



**Clackamas County Planning and Zoning Division
Department of Transportation and Development**

Development Services Building
150 Beavercreek Road | Oregon City, OR 97045

503-742-4500 | zoninginfo@clackamas.us
www.clackamas.us/planning

NOTICE OF LAND USE APPLICATION IN YOUR AREA

Date: 06/10/2020
Permit Number: Z0186-20
Application: Design Review
From: Clackamas County Planning and Zoning
Notice Mailed To: Property owners within 300 feet
Community Planning Organizations (CPO)
Interested Citizens and Agencies

Application Proposal:

DESIGN REVIEW - Project includes two speculative industrial/commercial buildings totaling approximately 50,000 square feet. Scope of work includes site preparation, new buildings, site access, circulation, landscaping, and other site improvements.

This project will be presented to the Design Review Committee on July 7, 2020 at 8:30 am. This meeting will be held via Zoom Video-conference. The public is welcome to participate and provide feedback at this meeting. For additional information about how to participate in this meeting, please visit the Design Review Committee website at <https://www.clackamas.us/planning/designreview.html>

Property Owner: CAPPS 120 QOZB LLC
Applicant: TROLAN, CURT
Address: 16935 SE 120TH AVE
CLACKAMAS, OR 97015

Location:

Legal Description: 22E15A 00701 **Acres:** 2.49

Zone: GI-GENERAL INDUSTRIAL

Staff: Anthony Riederer 503-742-4528 **E-mail:** ariederer@co.clackamas.or.us,

How to Comment on this Application:

1. To be sure your comments will be considered prior to the decision, we need to have them within 20 days of the date of this notice.

Permit Number: Z0186-20

2. You may use the space provided below, mail a separate letter or e-mail the information. Please include the permit number, address the information to the staff member handling this matter, and focus your comments on the approval criteria for the application.

3. Return your mailed comments to: Clackamas County Planning and Zoning, 150 Beaver Creek Rd, Oregon City, OR 97045; FAX to (503) 742-4550.

Community Planning Organization: The following recognized Community Planning Organization (CPO) has been notified of this application. This organization may develop a recommendation on this application. You are welcome to contact this organization and attend their meeting. If this Community Planning Organization is currently inactive, and you are interested in becoming involved in Land Use Planning in your area, please contact the Citizen Involvement Office at (503) 655-8552.

CLACKAMAS (INACTIVE)

OR

Decision Process: In order to be approved, this proposal must meet the approval criteria in the Zoning and Development Ordinance, Section(s)

The Ordinance criteria for evaluating this application can be viewed at www.clackamas.us/planning/zdo.html. You may view the submitted application at the following link, <https://accela.clackamas.us/citizenaccess/>.

A decision on this proposal will be made and a copy will be mailed to you. If you disagree with the decision you may appeal to the Land Use Hearings Officer who will conduct a public hearing. There is a \$250 appeal fee.

Comments:

Your Name/Organization

Telephone Number

Clackamas County is committed to providing meaningful access and will make reasonable accommodations, modifications, or provide translation, interpretation or other services upon request. Please contact us at 503-742-4545 or email DRenhard@clackamas.us.

503-742-4696: ¿Traducción e interpretación? |Требуется ли вам устный или письменный перевод? | 翻译或口译? | Cán Biên dịch hoặc Phiên dịch? | 번역 또는 통역?



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LAND USE APPLICATION

DEEMED COMPLETE

ORIGINAL DATE SUBMITTED:

FILE NUMBER:

APPLICATION TYPE:

The Planning and Zoning Division staff deemed this application complete for the purposes of Oregon Revised Statutes (ORS) 215.427 on:

Staff Name

Title

Comments:

Check one:

The subject property is located inside an urban growth boundary. The 120-day deadline for final action on the application pursuant to ORS 215.427(1) is:

The subject property is not located inside an urban growth boundary. The 150-day deadline for final action on the application pursuant to ORS 215.427(1) is:



Application for Design Review

2PAC 0150-19

May 2018

*****A Pre-Application Conference is required prior to filing this application.*****

Date Received: 4/29/20 File No.: 20186-20-D
 Staff Member: _____ Design Review Fee: \$ 13,056.00
 Zone: GI .384% of Construction Cost: \$ 3400,000
 Comp. Plan: _____ (\$650.00 Minimum / \$36,835.00 Maximum Fee)
 Development No.: _____ Project No.: _____

Name of Applicant: Curt Trolan, Mildren Design Group, P.C.
 Mailing Address: 7650 SW Beveland St., Suite 120 Tigard, OR 97223
 Phone: 503.244.0552 Email: curt@mdgpc.com

What is proposed?:

Two speculative concrete tilt-up building shells with dock-high an drive-in doors.

Proposed title: SE120th and SE Capps Rd Sq. ft. of each structure: 26,390 sf and 22,710 sf
 Estimated completion date: _____ Estimated cost of constr (labor & materials): \$ _____
 Site Address: NW Corner of SE 120th Avenue and SE Capps Road
 Total Land Area : 2.49 Acres
 Legal Description: T 2S R 2E Section: 15A Tax Lot(s): 00701
 Adjacent Properties Under Same Ownership: T _____ R _____ Section _____ Tax Lot(s) _____

Other persons (if any) to be mailed notices regarding this application:

Name	Address	Relationship
Name	Address	Relationship

I hereby certify the statements contained herein, along with the evidence submitted, are in all respects true and correct to the best of my knowledge.

Butch Busse
 Property Owner's Name (Print)
[Signature] 2/10/2020
 Property Owner's Signature Date

Curt Trolan
 Applicant's Name (Print)
[Signature] 3/4/2020
 Applicant's Signature Date

DESIGN REVIEW / DEVELOPMENT REVIEW

CHECKLIST

The following is a checklist of information/plans needed. **The following materials must be submitted:**

1. Project contact person, title, day time telephone number, fax number, address and e-mail address
2. Full-sized scaled plans (using engineer's scale)
3. Faxable site plan (8 ½ by 11 or 11 by 17 inch)
4. Information including the following:
 - Vicinity map
 - Project description
 - Total developable site area (in square feet)
 - Date of pre-application conference
 - Statements of Feasibility
 - Existing and proposed street improvements, i.e., right-of-way width, sidewalks/handicap ramps, utilities, transit stops, street lights within 250 feet of the site (both sides of right-of-way), relation to transit, location, size of storm water facilities and sanitary/storm water plans
 - Accesses, parking areas with details, i.e., required number of spaces, provided number of spaces, bicycle parking provided, drive aisles, loading area, garbage storage area. Large parking lots must be counted and shown on the site plan. This information can be placed in a table.
 - Property and surrounding area and uses at reasonable scale.
 - Grading Plan
 - Lighting plan and details
 - Type and number of units (residential projects) or total building areas (commercial projects, etc.)
 - Building entrances and walkways
 - Basic topography of the site and proposed grading plan
 - Any existing landscaping/trees and required percentage of landscaping as well as provided percentage of landscaping. Fencing details if applicable.
 - Landscaping detail including specimen, size and planting requirements
 - Color architectural elevations and samples of building materials and colors/materials board is recommended for hearings. Since this information will be scanned, please submit paper copies of the sample materials for the record.
 - Signage Plan

Projects and any questions should be directed to Anthony Riederer, Design Review/Development Review liaison at 150 Beaver Creek Road, Oregon City, OR, 97045, ARiederer@clackamas.us or (503) 742-4528.



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www.clackamas.us/planning

NOTICE OF INCOMPLETE APPLICATION

ORIGINAL DATE SUBMITTED: April 29, 2020 FILE NUMBER: Z0186-20-D APPLICATION TYPE: Design Review STAFF CONTACT: Anthony Riederer, ariederer@clackamas.us DATE OF THIS NOTICE: 5/6/2020 180 DAYS AFTER DATE SUBMITTED: 10/26/2020 Date of CERTIFIED MAILING : 5/6/2020
--

MAILED TO :

Curt Trolan, Mildren Design Group, P.C.
7650 Beveland St., Suite 120
Tigard, Oregon 97223

Also Sent Electronically to:
curt@mdgpc.com

MISSING INFORMATION REQUIRED FOR A COMPLETE APPLICATION:

- Preliminary Statement of Feasibility from Water Environment Services, per ZDO 1102.02(C).

ADVISORY NOTES:

- Please review the design of the building facades in light of the standards of 1005.04(A). The following facades need to meet these standards because they are either facing a public street or a primary building entrance:
 - West Building: South and East facades
 - East Building: West, South, and East facades
- Please review the design of the building entrances in light of the standards of 1005.04(B).

The following notes are not completeness items, but advisory notes based on the preliminary review of the materials by staff during the completeness check. They are not exhaustive and additional items will likely come to light as staff begins their in-depth review.

IMPORTANT

Your application will be deemed complete, if, within 180 days of the date the application was first submitted, the Planning Division receives one of the following:

- 1. All of the missing information; or**
- 2. Some of the missing information and written notice from you (the applicant) that no other information will be provided; or**
- 3. Written notice from you (the applicant) that none of the missing information will be provided.**

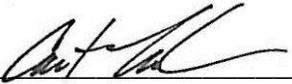
If any one of these options is chosen within 180 days of the date of the initial submittal, approval or denial of your application will be subject to the relevant criteria in effect on the date the application was first submitted.

NOTICE

Your application will be considered Void if, on the 181st day after the date the application was first submitted, you have been mailed this notice and have not provided the information requested in Options 1 – 3 above. In this case, no further action will be taken on your application.

Applicant or authorized representative, please check one of the following and return this notice to: Clackamas County Planning Division; 150 Beaver Creek Road, Oregon City, Oregon, 97045

- I am submitting the required information (attached); or.
- I am submitting some of the information requested (attached) and no other information will be submitted; or
- I will not be submitting the requested information. Please accept the application as submitted for review and decision.



Signed

6/9/2020

Date

Curt Trolan

Print Name



PRELIMINARY STATEMENT OF FEASIBILITY

To be completed by the applicant:

Applicant's Name: Gene Mildren, Mildren Design Group, P.C.
Property Legal Description: T 2 S, R 2E, Section 15A, Tax Lot(s) 701
Site Address: 16935 SE 120th Ave. Clackamas, 97015 Project Engineer:
Project Title/Description of Proposed Development: Two 23,000 SF speculative concrete tilt-up buildings shells.

To be completed by the service provider or surface water management authority:

Check all that apply:

- Sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system is available to serve the development or can be made available through improvements completed by the developer or the system owner.
Adequate surface water treatment and conveyance is available to serve the development or can be made available through improvements completed by the developer or the system owner.
Water service is available in levels appropriate for the development, and adequate water system capacity is available in source, supply, treatment, transmission, storage and distribution or such levels and capacity can be made available through improvements completed by the developer or the system owner. This statement applies does not apply to fire flows.*

*If water service is adequate with the exception of fire flows, the applicant shall submit a statement from the fire district serving the subject property that states that an alternate method of fire protection, such as an on-site water source or a sprinkler system, is acceptable.

This statement is issued subject to conditions of approval set forth in the attached.

- Adequate sanitary sewer service, surface water management, water service cannot be provided.

Signature of Authorized Representative: Betty A. Johnson
Engineering Associate
Title

Date: March 9, 2020
Name of Service Provider or Surface Water Management Authority: Clackamas River Water

Completion of this statement does not reserve capacity for the development and does not alter an applicant's obligation to comply with the service provider's or surface water management authority's regulations. Completion of this statement does not obligate the service provider or surface water management authority to finance or construct improvements necessary to provide adequate service for the proposed development. Completion of this statement does not guarantee that land use approval for the proposed development will be granted.



Clackamas River Water

Attachment County Preliminary Statement of Feasibility

To: Gene Mildren, Mildren Design Group, P.C.

From: Betty Johnson

Date: March 9, 2020

Re: 16935 SE 120th Ave, Clackamas, 97015

● Comments:

- A. *“Water service will be provided only from pipes or mains located within public street, alleys or rights-of-way, or within easements furnished to CRW, and to property or premises with frontage to such mains.... Each dwelling or building will be provided with its own water service connection and meter ...No person shall furnish water to other buildings or premises without the written approval of the Board, which may be granted in the sole discretion of the Board, and then only under the specific terms of an agreement approved by CRW”*
- B. Fire hydrant number and distribution shall be in accordance with the Oregon Fire Code C105.1
- C. Placement of fire hydrant systems shall be in accordance with the Oregon Fire Code 507.5.1
- D. Unless Noted on plans or specified otherwise, all construction and backflow devices are to be in accordance with the most recent version of Clackamas River Water standards and the Oregon Administration Rules (OAR), Chapter 333.
- E. All water facilities design, construction, testing and maintenance, where applicable, shall conform to the latest adopted revision of the Oregon state Health Division administrative Rules chapter 333 on Public water System except where provisions outlined in the Clackamas River Water rules and regulations.
- F. For design of District’s water system improvements, hydraulic system must be analyzed using the worst- case scenario envisioned in the district’s current Water System Facilities Plan. The water system analysis shall be conducted using a simultaneous demand for the maximum (peak) day demand or peak hour non-fire demand, whichever is greater, and the fire demand.
- G. Any substantial deviation from the approved construction plans must have prior approval of the Water District.
- H. Easements for water facilities shall be provided along property lines and designated on the final plat, as deemed necessary by the Water District.
- I. Resale of water purchased from the Water District will not be permitted. No user shall resell or permit resale of water directly to any person, or for any use.

F:\1B County & City Design Review\Pre-App, Design Review & Land Use Applications\16935 SE 120th Ave\CORRESPONDENCE\Preliminary Statement of Feasibility\16935 SE 120th Ave - Statement of Feasibility Conditions.docx

- J. An approved water system capable of supplying required fire flow for fire protection shall be provided to all premises upon which buildings are to be constructed.
- K. If water service is adequate with the exception of fire flows, the applicant shall submit a statement to Clackamas River Water from the fire district serving the subject property that states that if and /or what alternate method of fire protection is acceptable.
- L. Upon plan review there may be additional requirements as set forth by the Water District.



PRELIMINARY STATEMENT OF FEASIBILITY

(January 2018)

Instructions to Applicant

- This form is to be completed by the applicable sanitary sewer service provider, surface water management authority and water service provider.
- It is the applicant's responsibility to provide a copy of this form to **each** service provider. Attach the completed forms as part of the land use application submittal for a development. Where there is no surface water management service district, this form is to be provided to the Clackamas County Department of Transportation and Development, Engineering Division.
- A service provider may require the submission of detailed plans and/or engineering data prior to determining whether a Preliminary Statement of Feasibility will be issued. Contact the service providers for details.
- Completed forms are required for design review, subdivisions, partitions and conditional uses, and these applications will not be deemed complete until the completed forms are received by the Planning Division.
- The forms must be dated no more than one year prior to submittal of a complete land use application.
- Forms are not required for on-site sewage disposal systems or water service by private well.

Instructions to Service Provider

- A development is proposed within your service area. Please complete the attached Preliminary Statement of Feasibility to indicate whether adequate service can be provided to this development.
- If adequate service can be provided only with the implementation of certain conditions of approval, you may attach such conditions to this statement. Completion of this preliminary statement of feasibility does **not** imply that additional requirements (e.g. plan submittals) may not be imposed by your agency once a land use application is filed.
- The Planning Division will continue to provide notice to you of land use applications for property within your service area. This will allow you to determine whether the submitted development proposal differs from the plans reviewed by your agency in conjunction with the completion of this statement. This will also allow you to provide additional comments as necessary.



PRELIMINARY STATEMENT OF FEASIBILITY

To be completed by the applicant:

Applicant's Name:
Property Legal Description: T S, R, Section, Tax Lot(s)
Site Address: Project Engineer:
Project Title/Description of Proposed Development:

To be completed by the service provider or surface water management authority:

Check all that apply:

- Sanitary sewer capacity in the wastewater treatment system and the sanitary sewage collection system is available to serve the development or can be made available through improvements completed by the developer or the system owner.
Adequate surface water treatment and conveyance is available to serve the development or can be made available through improvements completed by the developer or the system owner.
Water service is available in levels appropriate for the development, and adequate water system capacity is available in source, supply, treatment, transmission, storage and distribution or such levels and capacity can be made available through improvements completed by the developer or the system owner. This statement applies does not apply to fire flows.*

*If water service is adequate with the exception of fire flows, the applicant shall submit a statement from the fire district serving the subject property that states that an alternate method of fire protection, such as an on-site water source or a sprinkler system, is acceptable.

- This statement is issued subject to conditions of approval set forth in the attached.
Adequate sanitary sewer service, surface water management, water service cannot be provided.

Erik Carr Bertram

Signature of Authorized Representative

Date

Title

Name of Service Provider or Surface Water Management Authority

Completion of this statement does not reserve capacity for the development and does not alter an applicant's obligation to comply with the service provider's or surface water management authority's regulations. Completion of this statement does not obligate the service provider or surface water management authority to finance or construct improvements necessary to provide adequate service for the proposed development. Completion of this statement does not guarantee that land use approval for the proposed development will be granted.



