Southeast Quarter of Section 23, Township 120, Range 23 described as follows:

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AND

That part of the North Half of the Southwest Quarter of Section 24, Township 120, Range 23, Hennepin County, Minnesota, lying southwesterly of the southwesterly line of Interstate Highway No. 94, except that part thereof lying southeasterly of a line bearing North 50 degrees, 16 minutes, 41 seconds East from a point on the south line of the Northwest Quarter of the Southwest Quarter of said Section, distant 346.08 feet easterly along said south line from the southwest corner of said Northwest Quarter of the southwest Quarter.

Has caused the same to be surveyed and platted as ROGERS CR81 ADDITION, and does hereby dedicate to the public for the public way and the drainage and utility easements created by this plat.

In witness whereof said City of Rogers, a Minnesota municipal corporation, has caused these presents to be signed by its proper officer this _____ day of _____, 20_____.

The City of Rogers

By: _____, as Mayor
Rick Ihli

STATE OF MINNESOTA
COUNTY OF HENNEPIN

This instrument was acknowledged before me on this _____ day of _____, 20_____,by Rick Ihli as Mayor , for The City of Rogers, a Minnesota municipal corporation, on behalf of the municipality.

_____ _____
Notary Public, _____ County, Minnesota Notary Printed Name
My Commission Expires _____

I Jared Averbeck do hereby certify that this plat was prepared by me or under my direct supervision; that I am a duly Licensed Land Surveyor in the State of Minnesota; that this plat is a correct representation of the boundary survey; that all mathematical data and labels are correctly designated on this plat; that all monuments depicted on this plat have been, or will be correctly set within one year; that all water boundaries and wet lands, as defined in Minnesota Statutes, Section 505.01, Subd. 3, as of the date of this certificate are shown and labeled on this plat; and all public ways are shown and labeled on this plat.

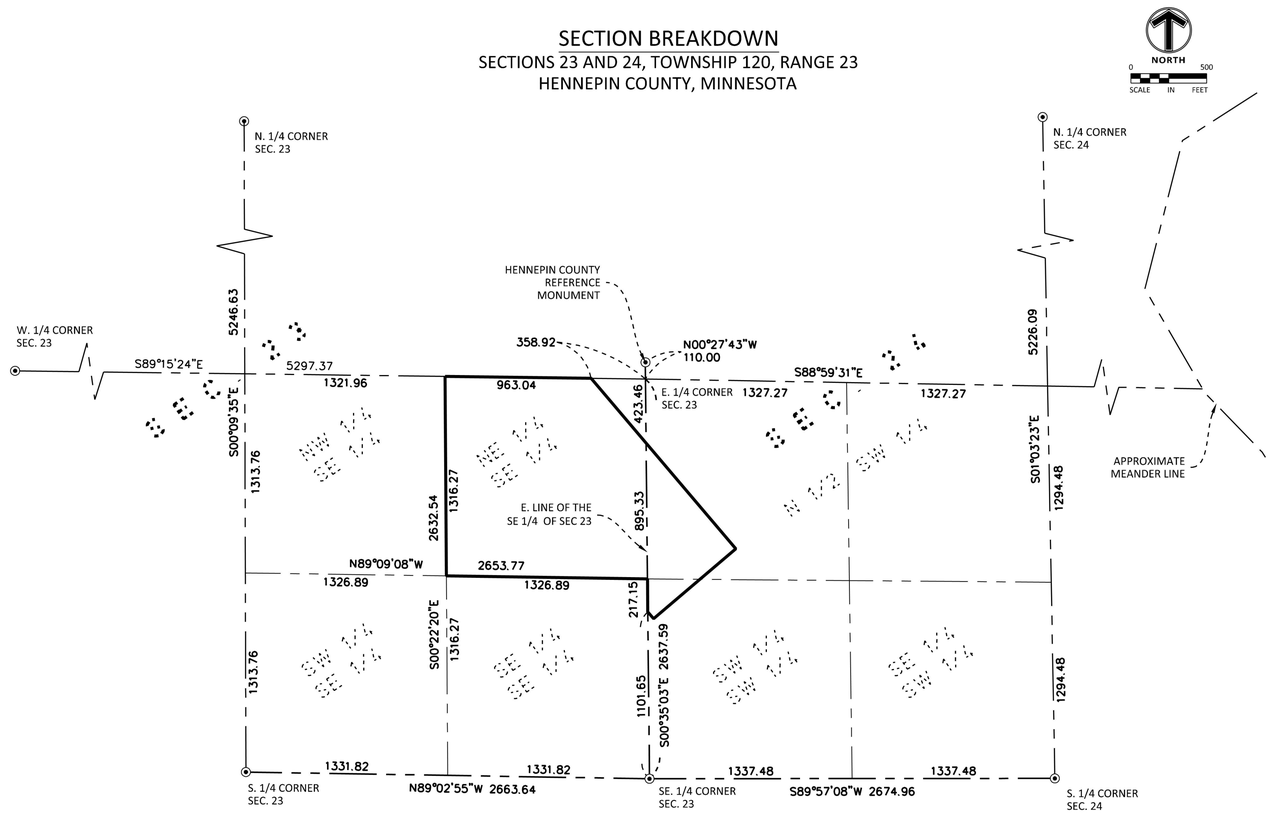
Dated this _____day of _____, 20___.