SE Capps Road and SE 120th Avenue

PRELIMINARY STORMWATER REPORT

Clackamas County, Oregon

March 23rd, 2020

The information contained in this report was prepared by
and under direct supervision of the undersigned:

Craig Harris, PE

AAI Engineering

4875 S.W. Griffith Drive

Suite 300

Beaverton, Oregon 97005

PH 503.352.7678 FX 503.620.5539

craigh@aaieng.com

AAI Project Number: A20027.10

SE Capps Road and SE 120TH Avenue

Table of Contents

I. Project Summary	3
II. Stormwater Design	3
III. Conveyance Calculations	4
IV. Downstream Analysis.....	4
V. Operations and Maintenance.....	4
VI. Engineering Conclusion	4

Appendices

Appendix A

Existing Conditions

Appendix B

Site Plan

Appendix C

Storm Plan and Details

Appendix D

HydroCAD Report and Storm Calculations

Appendix E

Conveyance Calculations

Appendix F

Operations and Maintenance Report

SE Capps Road and SE 120TH Avenue

I. Project Summary

This report has been prepared to outline the existing and proposed on-site stormwater conditions for the SE Capps Road and SE 120th Avenue project. This report is based on topographic survey, GIS information, a geotechnical report, and field observations.

The project site is located in Clackamas County, Oregon. The total pre-developed site is approximately 108,583 square feet (2.49 acres). The site currently consists of gently to moderately sloping open field with short grass throughout.

See Appendix A – Existing Conditions.

The primary purpose of this project is to develop the site for two separate warehouses. The site will be developed to contain two independent stormwater systems. The site improvements will consist of 90,682 square feet (2.08 acres) of total impervious area. In addition to the site improvements, stormwater management will be provided, including conveyance, water quality treatment, and flow control with detention for each side of the project area.

See Appendix B – Site Plan and Appendix C – Storm Plan and Details.

II. Stormwater Design

The proposed stormwater facilities are designed to capture all runoff from the proposed site improvements. No runoff from adjacent properties is anticipated to be captured by the proposed facilities. In addition, all site impervious runoff will be completely managed on site and will not drain onto adjacent properties. The stormwater management for this project is designed according to the requirements outlined in Clackamas County Stormwater District #1 Stormwater Standards.

Water quality treatment will be accomplished by using 2 Contech CDS stormwater systems, sized using a water quality event of 1" of rainfall over 24 hours. Flow control will be achieved using orificed flow control manholes in conjunction with detention chambers. The orifice systems are designed to restrict the 2-year 24 hour storm for post-development flow to ½ of the pre-development flow. Flows in excess of these events will bypass the flow control systems.

Detention will be accomplished by using two Contech Chambermaxx systems. The two systems will operate independently of one another. Due to the very similar size of each side of the project area, the Chambermaxx systems will be designed to be the same size. The detention systems were designed per the standards of CCSD #1, and are designed to detain up to the 100 year storm without ponding.

HydroCad was used to model the detention and flow control for the project, due to the fact that, per the geotechnical report, infiltration was not feasible on site. The WES BMP calculator was created to design above ground treatment and detention. However, above ground flow control and water quality

SE Capps Road and SE 120TH Avenue

treatment was not feasible for this project. Therefore, HydroCad was used to design the stormwater system.

See Appendix D – HydroCAD Report and Storm Calculations

III. Conveyance Calculations

All proposed storm mains and services are sized to convey up to the 25-yr storm event.

See Appendix E – Conveyance Calculations *(to be provided with permit submittal)*.

IV. Downstream Analysis

No negative impacts are anticipated downstream as post-developed flows are being limited to pre-developed flows. *(Certificate of Downstream Investigation to be provided with permit submittal, if needed)*

V. Operations and Maintenance

See Appendix F – Operations and Maintenance Report *(to be provided with permit submittal)*.

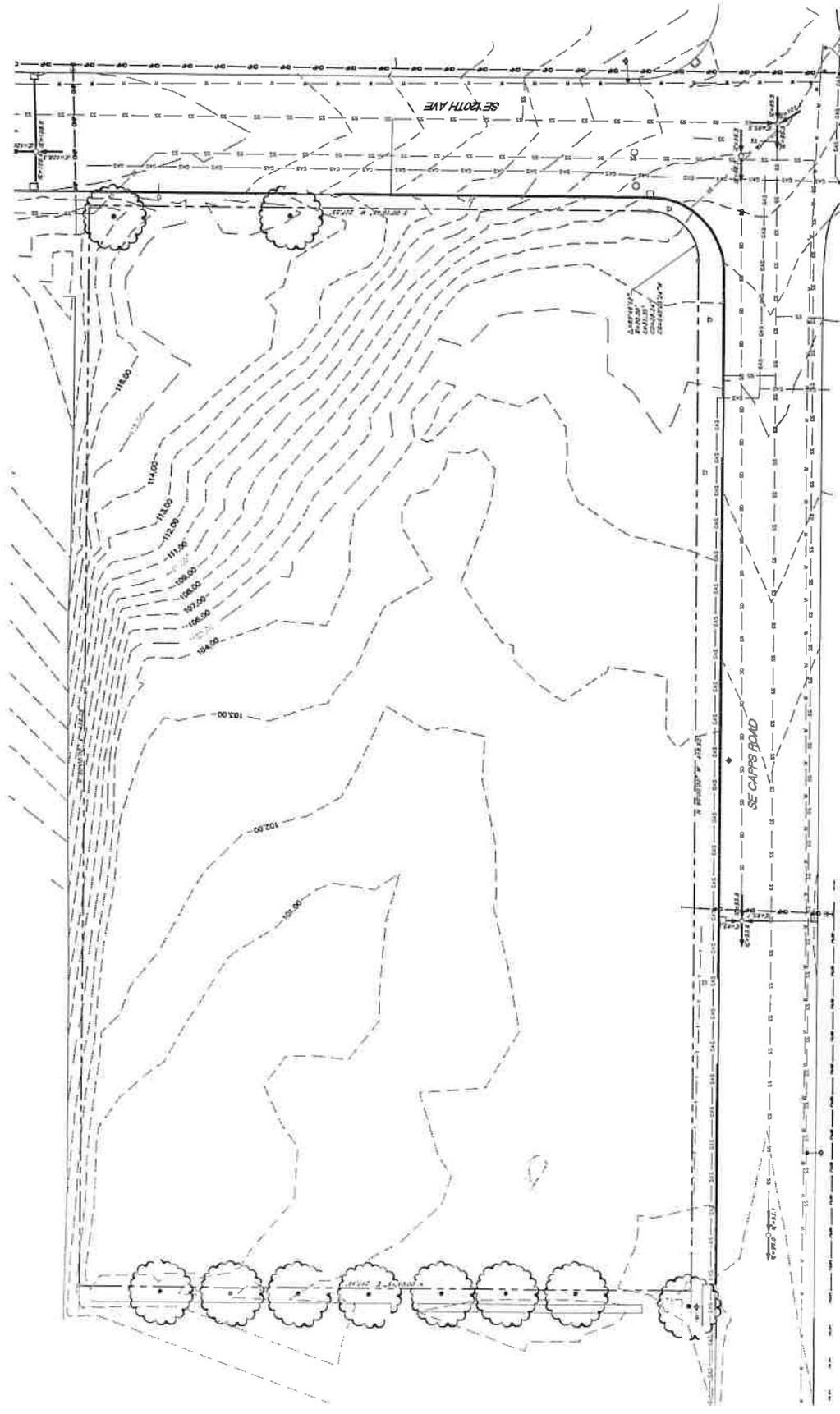
VI. Engineering Conclusion

Based on the requirements of the Clackamas County Stormwater District #1 Stormwater Standards, the proposed site facilities are adequately designed to manage the proposed development conditions and should be approved as designed.

SE Capps Road and SE 120TH Avenue

Appendix A

Existing Conditions



TOPOGRAPHY SURVEY

PROPOSED PARCEL 1 & 2
 OF PROPOSED PARSON PARTITION

1/4 SECTION 16, T. 2 S., R. 2 E., S. 44
 COUNTY OF CLATSOP, OREGON

PROJECT NO.	1/4 SECTION	DATE	ESTIMATE & 2013
DRAWN BY	JJ	CHECKED BY	EJA
CREATED BY		SCALE 1" = 80'	

CEALRE, JONER & ASSOCIATES INC.
 718 S. S. 11TH AVE. PORTLAND, OREGON 97114
 PHONE (503) 223-8844

LEGEND
 --- = CONTOUR
 --- = GUTTER
 --- = SIDEWALK
 --- = DRIVE
 --- = UTILITY
 --- = TREE

REGISTERED
 PROFESSIONAL
 LAND SURVEYOR

OREGON
 JULY 16, 1988
 ERIC L. JONES
 EXPIRES 6-30-15

- NOTES:
- BENCHMARK ELEVATIONS BASED ON NORTH RIM OF MANHOLE. ELEVATION = 100.00
 - CONTOURS ARE AT ONE-FOOT INTERVALS AND ARE COMPUTER GENERATED.
 - UNDERGROUND UTILITIES ARE SUBJECT TO ACTUAL FIELD LOCATION.
 - ALL UTILITIES MAY NOT BE SHOWN.
 - TREE SPREADS ARE NOT TO SCALE.

SE Capps Road and SE 120TH Avenue

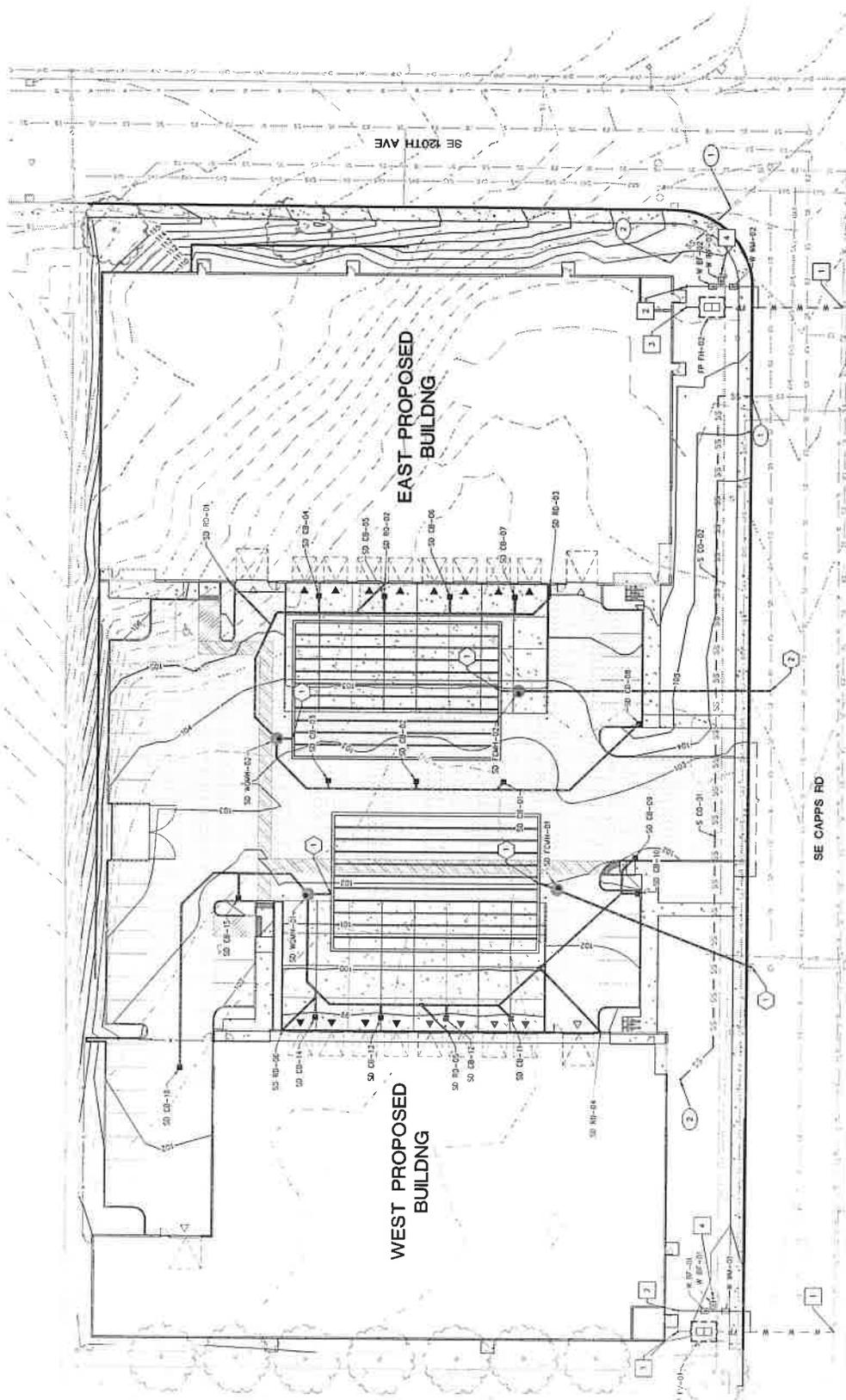
Appendix B

Site Plan

SE Capps Road and SE 120TH Avenue

Appendix C

Storm Plan and Details



SHEET NOTES

- SEE SHEET C01 FOR GENERAL SHEET NOTES
- PROCESSED MANHOLES AND PIPE INVERTS SHALL BE INSTALLED IN ACCORDANCE WITH PER DETAIL 7/21.2
- 1" (10" BIDDING) AND 1/2" (8" BIDDING) MANHOLES SHALL BE 10" PER DETAIL 7/21.2
- ALL SANITARY PIPING SHALL BE PVC 3034 OR APPROVED EQUAL OR APPROVED EQUAL
- FRAMING SHALL BE NOTED ON DRAWING
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, AND INVERTS WITH APPROVED PLUMBING PLANS PRIOR TO BEGINNING CONSTRUCTION OF SANITARY MANHOLES.
- CLEAN OUTS SHALL BE INSTALLED IN CONFORMANCE WITH PER DETAIL 7/21.2
- DOMESTIC WATER AND FIRE TRINKS AND ACCESSORIES SHALL BE INSTALLED IN CONFORMANCE WITH PER DETAIL 7/21.2
- THE WATER METER AND THE BUILDING SHALL BE INSTALLED IN CONFORMANCE WITH PER DETAIL 7/21.2

STRUCTURE TYPES

TYPE	DESCRIPTION
CB	CATCH BASIN
CO	CLEAN OUT
BF	BACKFLOW PREVENTER
RF	ROOF RAIN CONNECTION (UNDER SEPARATE PERMIT)
RD	ROOF DRAIN CONNECTION
WI	WATER METER

LEGEND

SS	SANITARY SEWER LINE
W	WATER LINE
F	FIRE LINE
S	STORM LINE

STRUCTURE LABELS

UTILITY TYPE (FIRE/FARE PROTECTION, S-SANITARY, W-WATER)
 SIZE (INCHES)
 STRUCTURE TYPE (SEE BELOW)
 INVERT ELEVATION (WHERE APPLICABLE)
 STRUCTURE INFO (WHERE APPLICABLE)

PIPE LABELS

UTILITY LENGTH
 UTILITY SIZE
 18" x 18" x 4' — UTILITY TYPE
 SLOPE (WHERE APPLICABLE)

STORM NOTES

- CONNECT TO EXISTING SEWER SYSTEM
- CONNECT TO EXISTING STORM LATERAL

SANITARY NOTES

- CONNECT TO EXISTING SANITARY SEWER TO BUILDING, SEE PLUMBING PLANS FOR CONTINUATION.
- CONNECT TO EXISTING WATER MAIN
- PROPOSED DOMESTIC WATER PLUMBING PLANS FOR CONTINUATION
- PROPOSED FIRE CONNECTION TO BUILDING, SEE PLUMBING PLANS FOR CONTINUATION
- UNDER SEPARATE PERMIT

WATER NOTES

- CONNECT TO EXISTING WATER MAIN
- PROPOSED DOMESTIC WATER PLUMBING PLANS FOR CONTINUATION
- PROPOSED FIRE CONNECTION TO BUILDING, SEE PLUMBING PLANS FOR CONTINUATION
- UNDER SEPARATE PERMIT

GROUPING SCALE
 1" = 20' (FEET)

ORIENTED NORTH

03/23/2020 — DESIGN REVIEW SUBMITTAL

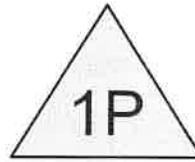
SE Capps Road and SE 120TH Avenue

Appendix D

HydroCAD Report and Storm Calculations



East Predeveloped

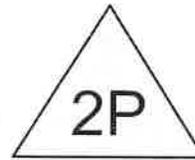


East Post Developed

Chambermaxx

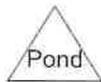
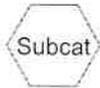


East Predeveloped



East Post Developed

Chambermaxx



Capps Road and 120th

Prepared by {enter your company name here}

HydroCAD® 10.00-24 s/n 01638 © 2018 HydroCAD Software Solutions LLC

Printed 3/23/2020

Page 2

Project Notes

Rainfall events imported from "A18203.HydroCad.hcp"

Rainfall events imported from "A18205.hcp"

Capps Road and 120th

Prepared by {enter your company name here}

HydroCAD® 10.00-24 s/n 01638 © 2018 HydroCAD Software Solutions LLC

Printed 3/23/2020

Page 3

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.494	74	>75% Grass cover, Good, HSG C (2S, 3S)
0.955	98	Paved parking, HSG A (1S, 4S)
1.131	98	Unconnected roofs, HSG A (1S, 4S)
4.580	85	TOTAL AREA

Capps Road and 120th

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Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
2.086	HSG A	1S, 4S
0.000	HSG B	
2.494	HSG C	2S, 3S
0.000	HSG D	
0.000	Other	
4.580		TOTAL AREA

Capps Road and 120th

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Page 5

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	2.494	0.000	0.000	2.494	>75% Grass cover, Good	2S, 3S
0.955	0.000	0.000	0.000	0.000	0.955	Paved parking	1S, 4S
1.131	0.000	0.000	0.000	0.000	1.131	Unconnected roofs	1S, 4S
2.086	0.000	2.494	0.000	0.000	4.580	TOTAL AREA	

Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 6

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: East Post Developed Runoff Area=45,603 sf 100.00% Impervious Runoff Depth>2.37"
Tc=0.0 min CN=98 Runoff=0.64 cfs 0.207 af

Subcatchment 2S: East Predeveloped Runoff Area=56,135 sf 0.00% Impervious Runoff Depth>0.67"
Tc=0.0 min CN=74 Runoff=0.14 cfs 0.071 af

Subcatchment 3S: East Predeveloped Runoff Area=52,488 sf 0.00% Impervious Runoff Depth>0.67"
Tc=0.0 min CN=74 Runoff=0.13 cfs 0.067 af

Subcatchment 4S: East Post Developed Runoff Area=45,278 sf 100.00% Impervious Runoff Depth>2.37"
Tc=0.0 min CN=98 Runoff=0.64 cfs 0.205 af

Pond 1P: Chambermaxx Peak Elev=1.50' Storage=0.104 af Inflow=0.64 cfs 0.207 af
Outflow=0.07 cfs 0.107 af

Pond 2P: Chambermaxx Peak Elev=1.83' Storage=0.129 af Inflow=0.64 cfs 0.205 af
Outflow=0.06 cfs 0.077 af

Total Runoff Area = 4.580 ac Runoff Volume = 0.550 af Average Runoff Depth = 1.44"
54.45% Pervious = 2.494 ac 45.55% Impervious = 2.086 ac

Capps Road and 120th

Prepared by {enter your company name here}

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Type IA 24-hr 2 Y Rainfall=2.60"

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Page 7

Summary for Subcatchment 1S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

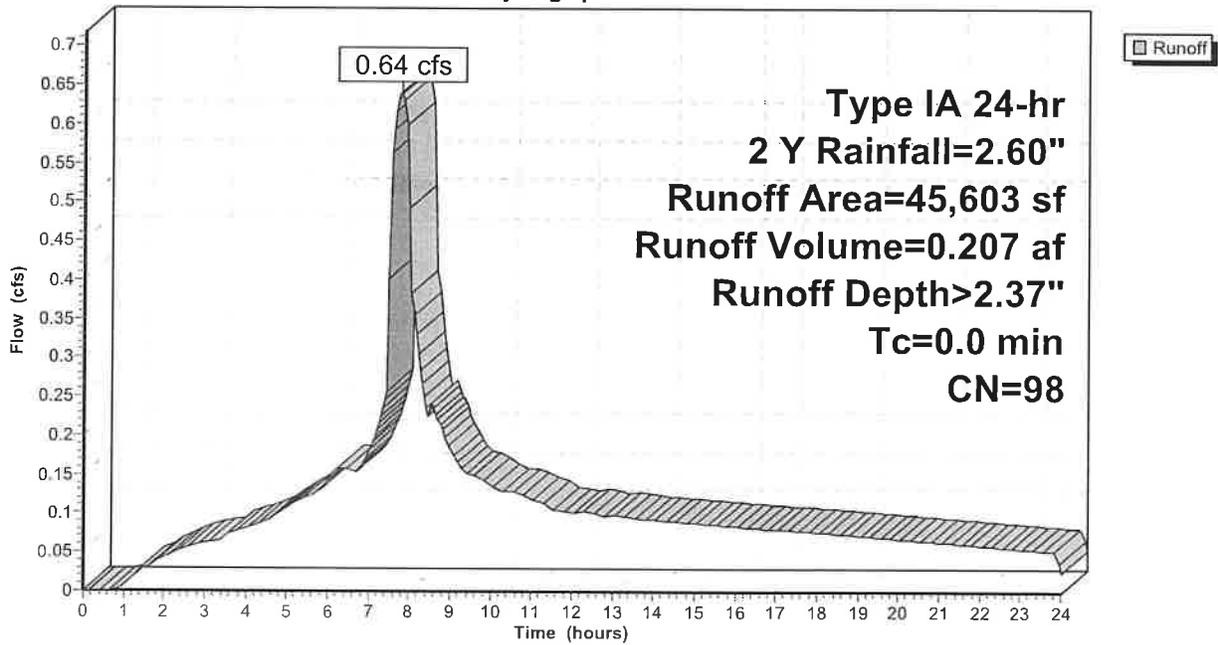
Runoff = 0.64 cfs @ 7.78 hrs, Volume= 0.207 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Y Rainfall=2.60"

Area (sf)	CN	Description
26,308	98	Unconnected roofs, HSG A
19,295	98	Paved parking, HSG A
45,603	98	Weighted Average
45,603	98	100.00% Impervious Area
26,308		57.69% Unconnected

Subcatchment 1S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 8

Hydrograph for Subcatchment 1S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	1.85	1.62	0.10
0.25	0.01	0.00	0.00	13.50	1.87	1.64	0.09
0.50	0.03	0.00	0.00	13.75	1.89	1.67	0.09
0.75	0.04	0.00	0.00	14.00	1.91	1.69	0.09
1.00	0.05	0.00	0.01	14.25	1.94	1.71	0.09
1.25	0.07	0.00	0.02	14.50	1.96	1.73	0.09
1.50	0.09	0.01	0.03	14.75	1.98	1.75	0.09
1.75	0.11	0.02	0.04	15.00	2.00	1.77	0.09
2.00	0.13	0.03	0.04	15.25	2.02	1.80	0.09
2.25	0.15	0.04	0.05	15.50	2.04	1.82	0.09
2.50	0.17	0.05	0.06	15.75	2.06	1.84	0.09
2.75	0.19	0.06	0.06	16.00	2.08	1.86	0.08
3.00	0.21	0.08	0.06	16.25	2.10	1.88	0.08
3.25	0.23	0.09	0.06	16.50	2.12	1.90	0.08
3.50	0.25	0.11	0.07	16.75	2.14	1.91	0.08
3.75	0.28	0.13	0.08	17.00	2.16	1.93	0.08
4.00	0.30	0.15	0.08	17.25	2.18	1.95	0.08
4.25	0.33	0.17	0.09	17.50	2.20	1.97	0.08
4.50	0.35	0.19	0.09	17.75	2.22	1.99	0.08
4.75	0.38	0.21	0.10	18.00	2.24	2.01	0.08
5.00	0.41	0.23	0.11	18.25	2.25	2.03	0.08
5.25	0.44	0.26	0.12	18.50	2.27	2.04	0.07
5.50	0.47	0.29	0.12	18.75	2.29	2.06	0.07
5.75	0.50	0.32	0.13	19.00	2.31	2.08	0.07
6.00	0.54	0.35	0.14	19.25	2.32	2.10	0.07
6.25	0.58	0.39	0.16	19.50	2.34	2.11	0.07
6.50	0.62	0.42	0.16	19.75	2.36	2.13	0.07
6.75	0.65	0.46	0.16	20.00	2.37	2.14	0.07
7.00	0.70	0.50	0.18	20.25	2.39	2.16	0.07
7.25	0.75	0.55	0.22	20.50	2.40	2.18	0.07
7.50	0.81	0.60	0.40	20.75	2.42	2.19	0.06
7.75	0.95	0.75	0.64	21.00	2.44	2.21	0.06
8.00	1.11	0.89	0.49	21.25	2.45	2.22	0.06
8.25	1.19	0.97	0.29	21.50	2.47	2.24	0.06
8.50	1.25	1.03	0.23	21.75	2.48	2.25	0.06
8.75	1.30	1.09	0.21	22.00	2.49	2.27	0.06
9.00	1.35	1.13	0.18	22.25	2.51	2.28	0.06
9.25	1.39	1.17	0.16	22.50	2.52	2.29	0.06
9.50	1.43	1.21	0.15	22.75	2.54	2.31	0.06
9.75	1.47	1.25	0.15	23.00	2.55	2.32	0.06
10.00	1.50	1.28	0.14	23.25	2.56	2.33	0.05
10.25	1.53	1.31	0.13	23.50	2.58	2.35	0.05
10.50	1.56	1.34	0.13	23.75	2.59	2.36	0.05
10.75	1.59	1.37	0.12	24.00	2.60	2.37	0.03
11.00	1.62	1.40	0.12				
11.25	1.65	1.43	0.11				
11.50	1.68	1.45	0.11				
11.75	1.70	1.48	0.10				
12.00	1.73	1.50	0.10				
12.25	1.75	1.53	0.10				
12.50	1.78	1.55	0.10				
12.75	1.80	1.58	0.10				
13.00	1.82	1.60	0.10				

Summary for Subcatchment 2S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

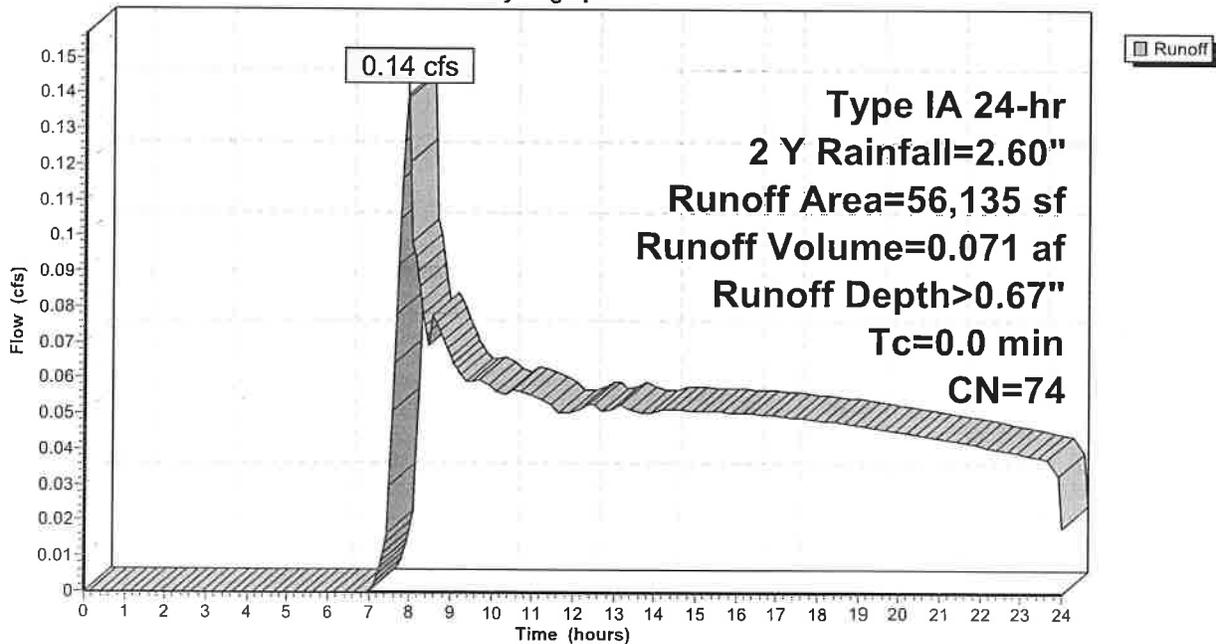
Runoff = 0.14 cfs @ 7.94 hrs, Volume= 0.071 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 2 Y Rainfall=2.60"

Area (sf)	CN	Description
56,135	74	>75% Grass cover, Good, HSG C
56,135	74	100.00% Pervious Area

Subcatchment 2S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 10

Hydrograph for Subcatchment 2S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	1.85	0.28	0.05
0.25	0.01	0.00	0.00	13.50	1.87	0.29	0.05
0.50	0.03	0.00	0.00	13.75	1.89	0.30	0.05
0.75	0.04	0.00	0.00	14.00	1.91	0.31	0.05
1.00	0.05	0.00	0.00	14.25	1.94	0.32	0.05
1.25	0.07	0.00	0.00	14.50	1.96	0.33	0.05
1.50	0.09	0.00	0.00	14.75	1.98	0.34	0.05
1.75	0.11	0.00	0.00	15.00	2.00	0.35	0.05
2.00	0.13	0.00	0.00	15.25	2.02	0.36	0.05
2.25	0.15	0.00	0.00	15.50	2.04	0.37	0.05
2.50	0.17	0.00	0.00	15.75	2.06	0.38	0.05
2.75	0.19	0.00	0.00	16.00	2.08	0.39	0.05
3.00	0.21	0.00	0.00	16.25	2.10	0.40	0.05
3.25	0.23	0.00	0.00	16.50	2.12	0.41	0.05
3.50	0.25	0.00	0.00	16.75	2.14	0.42	0.05
3.75	0.28	0.00	0.00	17.00	2.16	0.43	0.05
4.00	0.30	0.00	0.00	17.25	2.18	0.44	0.05
4.25	0.33	0.00	0.00	17.50	2.20	0.45	0.05
4.50	0.35	0.00	0.00	17.75	2.22	0.46	0.05
4.75	0.38	0.00	0.00	18.00	2.24	0.47	0.05
5.00	0.41	0.00	0.00	18.25	2.25	0.47	0.05
5.25	0.44	0.00	0.00	18.50	2.27	0.48	0.05
5.50	0.47	0.00	0.00	18.75	2.29	0.49	0.05
5.75	0.50	0.00	0.00	19.00	2.31	0.50	0.05
6.00	0.54	0.00	0.00	19.25	2.32	0.51	0.05
6.25	0.58	0.00	0.00	19.50	2.34	0.52	0.05
6.50	0.62	0.00	0.00	19.75	2.36	0.53	0.05
6.75	0.65	0.00	0.00	20.00	2.37	0.54	0.05
7.00	0.70	0.00	0.00	20.25	2.39	0.55	0.04
7.25	0.75	0.00	0.01	20.50	2.40	0.56	0.04
7.50	0.81	0.00	0.03	20.75	2.42	0.56	0.04
7.75	0.95	0.02	0.10	21.00	2.44	0.57	0.04
8.00	1.11	0.04	0.12	21.25	2.45	0.58	0.04
8.25	1.19	0.06	0.08	21.50	2.47	0.59	0.04
8.50	1.25	0.07	0.07	21.75	2.48	0.60	0.04
8.75	1.30	0.09	0.07	22.00	2.49	0.61	0.04
9.00	1.35	0.10	0.07	22.25	2.51	0.61	0.04
9.25	1.39	0.11	0.06	22.50	2.52	0.62	0.04
9.50	1.43	0.12	0.06	22.75	2.54	0.63	0.04
9.75	1.47	0.14	0.06	23.00	2.55	0.64	0.04
10.00	1.50	0.15	0.06	23.25	2.56	0.64	0.04
10.25	1.53	0.16	0.06	23.50	2.58	0.65	0.04
10.50	1.56	0.17	0.06	23.75	2.59	0.66	0.04
10.75	1.59	0.18	0.06	24.00	2.60	0.67	0.02
11.00	1.62	0.19	0.06				
11.25	1.65	0.20	0.05				
11.50	1.68	0.21	0.05				
11.75	1.70	0.22	0.05				
12.00	1.73	0.23	0.05				
12.25	1.75	0.24	0.05				
12.50	1.78	0.25	0.05				
12.75	1.80	0.26	0.05				
13.00	1.82	0.27	0.05				