_____
Jared Averbeck, Licensed Land Surveyor,
Minnesota License No. 53642

STATE OF MINNESOTA
COUNTY OF HENNEPIN
This instrument was acknowledged before me this _____ day of _____, 20_____, by Jared Averbeck.

_____ _____
Notary Public, _____ County, Minnesota Notary Printed Name
My Commission Expires _____

SECTION BREAKDOWN
SECTIONS 23 AND 24, TOWNSHIP 120, RANGE 23
HENNEPIN COUNTY, MINNESOTA



◉ Hennepin County Cast Iron Monument

The bearing system is based on the Hennepin County coordinate system, NAD83 (1986 Adjust). With an assumed bearing of N 00° 35' 03" W for the East line of the Southeast Quarter, Section 23, Township 120, Range 23.

CITY COUNCIL, CITY OF ROGERS, MINNESOTA

This plat of ROGERS CR81 ADDITION was approved and accepted by the City Council of the City of Rogers, Minnesota at a regular meeting thereof held this _____ day of _____, 20_____, and said plat is in compliance with the provisions of Minnesota Statutes, Section 505.03, Subd. 2.

City Council, City of Rogers, Minnesota

By: _____ Mayor By: _____ Clerk
Rick Ihli Stacie Brown

COUNTY AUDITOR, Hennepin County, Minnesota

I hereby certify that taxes payable in 20_____ and prior years have been paid for land described on this plat, dated this _____ day of _____, 20_____.

Daniel Rogan, County Auditor By: _____, Deputy

SURVEY DIVISION, Hennepin County, Minnesota

Pursuant to Minnesota Statutes Section 383B.565 (1969), this plat has been approved this _____ day of _____, 20_____.