Summary for Subcatchment 3S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

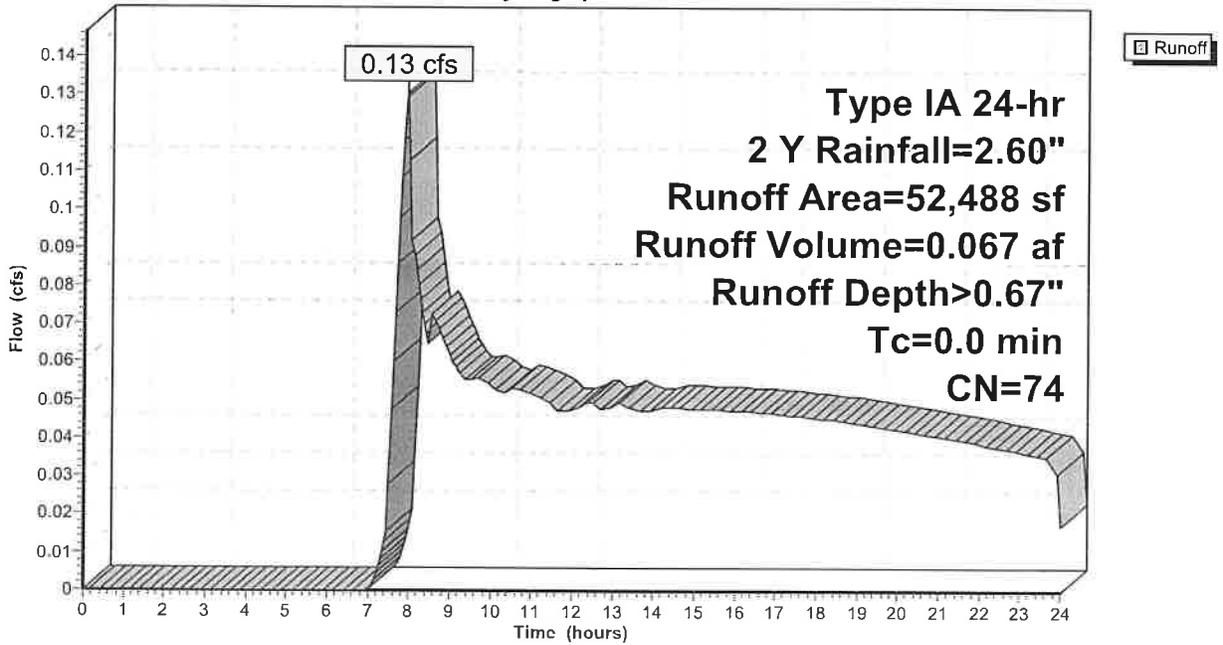
Runoff = 0.13 cfs @ 7.94 hrs, Volume= 0.067 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Y Rainfall=2.60"

Area (sf)	CN	Description
52,488	74	>75% Grass cover, Good, HSG C
52,488	74	100.00% Pervious Area

Subcatchment 3S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 12

Hydrograph for Subcatchment 3S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	1.85	0.28	0.05
0.25	0.01	0.00	0.00	13.50	1.87	0.29	0.05
0.50	0.03	0.00	0.00	13.75	1.89	0.30	0.05
0.75	0.04	0.00	0.00	14.00	1.91	0.31	0.05
1.00	0.05	0.00	0.00	14.25	1.94	0.32	0.05
1.25	0.07	0.00	0.00	14.50	1.96	0.33	0.05
1.50	0.09	0.00	0.00	14.75	1.98	0.34	0.05
1.75	0.11	0.00	0.00	15.00	2.00	0.35	0.05
2.00	0.13	0.00	0.00	15.25	2.02	0.36	0.05
2.25	0.15	0.00	0.00	15.50	2.04	0.37	0.05
2.50	0.17	0.00	0.00	15.75	2.06	0.38	0.05
2.75	0.19	0.00	0.00	16.00	2.08	0.39	0.05
3.00	0.21	0.00	0.00	16.25	2.10	0.40	0.05
3.25	0.23	0.00	0.00	16.50	2.12	0.41	0.05
3.50	0.25	0.00	0.00	16.75	2.14	0.42	0.05
3.75	0.28	0.00	0.00	17.00	2.16	0.43	0.05
4.00	0.30	0.00	0.00	17.25	2.18	0.44	0.05
4.25	0.33	0.00	0.00	17.50	2.20	0.45	0.05
4.50	0.35	0.00	0.00	17.75	2.22	0.46	0.05
4.75	0.38	0.00	0.00	18.00	2.24	0.47	0.05
5.00	0.41	0.00	0.00	18.25	2.25	0.47	0.05
5.25	0.44	0.00	0.00	18.50	2.27	0.48	0.04
5.50	0.47	0.00	0.00	18.75	2.29	0.49	0.04
5.75	0.50	0.00	0.00	19.00	2.31	0.50	0.04
6.00	0.54	0.00	0.00	19.25	2.32	0.51	0.04
6.25	0.58	0.00	0.00	19.50	2.34	0.52	0.04
6.50	0.62	0.00	0.00	19.75	2.36	0.53	0.04
6.75	0.65	0.00	0.00	20.00	2.37	0.54	0.04
7.00	0.70	0.00	0.00	20.25	2.39	0.55	0.04
7.25	0.75	0.00	0.01	20.50	2.40	0.56	0.04
7.50	0.81	0.00	0.03	20.75	2.42	0.56	0.04
7.75	0.95	0.02	0.10	21.00	2.44	0.57	0.04
8.00	1.11	0.04	0.11	21.25	2.45	0.58	0.04
8.25	1.19	0.06	0.08	21.50	2.47	0.59	0.04
8.50	1.25	0.07	0.07	21.75	2.48	0.60	0.04
8.75	1.30	0.09	0.07	22.00	2.49	0.61	0.04
9.00	1.35	0.10	0.06	22.25	2.51	0.61	0.04
9.25	1.39	0.11	0.06	22.50	2.52	0.62	0.04
9.50	1.43	0.12	0.06	22.75	2.54	0.63	0.04
9.75	1.47	0.14	0.06	23.00	2.55	0.64	0.04
10.00	1.50	0.15	0.05	23.25	2.56	0.64	0.04
10.25	1.53	0.16	0.05	23.50	2.58	0.65	0.04
10.50	1.56	0.17	0.05	23.75	2.59	0.66	0.03
10.75	1.59	0.18	0.05	24.00	2.60	0.67	0.02
11.00	1.62	0.19	0.05				
11.25	1.65	0.20	0.05				
11.50	1.68	0.21	0.05				
11.75	1.70	0.22	0.05				
12.00	1.73	0.23	0.05				
12.25	1.75	0.24	0.05				
12.50	1.78	0.25	0.05				
12.75	1.80	0.26	0.05				
13.00	1.82	0.27	0.05				

Summary for Subcatchment 4S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

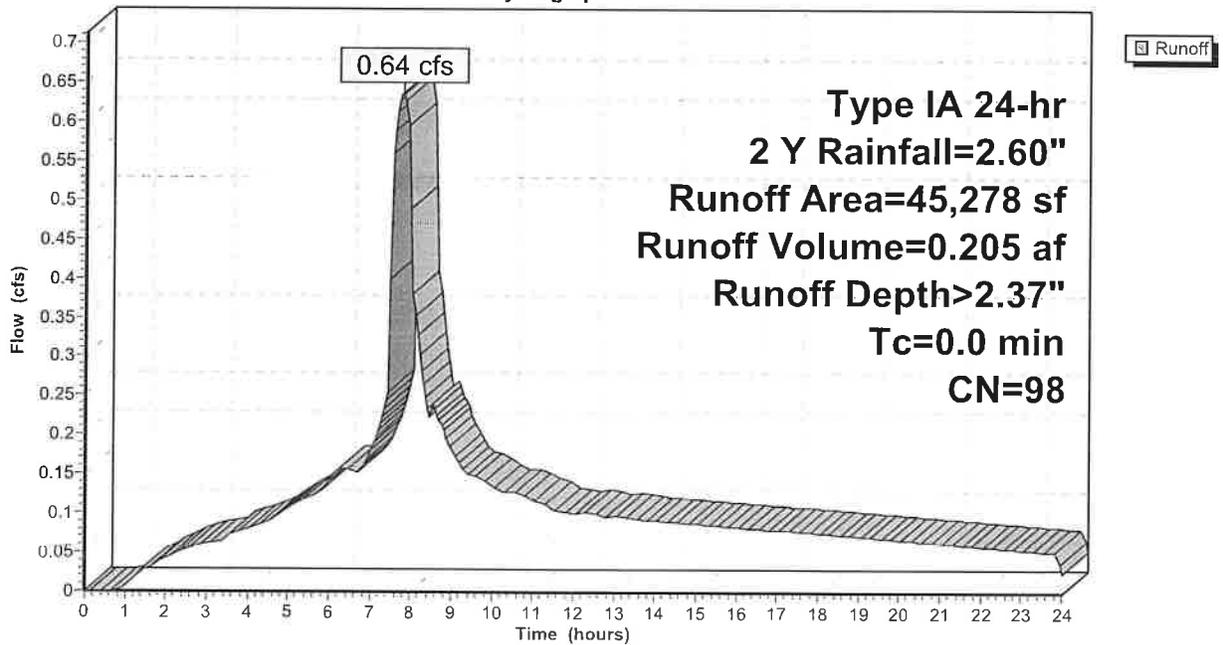
Runoff = 0.64 cfs @ 7.78 hrs, Volume= 0.205 af, Depth> 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 2 Y Rainfall=2.60"

Area (sf)	CN	Description
22,959	98	Unconnected roofs, HSG A
22,319	98	Paved parking, HSG A
45,278	98	Weighted Average
45,278	98	100.00% Impervious Area
22,959		50.71% Unconnected

Subcatchment 4S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 14

Hydrograph for Subcatchment 4S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	1.85	1.62	0.10
0.25	0.01	0.00	0.00	13.50	1.87	1.64	0.09
0.50	0.03	0.00	0.00	13.75	1.89	1.67	0.09
0.75	0.04	0.00	0.00	14.00	1.91	1.69	0.09
1.00	0.05	0.00	0.01	14.25	1.94	1.71	0.09
1.25	0.07	0.00	0.02	14.50	1.96	1.73	0.09
1.50	0.09	0.01	0.03	14.75	1.98	1.75	0.09
1.75	0.11	0.02	0.04	15.00	2.00	1.77	0.09
2.00	0.13	0.03	0.04	15.25	2.02	1.80	0.09
2.25	0.15	0.04	0.05	15.50	2.04	1.82	0.09
2.50	0.17	0.05	0.06	15.75	2.06	1.84	0.08
2.75	0.19	0.06	0.06	16.00	2.08	1.86	0.08
3.00	0.21	0.08	0.06	16.25	2.10	1.88	0.08
3.25	0.23	0.09	0.06	16.50	2.12	1.90	0.08
3.50	0.25	0.11	0.07	16.75	2.14	1.91	0.08
3.75	0.28	0.13	0.08	17.00	2.16	1.93	0.08
4.00	0.30	0.15	0.08	17.25	2.18	1.95	0.08
4.25	0.33	0.17	0.09	17.50	2.20	1.97	0.08
4.50	0.35	0.19	0.09	17.75	2.22	1.99	0.08
4.75	0.38	0.21	0.10	18.00	2.24	2.01	0.08
5.00	0.41	0.23	0.11	18.25	2.25	2.03	0.07
5.25	0.44	0.26	0.12	18.50	2.27	2.04	0.07
5.50	0.47	0.29	0.12	18.75	2.29	2.06	0.07
5.75	0.50	0.32	0.13	19.00	2.31	2.08	0.07
6.00	0.54	0.35	0.14	19.25	2.32	2.10	0.07
6.25	0.58	0.39	0.16	19.50	2.34	2.11	0.07
6.50	0.62	0.42	0.16	19.75	2.36	2.13	0.07
6.75	0.65	0.46	0.16	20.00	2.37	2.14	0.07
7.00	0.70	0.50	0.18	20.25	2.39	2.16	0.07
7.25	0.75	0.55	0.22	20.50	2.40	2.18	0.07
7.50	0.81	0.60	0.40	20.75	2.42	2.19	0.06
7.75	0.95	0.75	0.63	21.00	2.44	2.21	0.06
8.00	1.11	0.89	0.49	21.25	2.45	2.22	0.06
8.25	1.19	0.97	0.28	21.50	2.47	2.24	0.06
8.50	1.25	1.03	0.23	21.75	2.48	2.25	0.06
8.75	1.30	1.09	0.21	22.00	2.49	2.27	0.06
9.00	1.35	1.13	0.18	22.25	2.51	2.28	0.06
9.25	1.39	1.17	0.16	22.50	2.52	2.29	0.06
9.50	1.43	1.21	0.15	22.75	2.54	2.31	0.06
9.75	1.47	1.25	0.14	23.00	2.55	2.32	0.06
10.00	1.50	1.28	0.14	23.25	2.56	2.33	0.05
10.25	1.53	1.31	0.13	23.50	2.58	2.35	0.05
10.50	1.56	1.34	0.13	23.75	2.59	2.36	0.05
10.75	1.59	1.37	0.12	24.00	2.60	2.37	0.03
11.00	1.62	1.40	0.12				
11.25	1.65	1.43	0.11				
11.50	1.68	1.45	0.11				
11.75	1.70	1.48	0.10				
12.00	1.73	1.50	0.10				
12.25	1.75	1.53	0.10				
12.50	1.78	1.55	0.10				
12.75	1.80	1.58	0.10				
13.00	1.82	1.60	0.10				

Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 15

Summary for Pond 1P: Chambermaxx

Inflow Area = 1.047 ac, 100.00% Impervious, Inflow Depth > 2.37" for 2 Y event
 Inflow = 0.64 cfs @ 7.78 hrs, Volume= 0.207 af
 Outflow = 0.07 cfs @ 19.29 hrs, Volume= 0.107 af, Atten= 89%, Lag= 690.4 min
 Primary = 0.07 cfs @ 19.29 hrs, Volume= 0.107 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 1.50' @ 19.29 hrs Surf.Area= 0.100 ac Storage= 0.104 af

Plug-Flow detention time= 469.3 min calculated for 0.106 af (52% of inflow)
 Center-of-Mass det. time= 210.4 min (876.4 - 666.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.5" Vert. Orifice/Grate C= 0.600
#2	Primary	1.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	0.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.07 cfs @ 19.29 hrs HW=1.50' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.07 cfs @ 5.77 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

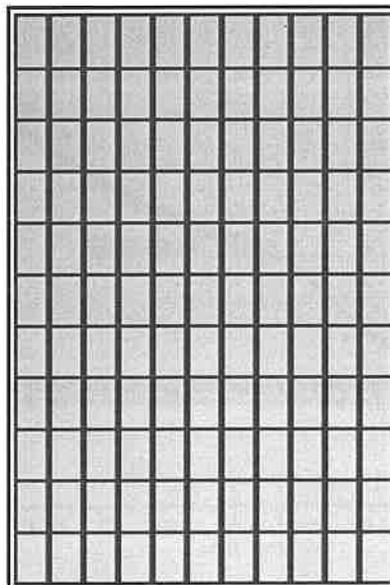
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

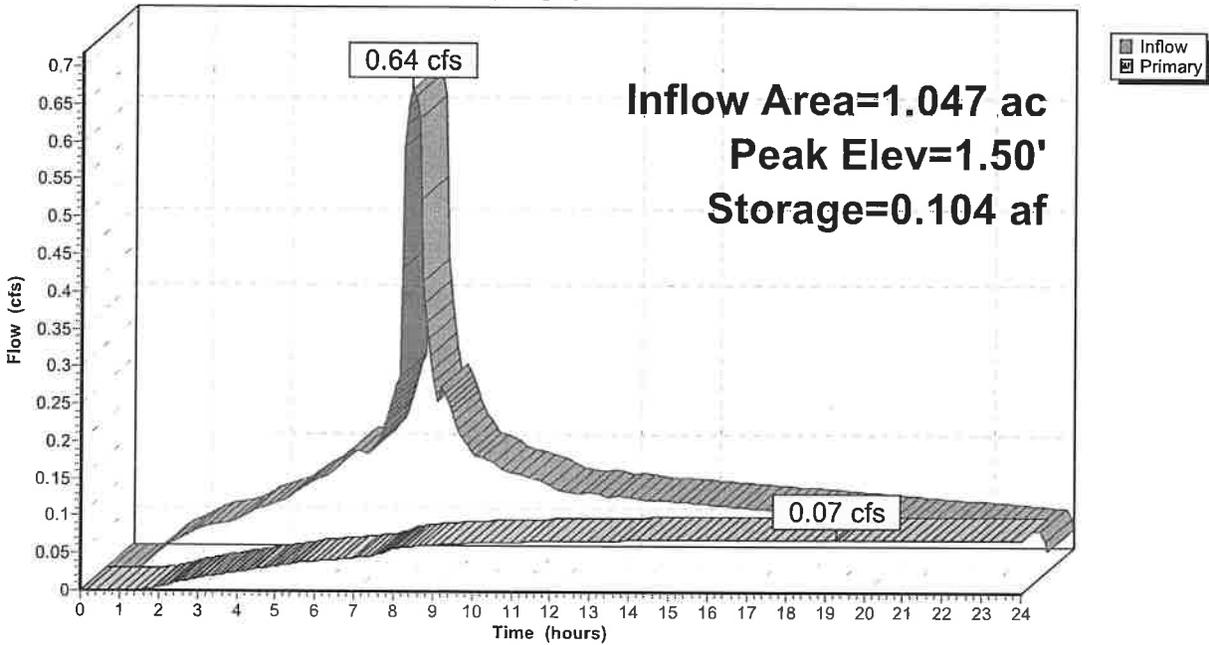
566.0 cy Field

344.3 cy Stone



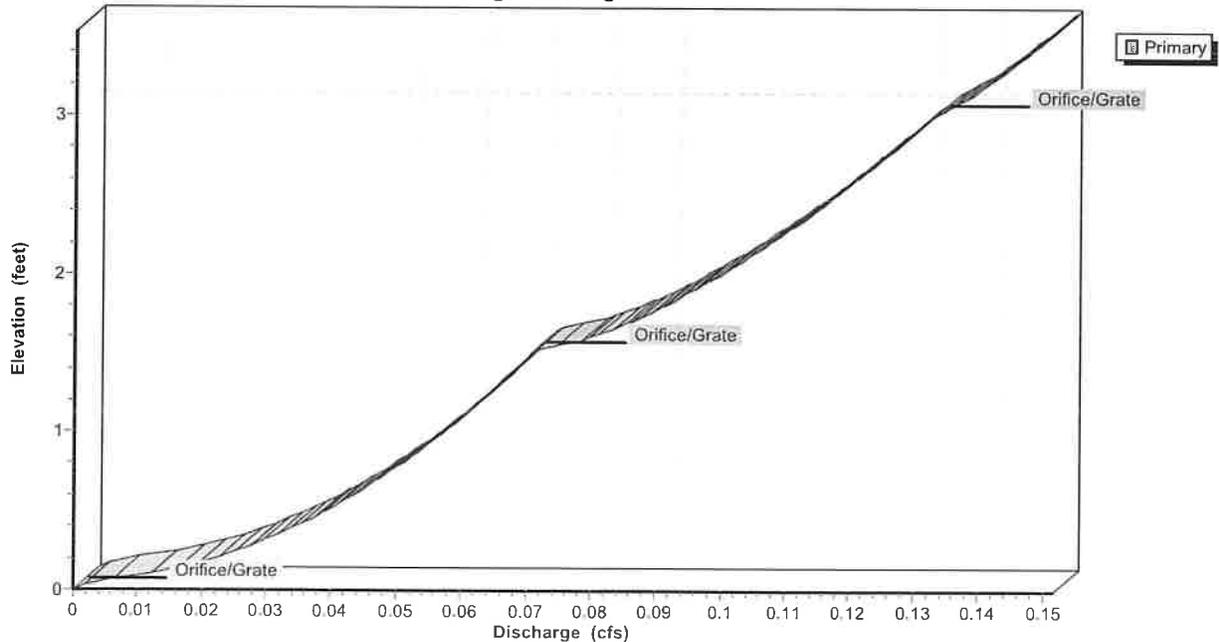
Pond 1P: Chambermaxx

Hydrograph



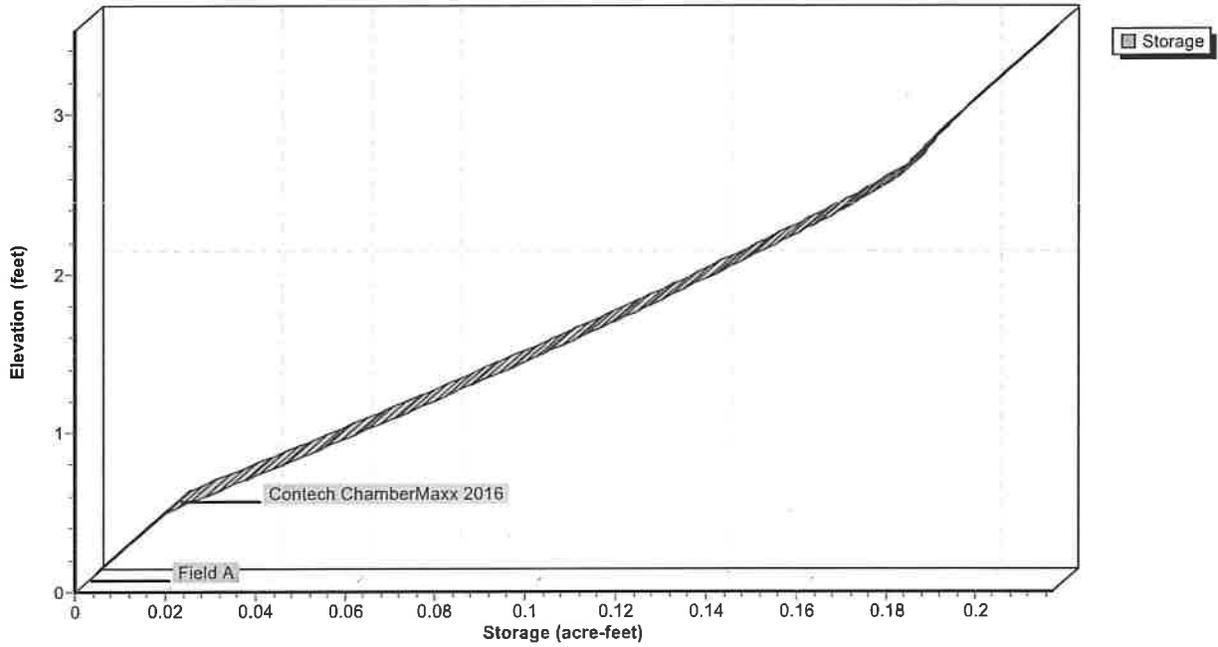
Pond 1P: Chambermaxx

Stage-Discharge



Pond 1P: Chambermaxx

Stage-Area-Storage



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Page 19

Hydrograph for Pond 1P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.01	0.000	0.00	0.00
1.50	0.03	0.001	0.02	0.00
2.00	0.04	0.002	0.06	0.00
2.50	0.06	0.004	0.10	0.01
3.00	0.06	0.006	0.15	0.02
3.50	0.07	0.008	0.19	0.02
4.00	0.08	0.010	0.25	0.03
4.50	0.09	0.012	0.31	0.03
5.00	0.11	0.015	0.38	0.03
5.50	0.12	0.019	0.47	0.04
6.00	0.14	0.022	0.53	0.04
6.50	0.16	0.027	0.58	0.04
7.00	0.18	0.032	0.64	0.04
7.50	0.40	0.039	0.72	0.05
8.00	0.49	0.062	0.98	0.06
8.50	0.23	0.072	1.10	0.06
9.00	0.18	0.078	1.18	0.06
9.50	0.15	0.082	1.23	0.06
10.00	0.14	0.086	1.27	0.06
10.50	0.13	0.088	1.30	0.07
11.00	0.12	0.091	1.33	0.07
11.50	0.11	0.093	1.36	0.07
12.00	0.10	0.094	1.37	0.07
12.50	0.10	0.095	1.39	0.07
13.00	0.10	0.097	1.41	0.07
13.50	0.09	0.098	1.42	0.07
14.00	0.09	0.099	1.43	0.07
14.50	0.09	0.100	1.45	0.07
15.00	0.09	0.101	1.46	0.07
15.50	0.09	0.101	1.47	0.07
16.00	0.08	0.102	1.47	0.07
16.50	0.08	0.102	1.48	0.07
17.00	0.08	0.103	1.49	0.07
17.50	0.08	0.103	1.49	0.07
18.00	0.08	0.104	1.49	0.07
18.50	0.07	0.104	1.50	0.07
19.00	0.07	0.104	1.50	0.07
19.50	0.07	0.104	1.50	0.07
20.00	0.07	0.104	1.50	0.07
20.50	0.07	0.104	1.49	0.07
21.00	0.06	0.103	1.49	0.07
21.50	0.06	0.103	1.49	0.07
22.00	0.06	0.103	1.48	0.07
22.50	0.06	0.102	1.48	0.07
23.00	0.06	0.102	1.47	0.07
23.50	0.05	0.101	1.46	0.07
24.00	0.03	0.100	1.45	0.07

Capps Road and 120th

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Page 20

Stage-Discharge for Pond 1P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.06	2.12	0.10	3.18	0.14
0.02	0.00	1.08	0.06	2.14	0.11	3.20	0.14
0.04	0.00	1.10	0.06	2.16	0.11	3.22	0.14
0.06	0.00	1.12	0.06	2.18	0.11	3.24	0.14
0.08	0.01	1.14	0.06	2.20	0.11	3.26	0.14
0.10	0.01	1.16	0.06	2.22	0.11	3.28	0.14
0.12	0.01	1.18	0.06	2.24	0.11	3.30	0.14
0.14	0.02	1.20	0.06	2.26	0.11	3.32	0.15
0.16	0.02	1.22	0.06	2.28	0.11	3.34	0.15
0.18	0.02	1.24	0.06	2.30	0.11	3.36	0.15
0.20	0.02	1.26	0.06	2.32	0.11	3.38	0.15
0.22	0.02	1.28	0.07	2.34	0.11	3.40	0.15
0.24	0.02	1.30	0.07	2.36	0.11	3.42	0.15
0.26	0.03	1.32	0.07	2.38	0.11	3.44	0.15
0.28	0.03	1.34	0.07	2.40	0.11	3.46	0.15
0.30	0.03	1.36	0.07	2.42	0.12	3.48	0.15
0.32	0.03	1.38	0.07	2.44	0.12	3.50	0.15
0.34	0.03	1.40	0.07	2.46	0.12	3.52	0.15
0.36	0.03	1.42	0.07	2.48	0.12		
0.38	0.03	1.44	0.07	2.50	0.12		
0.40	0.03	1.46	0.07	2.52	0.12		
0.42	0.04	1.48	0.07	2.54	0.12		
0.44	0.04	1.50	0.07	2.56	0.12		
0.46	0.04	1.52	0.07	2.58	0.12		
0.48	0.04	1.54	0.07	2.60	0.12		
0.50	0.04	1.56	0.08	2.62	0.12		
0.52	0.04	1.58	0.08	2.64	0.12		
0.54	0.04	1.60	0.08	2.66	0.12		
0.56	0.04	1.62	0.08	2.68	0.12		
0.58	0.04	1.64	0.08	2.70	0.12		
0.60	0.04	1.66	0.08	2.72	0.12		
0.62	0.04	1.68	0.08	2.74	0.13		
0.64	0.04	1.70	0.09	2.76	0.13		
0.66	0.05	1.72	0.09	2.78	0.13		
0.68	0.05	1.74	0.09	2.80	0.13		
0.70	0.05	1.76	0.09	2.82	0.13		
0.72	0.05	1.78	0.09	2.84	0.13		
0.74	0.05	1.80	0.09	2.86	0.13		
0.76	0.05	1.82	0.09	2.88	0.13		
0.78	0.05	1.84	0.09	2.90	0.13		
0.80	0.05	1.86	0.09	2.92	0.13		
0.82	0.05	1.88	0.09	2.94	0.13		
0.84	0.05	1.90	0.10	2.96	0.13		
0.86	0.05	1.92	0.10	2.98	0.13		
0.88	0.05	1.94	0.10	3.00	0.13		
0.90	0.05	1.96	0.10	3.02	0.13		
0.92	0.05	1.98	0.10	3.04	0.14		
0.94	0.06	2.00	0.10	3.06	0.14		
0.96	0.06	2.02	0.10	3.08	0.14		
0.98	0.06	2.04	0.10	3.10	0.14		
1.00	0.06	2.06	0.10	3.12	0.14		
1.02	0.06	2.08	0.10	3.14	0.14		
1.04	0.06	2.10	0.10	3.16	0.14		

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Type IA 24-hr 2 Y Rainfall=2.60"

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Page 21

Stage-Area-Storage for Pond 1P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

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Type IA 24-hr 2 Y Rainfall=2.60"

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Page 22

Summary for Pond 2P: Chambermaxx

Inflow Area = 1.039 ac, 100.00% Impervious, Inflow Depth > 2.37" for 2 Y event
 Inflow = 0.64 cfs @ 7.78 hrs, Volume= 0.205 af
 Outflow = 0.06 cfs @ 22.35 hrs, Volume= 0.077 af, Atten= 91%, Lag= 874.2 min
 Primary = 0.06 cfs @ 22.35 hrs, Volume= 0.077 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 1.83' @ 22.35 hrs Surf.Area= 0.100 ac Storage= 0.129 af

Plug-Flow detention time= 534.5 min calculated for 0.076 af (37% of inflow)
 Center-of-Mass det. time= 232.3 min (898.4 - 666.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.2" Vert. Orifice/Grate C= 0.600
#2	Primary	1.75'	1.5" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.06 cfs @ 22.35 hrs HW=1.83' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.05 cfs @ 6.42 fps)
- 2=Orifice/Grate (Orifice Controls 0.01 cfs @ 0.93 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H -> 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

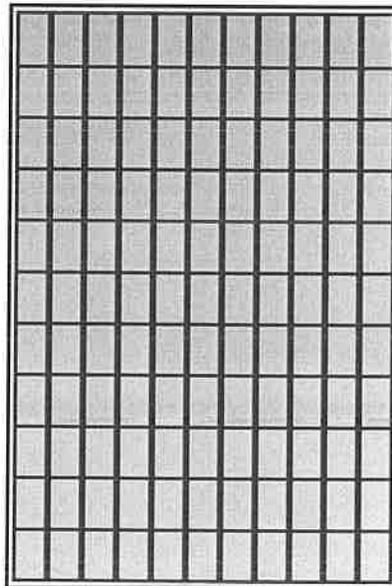
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