Chris F. Mavis , County Surveyor By: _____

COUNTY RECORDER, Hennepin County, Minnesota

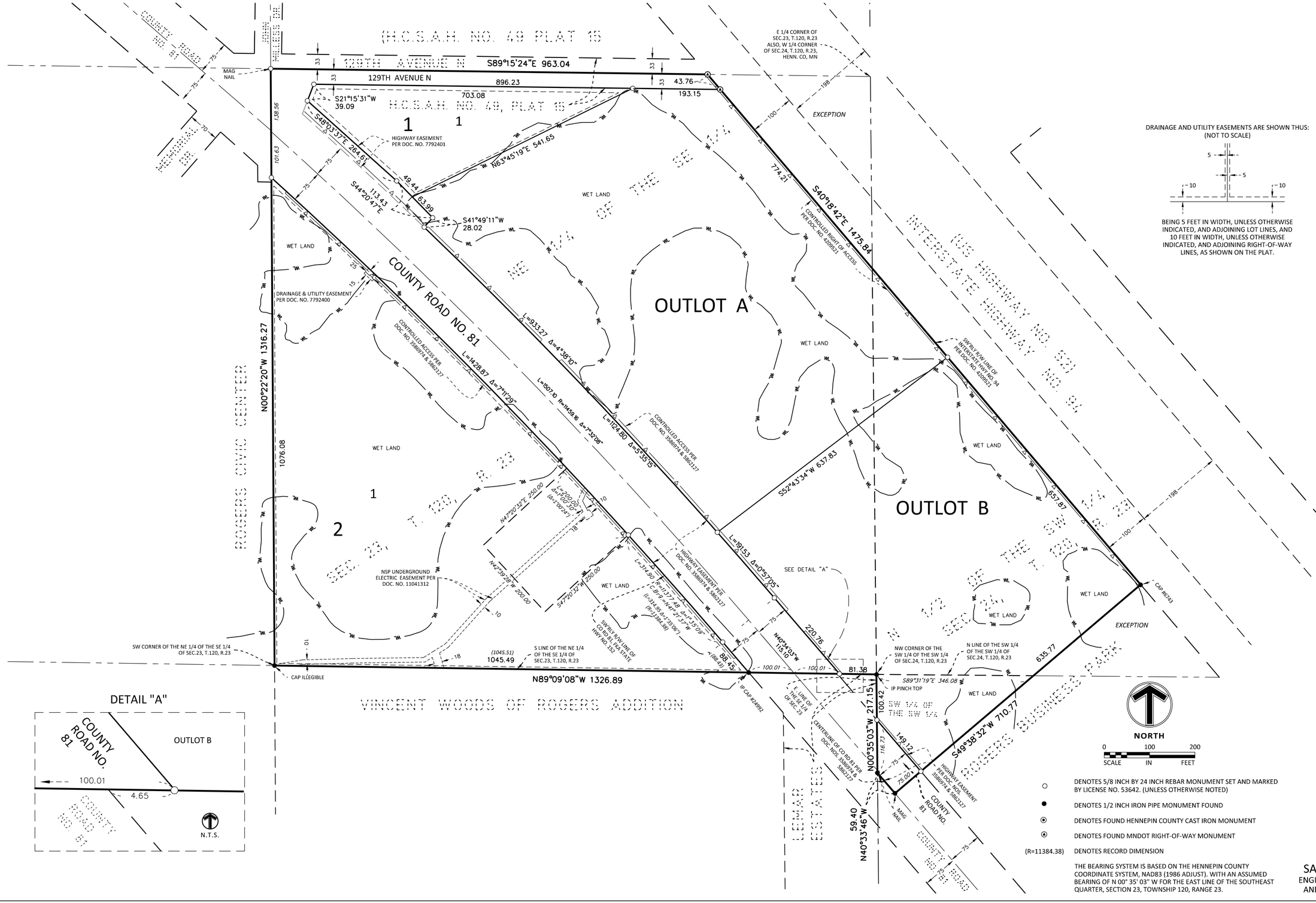
I hereby certify that the within plat of ROGERS CR81 ADDITION was recorded in this office this _____ day of _____, 20_____, at _____ o'clock ____ .M.

Amber Bougie, County Recorder By: _____, Deputy

SAMBATEK, INC.
ENGINEERING, PLANNING
AND LAND SURVEYING

ROGERS CR81 ADDITION

C.R. DOC. NO. _____



DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS: (NOT TO SCALE)

BEING 5 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING LOT LINES, AND 10 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING RIGHT-OF-WAY LINES, AS SHOWN ON THE PLAT.

○ DENOTES 5/8 INCH BY 24 INCH REBAR MONUMENT SET AND MARKED BY LICENSE NO. 53642. (UNLESS OTHERWISE NOTED)

● DENOTES 1/2 INCH IRON PIPE MONUMENT FOUND

⊙ DENOTES FOUND HENNEPIN COUNTY CAST IRON MONUMENT

⊙ DENOTES FOUND MNDOT RIGHT-OF-WAY MONUMENT

(R=11384.38) DENOTES RECORD DIMENSION

THE BEARING SYSTEM IS BASED ON THE HENNEPIN COUNTY COORDINATE SYSTEM, NAD83 (1986 ADJUST). WITH AN ASSUMED BEARING OF N 00° 35' 03" W FOR THE EAST LINE OF THE SOUTHEAST QUARTER, SECTION 23, TOWNSHIP 120, RANGE 23.

SAMBATEK, INC.
ENGINEERING, PLANNING AND LAND SURVEYING