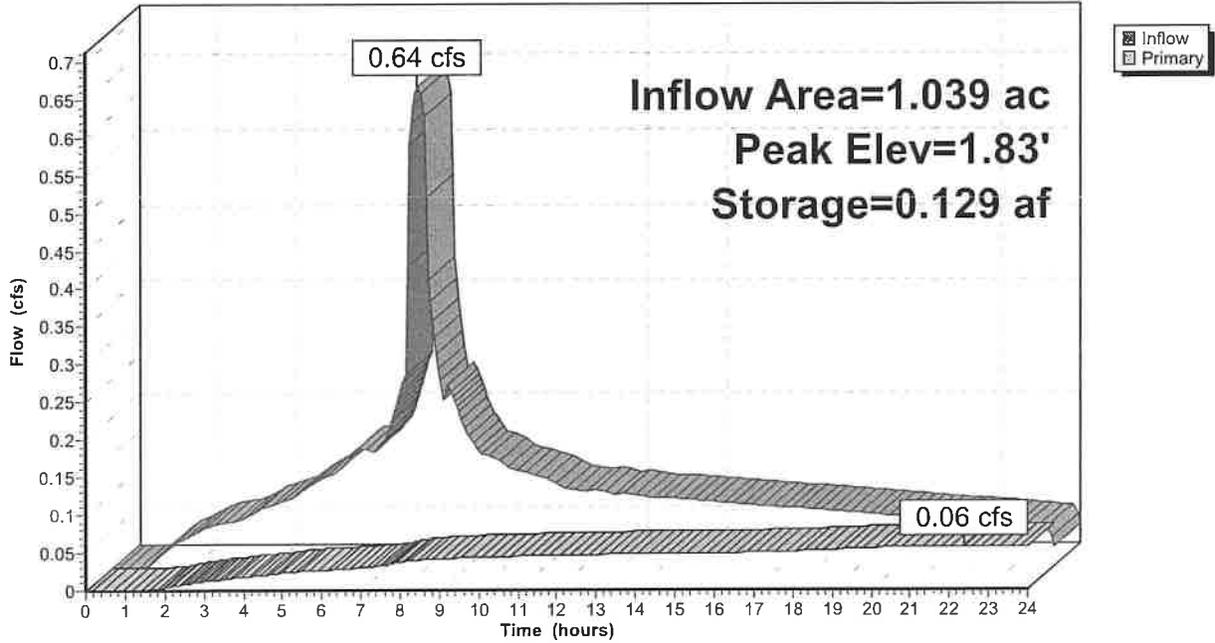
566.0 cy Field

344.3 cy Stone



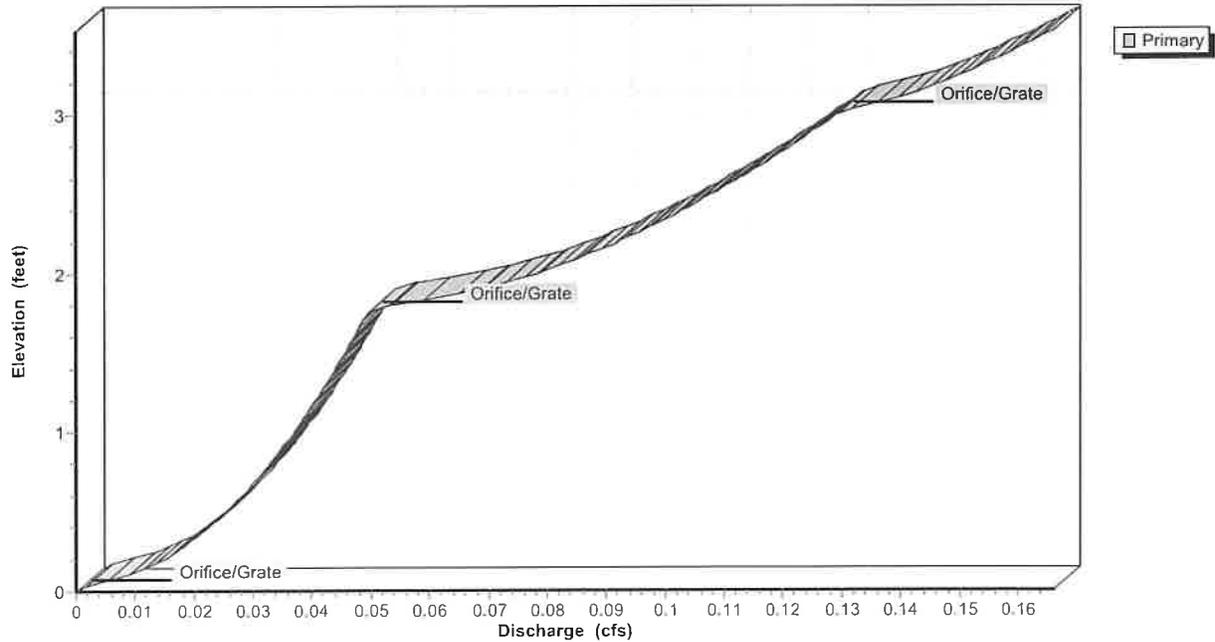
Pond 2P: Chambermaxx

Hydrograph



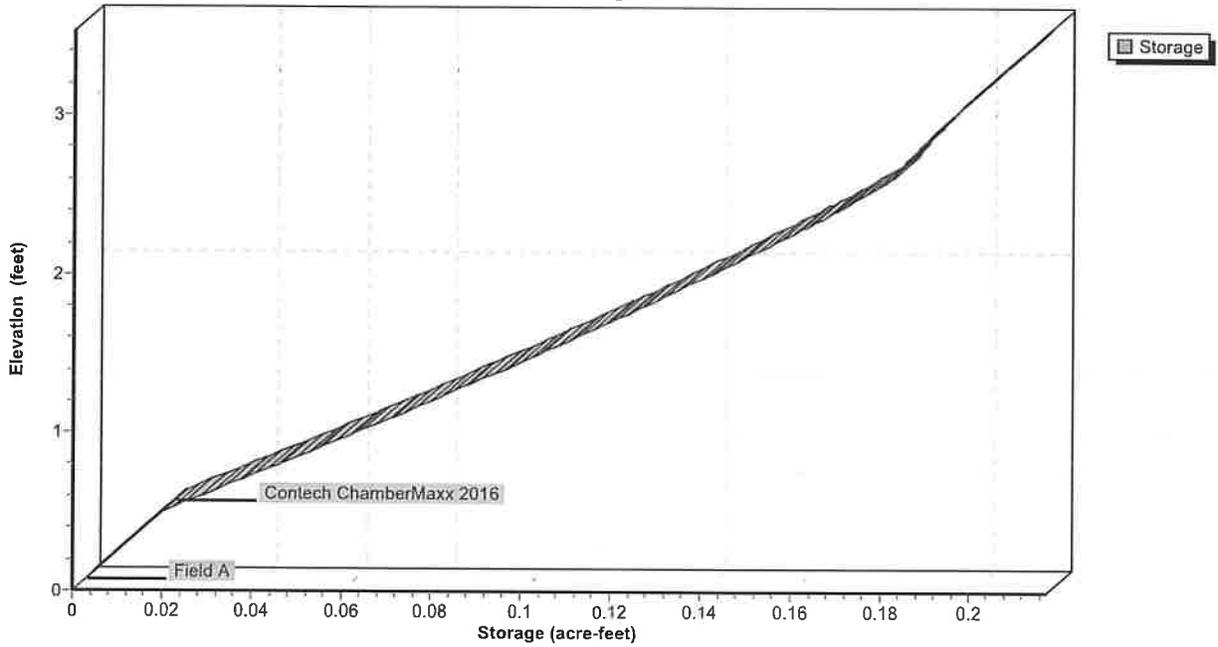
Pond 2P: Chambermaxx

Stage-Discharge



Pond 2P: Chambermaxx

Stage-Area-Storage



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Page 26

Hydrograph for Pond 2P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.01	0.000	0.00	0.00
1.50	0.03	0.001	0.02	0.00
2.00	0.04	0.002	0.06	0.00
2.50	0.06	0.004	0.10	0.01
3.00	0.06	0.006	0.15	0.01
3.50	0.07	0.008	0.20	0.01
4.00	0.08	0.011	0.27	0.02
4.50	0.09	0.013	0.34	0.02
5.00	0.11	0.017	0.42	0.02
5.50	0.12	0.020	0.50	0.03
6.00	0.14	0.025	0.55	0.03
6.50	0.16	0.030	0.61	0.03
7.00	0.18	0.035	0.67	0.03
7.50	0.40	0.043	0.77	0.03
8.00	0.49	0.066	1.04	0.04
8.50	0.23	0.077	1.17	0.04
9.00	0.18	0.084	1.25	0.04
9.50	0.15	0.089	1.31	0.04
10.00	0.14	0.093	1.37	0.04
10.50	0.13	0.097	1.41	0.04
11.00	0.12	0.100	1.45	0.04
11.50	0.11	0.103	1.48	0.05
12.00	0.10	0.105	1.51	0.05
12.50	0.10	0.108	1.54	0.05
13.00	0.10	0.110	1.57	0.05
13.50	0.09	0.112	1.60	0.05
14.00	0.09	0.114	1.62	0.05
14.50	0.09	0.115	1.64	0.05
15.00	0.09	0.117	1.67	0.05
15.50	0.09	0.119	1.69	0.05
16.00	0.08	0.120	1.71	0.05
16.50	0.08	0.122	1.72	0.05
17.00	0.08	0.123	1.74	0.05
17.50	0.08	0.124	1.76	0.05
18.00	0.08	0.125	1.77	0.05
18.50	0.07	0.126	1.78	0.05
19.00	0.07	0.127	1.79	0.05
19.50	0.07	0.128	1.80	0.05
20.00	0.07	0.128	1.81	0.06
20.50	0.07	0.129	1.82	0.06
21.00	0.06	0.129	1.82	0.06
21.50	0.06	0.129	1.82	0.06
22.00	0.06	0.129	1.83	0.06
22.50	0.06	0.129	1.83	0.06
23.00	0.06	0.129	1.82	0.06
23.50	0.05	0.129	1.82	0.06
24.00	0.03	0.129	1.82	0.06

Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 27

Stage-Discharge for Pond 2P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.04	2.12	0.09	3.18	0.15
0.02	0.00	1.08	0.04	2.14	0.09	3.20	0.15
0.04	0.00	1.10	0.04	2.16	0.09	3.22	0.15
0.06	0.00	1.12	0.04	2.18	0.09	3.24	0.15
0.08	0.01	1.14	0.04	2.20	0.09	3.26	0.15
0.10	0.01	1.16	0.04	2.22	0.09	3.28	0.15
0.12	0.01	1.18	0.04	2.24	0.09	3.30	0.15
0.14	0.01	1.20	0.04	2.26	0.10	3.32	0.15
0.16	0.01	1.22	0.04	2.28	0.10	3.34	0.16
0.18	0.01	1.24	0.04	2.30	0.10	3.36	0.16
0.20	0.01	1.26	0.04	2.32	0.10	3.38	0.16
0.22	0.02	1.28	0.04	2.34	0.10	3.40	0.16
0.24	0.02	1.30	0.04	2.36	0.10	3.42	0.16
0.26	0.02	1.32	0.04	2.38	0.10	3.44	0.16
0.28	0.02	1.34	0.04	2.40	0.10	3.46	0.16
0.30	0.02	1.36	0.04	2.42	0.10	3.48	0.16
0.32	0.02	1.38	0.04	2.44	0.11	3.50	0.16
0.34	0.02	1.40	0.04	2.46	0.11	3.52	0.17
0.36	0.02	1.42	0.04	2.48	0.11		
0.38	0.02	1.44	0.04	2.50	0.11		
0.40	0.02	1.46	0.04	2.52	0.11		
0.42	0.02	1.48	0.05	2.54	0.11		
0.44	0.02	1.50	0.05	2.56	0.11		
0.46	0.02	1.52	0.05	2.58	0.11		
0.48	0.02	1.54	0.05	2.60	0.11		
0.50	0.03	1.56	0.05	2.62	0.11		
0.52	0.03	1.58	0.05	2.64	0.11		
0.54	0.03	1.60	0.05	2.66	0.12		
0.56	0.03	1.62	0.05	2.68	0.12		
0.58	0.03	1.64	0.05	2.70	0.12		
0.60	0.03	1.66	0.05	2.72	0.12		
0.62	0.03	1.68	0.05	2.74	0.12		
0.64	0.03	1.70	0.05	2.76	0.12		
0.66	0.03	1.72	0.05	2.78	0.12		
0.68	0.03	1.74	0.05	2.80	0.12		
0.70	0.03	1.76	0.05	2.82	0.12		
0.72	0.03	1.78	0.05	2.84	0.12		
0.74	0.03	1.80	0.05	2.86	0.12		
0.76	0.03	1.82	0.06	2.88	0.12		
0.78	0.03	1.84	0.06	2.90	0.13		
0.80	0.03	1.86	0.06	2.92	0.13		
0.82	0.03	1.88	0.07	2.94	0.13		
0.84	0.03	1.90	0.07	2.96	0.13		
0.86	0.03	1.92	0.07	2.98	0.13		
0.88	0.03	1.94	0.07	3.00	0.13		
0.90	0.03	1.96	0.07	3.02	0.13		
0.92	0.04	1.98	0.08	3.04	0.13		
0.94	0.04	2.00	0.08	3.06	0.14		
0.96	0.04	2.02	0.08	3.08	0.14		
0.98	0.04	2.04	0.08	3.10	0.14		
1.00	0.04	2.06	0.08	3.12	0.14		
1.02	0.04	2.08	0.08	3.14	0.14		
1.04	0.04	2.10	0.09	3.16	0.14		

Capps Road and 120th

Type IA 24-hr 2 Y Rainfall=2.60"

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Page 28

Stage-Area-Storage for Pond 2P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 29

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: East Post Developed	Runoff Area=45,603 sf 100.00% Impervious Runoff Depth>3.17" Tc=0.0 min CN=98 Runoff=0.85 cfs 0.276 af
Subcatchment 2S: East Predeveloped	Runoff Area=56,135 sf 0.00% Impervious Runoff Depth>1.17" Tc=0.0 min CN=74 Runoff=0.31 cfs 0.126 af
Subcatchment 3S: East Predeveloped	Runoff Area=52,488 sf 0.00% Impervious Runoff Depth>1.17" Tc=0.0 min CN=74 Runoff=0.29 cfs 0.118 af
Subcatchment 4S: East Post Developed	Runoff Area=45,278 sf 100.00% Impervious Runoff Depth>3.17" Tc=0.0 min CN=98 Runoff=0.84 cfs 0.274 af
Pond 1P: Chambermaxx	Peak Elev=1.97' Storage=0.140 af Inflow=0.85 cfs 0.276 af Outflow=0.10 cfs 0.144 af
Pond 2P: Chambermaxx	Peak Elev=2.21' Storage=0.157 af Inflow=0.84 cfs 0.274 af Outflow=0.09 cfs 0.122 af

Total Runoff Area = 4.580 ac Runoff Volume = 0.794 af Average Runoff Depth = 2.08"
54.45% Pervious = 2.494 ac 45.55% Impervious = 2.086 ac

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 30

Summary for Subcatchment 1S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

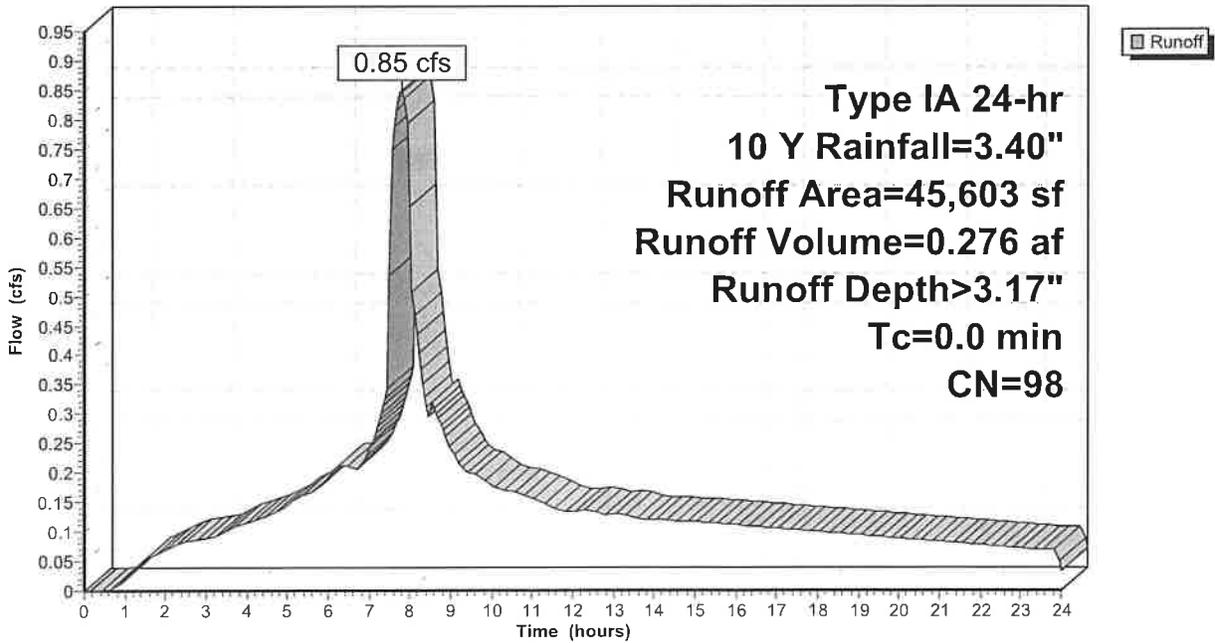
Runoff = 0.85 cfs @ 7.78 hrs, Volume= 0.276 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Y Rainfall=3.40"

Area (sf)	CN	Description
26,308	98	Unconnected roofs, HSG A
19,295	98	Paved parking, HSG A
45,603	98	Weighted Average
45,603	98	100.00% Impervious Area
26,308		57.69% Unconnected

Subcatchment 1S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 31

Hydrograph for Subcatchment 1S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.41	2.19	0.13
0.25	0.02	0.00	0.00	13.50	2.44	2.22	0.12
0.50	0.03	0.00	0.00	13.75	2.47	2.24	0.12
0.75	0.05	0.00	0.01	14.00	2.50	2.27	0.12
1.00	0.07	0.00	0.02	14.25	2.53	2.30	0.12
1.25	0.09	0.01	0.04	14.50	2.56	2.33	0.12
1.50	0.12	0.02	0.05	14.75	2.59	2.36	0.12
1.75	0.14	0.03	0.06	15.00	2.62	2.39	0.12
2.00	0.17	0.05	0.07	15.25	2.64	2.41	0.11
2.25	0.20	0.07	0.08	15.50	2.67	2.44	0.11
2.50	0.22	0.09	0.08	15.75	2.70	2.47	0.11
2.75	0.25	0.11	0.09	16.00	2.72	2.49	0.11
3.00	0.28	0.13	0.09	16.25	2.75	2.52	0.11
3.25	0.31	0.15	0.09	16.50	2.78	2.54	0.11
3.50	0.33	0.17	0.10	16.75	2.80	2.57	0.11
3.75	0.36	0.20	0.11	17.00	2.83	2.59	0.11
4.00	0.39	0.22	0.11	17.25	2.85	2.62	0.10
4.25	0.43	0.25	0.12	17.50	2.88	2.64	0.10
4.50	0.46	0.28	0.13	17.75	2.90	2.67	0.10
4.75	0.49	0.31	0.14	18.00	2.92	2.69	0.10
5.00	0.53	0.35	0.15	18.25	2.95	2.72	0.10
5.25	0.57	0.38	0.16	18.50	2.97	2.74	0.10
5.50	0.61	0.42	0.17	18.75	2.99	2.76	0.10
5.75	0.65	0.46	0.17	19.00	3.02	2.78	0.09
6.00	0.70	0.50	0.19	19.25	3.04	2.81	0.09
6.25	0.75	0.55	0.21	19.50	3.06	2.83	0.09
6.50	0.81	0.60	0.21	19.75	3.08	2.85	0.09
6.75	0.86	0.65	0.21	20.00	3.10	2.87	0.09
7.00	0.91	0.71	0.24	20.25	3.12	2.89	0.09
7.25	0.98	0.77	0.29	20.50	3.14	2.91	0.09
7.50	1.05	0.84	0.53	20.75	3.16	2.93	0.08
7.75	1.25	1.03	0.85	21.00	3.18	2.95	0.08
8.00	1.45	1.23	0.65	21.25	3.20	2.97	0.08
8.25	1.55	1.33	0.38	21.50	3.22	2.99	0.08
8.50	1.63	1.41	0.31	21.75	3.24	3.01	0.08
8.75	1.71	1.48	0.28	22.00	3.26	3.03	0.08
9.00	1.77	1.54	0.24	22.25	3.28	3.05	0.08
9.25	1.82	1.60	0.21	22.50	3.30	3.07	0.08
9.50	1.87	1.65	0.20	22.75	3.32	3.08	0.07
9.75	1.92	1.69	0.19	23.00	3.33	3.10	0.07
10.00	1.96	1.74	0.18	23.25	3.35	3.12	0.07
10.25	2.00	1.78	0.17	23.50	3.37	3.13	0.07
10.50	2.04	1.82	0.17	23.75	3.38	3.15	0.07
10.75	2.08	1.86	0.16	24.00	3.40	3.17	0.03
11.00	2.12	1.89	0.16				
11.25	2.16	1.93	0.15				
11.50	2.19	1.97	0.14				
11.75	2.23	2.00	0.13				
12.00	2.26	2.03	0.13				
12.25	2.29	2.06	0.13				
12.50	2.32	2.09	0.14				
12.75	2.35	2.12	0.13				
13.00	2.38	2.15	0.13				

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 32

Summary for Subcatchment 2S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

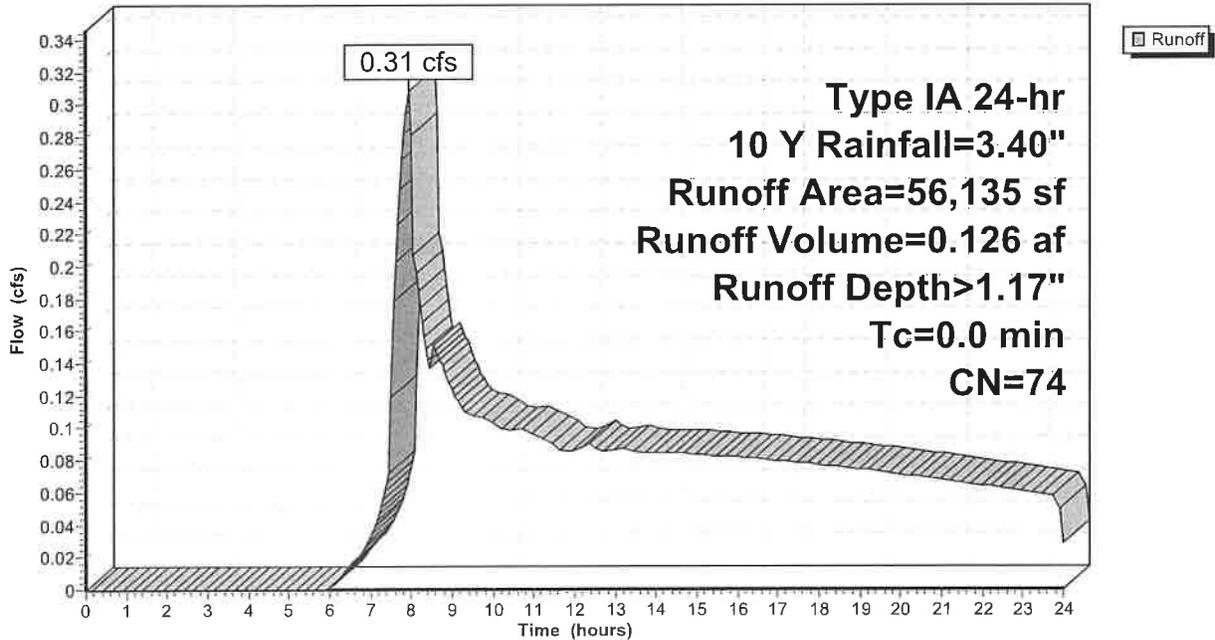
Runoff = 0.31 cfs @ 7.93 hrs, Volume= 0.126 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Y Rainfall=3.40"

Area (sf)	CN	Description
56,135	74	>75% Grass cover, Good, HSG C
56,135	74	100.00% Pervious Area

Subcatchment 2S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 33

Hydrograph for Subcatchment 2S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.41	0.56	0.09
0.25	0.02	0.00	0.00	13.50	2.44	0.58	0.08
0.50	0.03	0.00	0.00	13.75	2.47	0.59	0.08
0.75	0.05	0.00	0.00	14.00	2.50	0.61	0.08
1.00	0.07	0.00	0.00	14.25	2.53	0.63	0.08
1.25	0.09	0.00	0.00	14.50	2.56	0.64	0.08
1.50	0.12	0.00	0.00	14.75	2.59	0.66	0.08
1.75	0.14	0.00	0.00	15.00	2.62	0.67	0.08
2.00	0.17	0.00	0.00	15.25	2.64	0.69	0.08
2.25	0.20	0.00	0.00	15.50	2.67	0.71	0.08
2.50	0.22	0.00	0.00	15.75	2.70	0.72	0.08
2.75	0.25	0.00	0.00	16.00	2.72	0.74	0.08
3.00	0.28	0.00	0.00	16.25	2.75	0.75	0.08
3.25	0.31	0.00	0.00	16.50	2.78	0.77	0.08
3.50	0.33	0.00	0.00	16.75	2.80	0.78	0.08
3.75	0.36	0.00	0.00	17.00	2.83	0.80	0.08
4.00	0.39	0.00	0.00	17.25	2.85	0.82	0.08
4.25	0.43	0.00	0.00	17.50	2.88	0.83	0.08
4.50	0.46	0.00	0.00	17.75	2.90	0.85	0.08
4.75	0.49	0.00	0.00	18.00	2.92	0.86	0.08
5.00	0.53	0.00	0.00	18.25	2.95	0.87	0.08
5.25	0.57	0.00	0.00	18.50	2.97	0.89	0.08
5.50	0.61	0.00	0.00	18.75	2.99	0.90	0.07
5.75	0.65	0.00	0.00	19.00	3.02	0.92	0.07
6.00	0.70	0.00	0.00	19.25	3.04	0.93	0.07
6.25	0.75	0.00	0.01	19.50	3.06	0.95	0.07
6.50	0.81	0.00	0.02	19.75	3.08	0.96	0.07
6.75	0.86	0.01	0.02	20.00	3.10	0.97	0.07
7.00	0.91	0.01	0.03	20.25	3.12	0.99	0.07
7.25	0.98	0.02	0.05	20.50	3.14	1.00	0.07
7.50	1.05	0.03	0.12	20.75	3.16	1.01	0.07
7.75	1.25	0.07	0.27	21.00	3.18	1.03	0.07
8.00	1.45	0.13	0.26	21.25	3.20	1.04	0.07
8.25	1.55	0.17	0.17	21.50	3.22	1.05	0.07
8.50	1.63	0.19	0.14	21.75	3.24	1.07	0.07
8.75	1.71	0.22	0.14	22.00	3.26	1.08	0.06
9.00	1.77	0.25	0.12	22.25	3.28	1.09	0.06
9.25	1.82	0.27	0.11	22.50	3.30	1.10	0.06
9.50	1.87	0.29	0.11	22.75	3.32	1.11	0.06
9.75	1.92	0.31	0.11	23.00	3.33	1.13	0.06
10.00	1.96	0.33	0.10	23.25	3.35	1.14	0.06
10.25	2.00	0.35	0.10	23.50	3.37	1.15	0.06
10.50	2.04	0.37	0.10	23.75	3.38	1.16	0.06
10.75	2.08	0.39	0.10	24.00	3.40	1.17	0.03
11.00	2.12	0.41	0.10				
11.25	2.16	0.43	0.09				
11.50	2.19	0.44	0.09				
11.75	2.23	0.46	0.09				
12.00	2.26	0.48	0.09				
12.25	2.29	0.49	0.09				
12.50	2.32	0.51	0.09				
12.75	2.35	0.53	0.09				
13.00	2.38	0.54	0.09				

Summary for Subcatchment 3S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

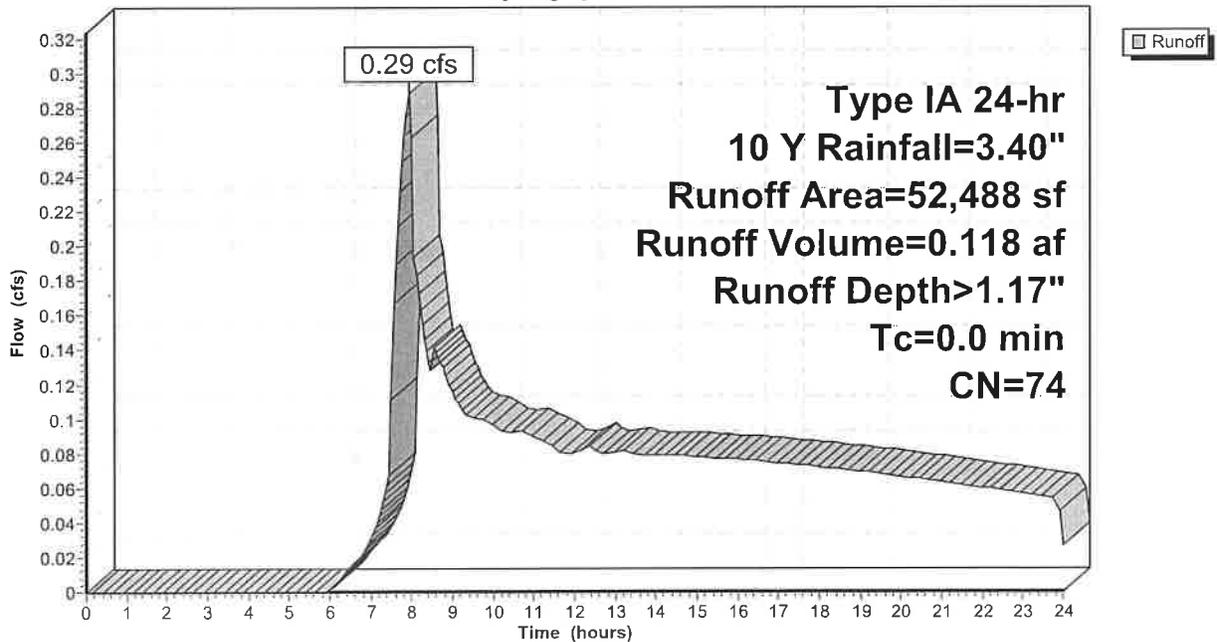
Runoff = 0.29 cfs @ 7.93 hrs, Volume= 0.118 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 10 Y Rainfall=3.40"

Area (sf)	CN	Description
52,488	74	>75% Grass cover, Good, HSG C
52,488	74	100.00% Pervious Area

Subcatchment 3S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 35

Hydrograph for Subcatchment 3S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.41	0.56	0.08
0.25	0.02	0.00	0.00	13.50	2.44	0.58	0.08
0.50	0.03	0.00	0.00	13.75	2.47	0.59	0.08
0.75	0.05	0.00	0.00	14.00	2.50	0.61	0.08
1.00	0.07	0.00	0.00	14.25	2.53	0.63	0.08
1.25	0.09	0.00	0.00	14.50	2.56	0.64	0.08
1.50	0.12	0.00	0.00	14.75	2.59	0.66	0.08
1.75	0.14	0.00	0.00	15.00	2.62	0.67	0.08
2.00	0.17	0.00	0.00	15.25	2.64	0.69	0.08
2.25	0.20	0.00	0.00	15.50	2.67	0.71	0.08
2.50	0.22	0.00	0.00	15.75	2.70	0.72	0.08
2.75	0.25	0.00	0.00	16.00	2.72	0.74	0.08
3.00	0.28	0.00	0.00	16.25	2.75	0.75	0.08
3.25	0.31	0.00	0.00	16.50	2.78	0.77	0.08
3.50	0.33	0.00	0.00	16.75	2.80	0.78	0.07
3.75	0.36	0.00	0.00	17.00	2.83	0.80	0.07
4.00	0.39	0.00	0.00	17.25	2.85	0.82	0.07
4.25	0.43	0.00	0.00	17.50	2.88	0.83	0.07
4.50	0.46	0.00	0.00	17.75	2.90	0.85	0.07
4.75	0.49	0.00	0.00	18.00	2.92	0.86	0.07
5.00	0.53	0.00	0.00	18.25	2.95	0.87	0.07
5.25	0.57	0.00	0.00	18.50	2.97	0.89	0.07
5.50	0.61	0.00	0.00	18.75	2.99	0.90	0.07
5.75	0.65	0.00	0.00	19.00	3.02	0.92	0.07
6.00	0.70	0.00	0.00	19.25	3.04	0.93	0.07
6.25	0.75	0.00	0.01	19.50	3.06	0.95	0.07
6.50	0.81	0.00	0.01	19.75	3.08	0.96	0.07
6.75	0.86	0.01	0.02	20.00	3.10	0.97	0.07
7.00	0.91	0.01	0.03	20.25	3.12	0.99	0.07
7.25	0.98	0.02	0.05	20.50	3.14	1.00	0.06
7.50	1.05	0.03	0.11	20.75	3.16	1.01	0.06
7.75	1.25	0.07	0.25	21.00	3.18	1.03	0.06
8.00	1.45	0.13	0.24	21.25	3.20	1.04	0.06
8.25	1.55	0.17	0.15	21.50	3.22	1.05	0.06
8.50	1.63	0.19	0.13	21.75	3.24	1.07	0.06
8.75	1.71	0.22	0.13	22.00	3.26	1.08	0.06
9.00	1.77	0.25	0.12	22.25	3.28	1.09	0.06
9.25	1.82	0.27	0.10	22.50	3.30	1.10	0.06
9.50	1.87	0.29	0.10	22.75	3.32	1.11	0.06
9.75	1.92	0.31	0.10	23.00	3.33	1.13	0.06
10.00	1.96	0.33	0.10	23.25	3.35	1.14	0.06
10.25	2.00	0.35	0.09	23.50	3.37	1.15	0.05
10.50	2.04	0.37	0.09	23.75	3.38	1.16	0.05
10.75	2.08	0.39	0.09	24.00	3.40	1.17	0.03
11.00	2.12	0.41	0.09				
11.25	2.16	0.43	0.09				
11.50	2.19	0.44	0.08				
11.75	2.23	0.46	0.08				
12.00	2.26	0.48	0.08				
12.25	2.29	0.49	0.08				
12.50	2.32	0.51	0.08				
12.75	2.35	0.53	0.08				
13.00	2.38	0.54	0.08				

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 36

Summary for Subcatchment 4S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

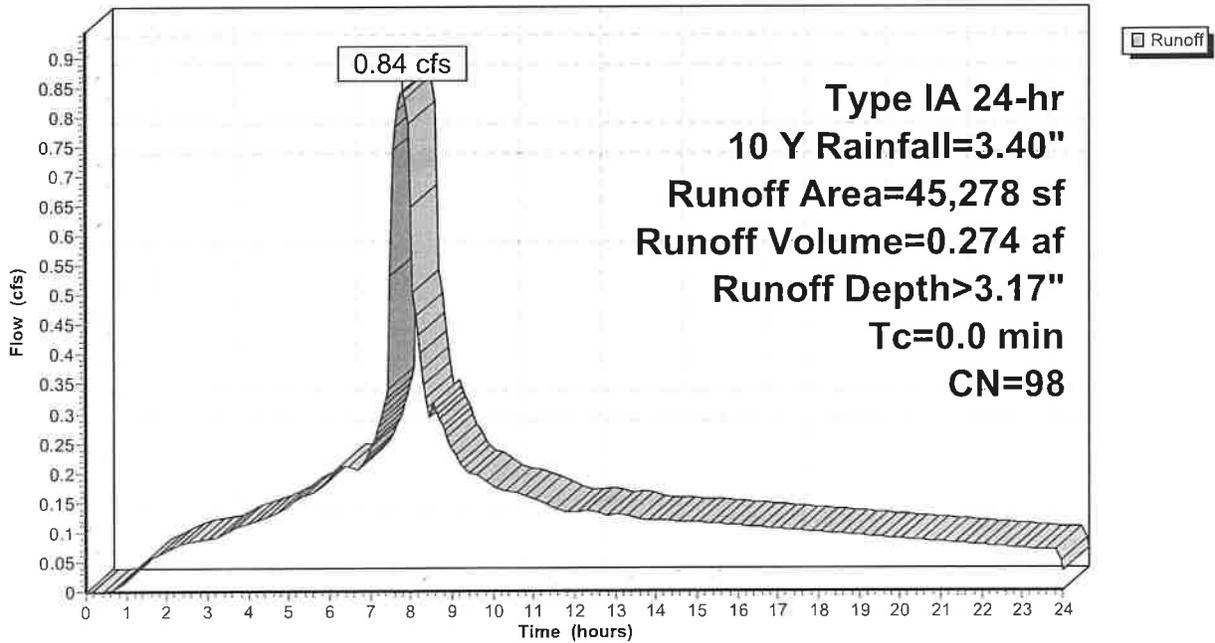
Runoff = 0.84 cfs @ 7.78 hrs, Volume= 0.274 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Y Rainfall=3.40"

Area (sf)	CN	Description
22,959	98	Unconnected roofs, HSG A
22,319	98	Paved parking, HSG A
45,278	98	Weighted Average
45,278	98	100.00% Impervious Area
22,959		50.71% Unconnected

Subcatchment 4S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 37

Hydrograph for Subcatchment 4S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.41	2.19	0.13
0.25	0.02	0.00	0.00	13.50	2.44	2.22	0.12
0.50	0.03	0.00	0.00	13.75	2.47	2.24	0.12
0.75	0.05	0.00	0.01	14.00	2.50	2.27	0.12
1.00	0.07	0.00	0.02	14.25	2.53	2.30	0.12
1.25	0.09	0.01	0.04	14.50	2.56	2.33	0.12
1.50	0.12	0.02	0.05	14.75	2.59	2.36	0.12
1.75	0.14	0.03	0.06	15.00	2.62	2.39	0.12
2.00	0.17	0.05	0.07	15.25	2.64	2.41	0.11
2.25	0.20	0.07	0.08	15.50	2.67	2.44	0.11
2.50	0.22	0.09	0.08	15.75	2.70	2.47	0.11
2.75	0.25	0.11	0.09	16.00	2.72	2.49	0.11
3.00	0.28	0.13	0.09	16.25	2.75	2.52	0.11
3.25	0.31	0.15	0.09	16.50	2.78	2.54	0.11
3.50	0.33	0.17	0.10	16.75	2.80	2.57	0.11
3.75	0.36	0.20	0.11	17.00	2.83	2.59	0.10
4.00	0.39	0.22	0.11	17.25	2.85	2.62	0.10
4.25	0.43	0.25	0.12	17.50	2.88	2.64	0.10
4.50	0.46	0.28	0.13	17.75	2.90	2.67	0.10
4.75	0.49	0.31	0.13	18.00	2.92	2.69	0.10
5.00	0.53	0.35	0.15	18.25	2.95	2.72	0.10
5.25	0.57	0.38	0.16	18.50	2.97	2.74	0.10
5.50	0.61	0.42	0.16	18.75	2.99	2.76	0.10
5.75	0.65	0.46	0.17	19.00	3.02	2.78	0.09
6.00	0.70	0.50	0.19	19.25	3.04	2.81	0.09
6.25	0.75	0.55	0.21	19.50	3.06	2.83	0.09
6.50	0.81	0.60	0.21	19.75	3.08	2.85	0.09
6.75	0.86	0.65	0.21	20.00	3.10	2.87	0.09
7.00	0.91	0.71	0.24	20.25	3.12	2.89	0.09
7.25	0.98	0.77	0.29	20.50	3.14	2.91	0.09
7.50	1.05	0.84	0.53	20.75	3.16	2.93	0.08
7.75	1.25	1.03	0.84	21.00	3.18	2.95	0.08
8.00	1.45	1.23	0.65	21.25	3.20	2.97	0.08
8.25	1.55	1.33	0.37	21.50	3.22	2.99	0.08
8.50	1.63	1.41	0.30	21.75	3.24	3.01	0.08
8.75	1.71	1.48	0.28	22.00	3.26	3.03	0.08
9.00	1.77	1.54	0.24	22.25	3.28	3.05	0.08
9.25	1.82	1.60	0.21	22.50	3.30	3.07	0.07
9.50	1.87	1.65	0.20	22.75	3.32	3.08	0.07
9.75	1.92	1.69	0.19	23.00	3.33	3.10	0.07
10.00	1.96	1.74	0.18	23.25	3.35	3.12	0.07
10.25	2.00	1.78	0.17	23.50	3.37	3.13	0.07
10.50	2.04	1.82	0.17	23.75	3.38	3.15	0.07
10.75	2.08	1.86	0.16	24.00	3.40	3.17	0.03
11.00	2.12	1.89	0.16				
11.25	2.16	1.93	0.15				
11.50	2.19	1.97	0.14				
11.75	2.23	2.00	0.13				
12.00	2.26	2.03	0.13				
12.25	2.29	2.06	0.13				
12.50	2.32	2.09	0.13				
12.75	2.35	2.12	0.13				
13.00	2.38	2.15	0.13				

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 38

Summary for Pond 1P: Chambermaxx

Inflow Area = 1.047 ac, 100.00% Impervious, Inflow Depth > 3.17" for 10 Y event
 Inflow = 0.85 cfs @ 7.78 hrs, Volume= 0.276 af
 Outflow = 0.10 cfs @ 18.20 hrs, Volume= 0.144 af, Atten= 88%, Lag= 625.3 min
 Primary = 0.10 cfs @ 18.20 hrs, Volume= 0.144 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 1.97' @ 18.20 hrs Surf.Area= 0.100 ac Storage= 0.140 af

Plug-Flow detention time= 489.5 min calculated for 0.144 af (52% of inflow)
 Center-of-Mass det. time= 229.9 min (888.2 - 658.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.5" Vert. Orifice/Grate C= 0.600
#2	Primary	1.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	0.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.10 cfs @ 18.20 hrs HW=1.97' (Free Discharge)

- └─1=Orifice/Grate (Orifice Controls 0.08 cfs @ 6.65 fps)
- └─2=Orifice/Grate (Orifice Controls 0.02 cfs @ 3.14 fps)
- └─3=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

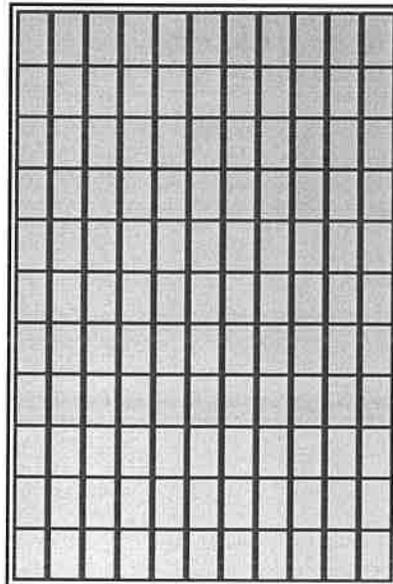
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

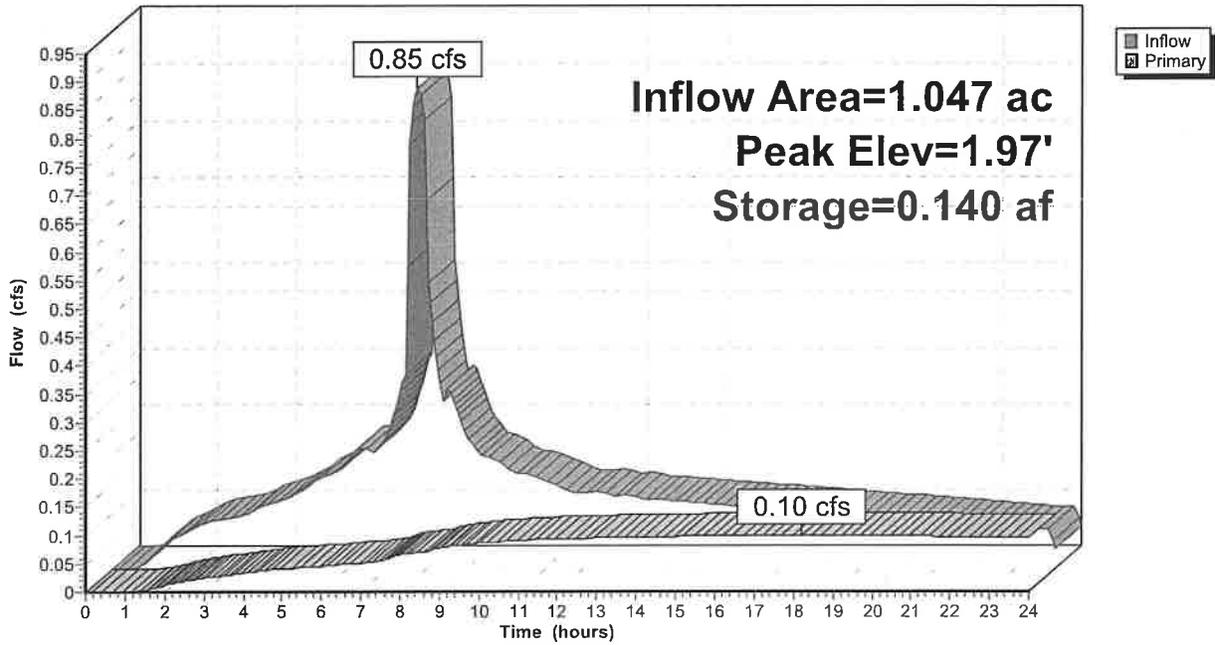
566.0 cy Field

344.3 cy Stone



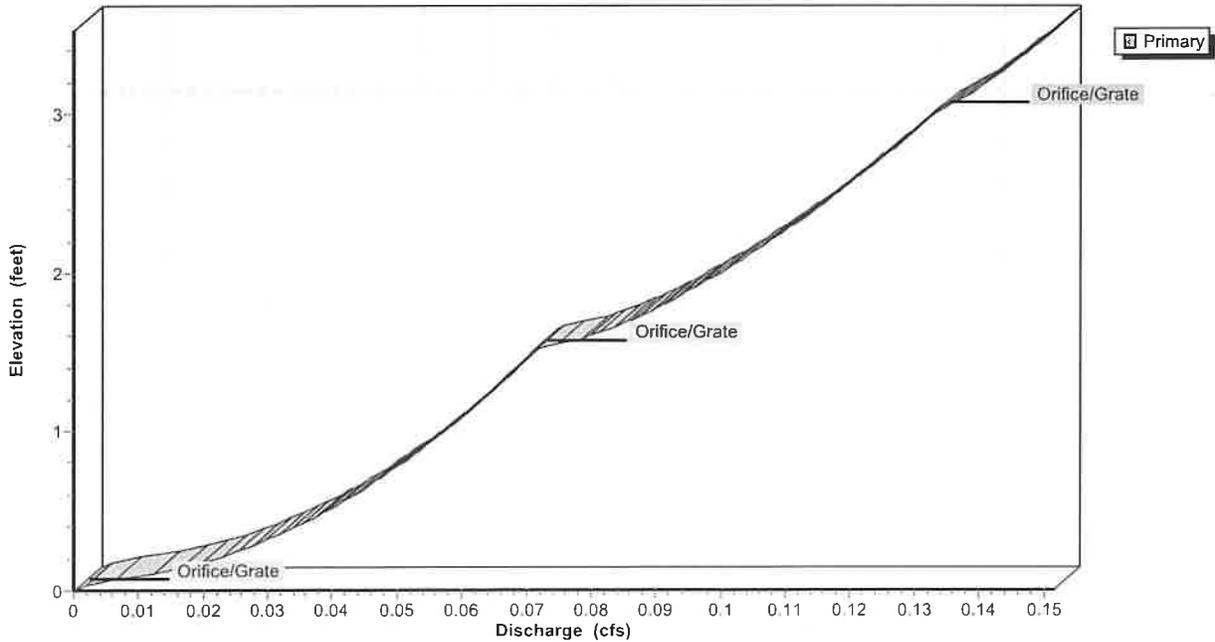
Pond 1P: Chambermaxx

Hydrograph



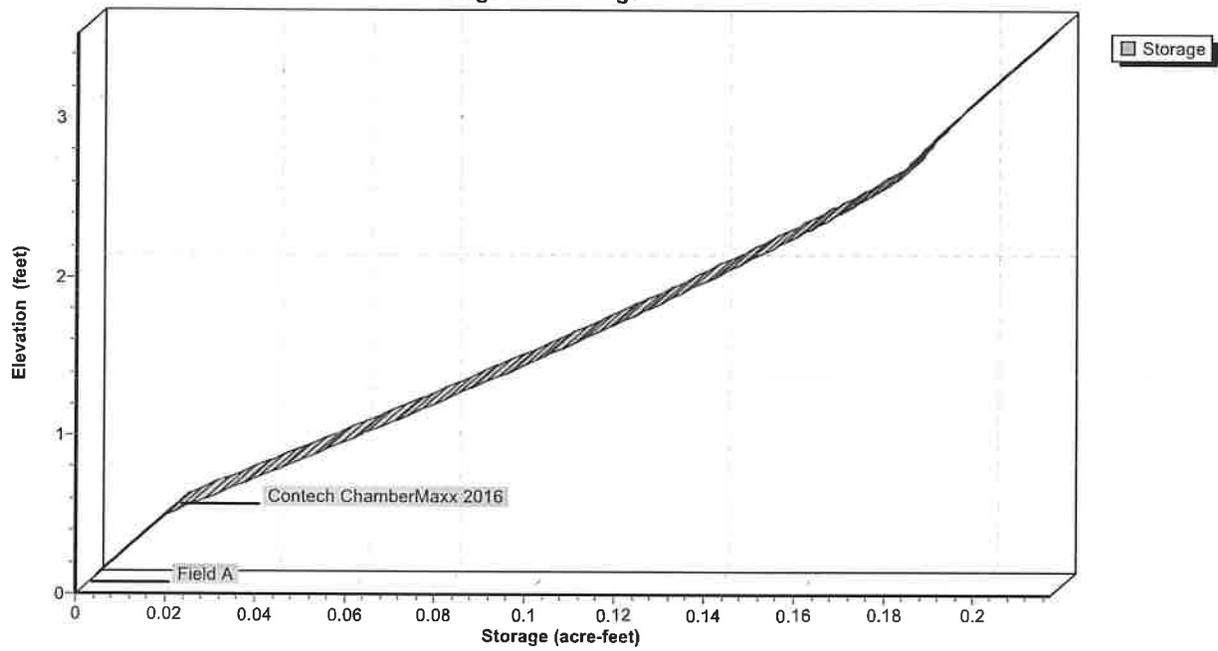
Pond 1P: Chambermaxx

Stage-Discharge



Pond 1P: Chambermaxx

Stage-Area-Storage



Capps Road and 120th

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Page 42

Hydrograph for Pond 1P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.02	0.000	0.01	0.00
1.50	0.05	0.002	0.05	0.00
2.00	0.07	0.004	0.10	0.01
2.50	0.08	0.007	0.17	0.02
3.00	0.09	0.009	0.23	0.02
3.50	0.10	0.012	0.30	0.03
4.00	0.11	0.015	0.38	0.03
4.50	0.13	0.019	0.47	0.04
5.00	0.15	0.023	0.53	0.04
5.50	0.17	0.028	0.59	0.04
6.00	0.19	0.033	0.65	0.05
6.50	0.21	0.040	0.73	0.05
7.00	0.24	0.047	0.81	0.05
7.50	0.53	0.057	0.93	0.05
8.00	0.65	0.087	1.29	0.07
8.50	0.31	0.101	1.46	0.07
9.00	0.24	0.109	1.57	0.08
9.50	0.20	0.115	1.64	0.08
10.00	0.18	0.119	1.70	0.09
10.50	0.17	0.123	1.74	0.09
11.00	0.16	0.126	1.78	0.09
11.50	0.14	0.128	1.81	0.09
12.00	0.13	0.130	1.84	0.09
12.50	0.14	0.132	1.86	0.09
13.00	0.13	0.133	1.88	0.09
13.50	0.12	0.135	1.90	0.10
14.00	0.12	0.136	1.91	0.10
14.50	0.12	0.137	1.92	0.10
15.00	0.12	0.137	1.93	0.10
15.50	0.11	0.138	1.94	0.10
16.00	0.11	0.139	1.95	0.10
16.50	0.11	0.139	1.96	0.10
17.00	0.11	0.140	1.96	0.10
17.50	0.10	0.140	1.97	0.10
18.00	0.10	0.140	1.97	0.10
18.50	0.10	0.140	1.97	0.10
19.00	0.09	0.140	1.97	0.10
19.50	0.09	0.139	1.96	0.10
20.00	0.09	0.139	1.96	0.10
20.50	0.09	0.139	1.95	0.10
21.00	0.08	0.138	1.94	0.10
21.50	0.08	0.138	1.94	0.10
22.00	0.08	0.137	1.93	0.10
22.50	0.08	0.136	1.91	0.10
23.00	0.07	0.135	1.90	0.10
23.50	0.07	0.134	1.89	0.10
24.00	0.03	0.133	1.87	0.09

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 43

Stage-Discharge for Pond 1P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.06	2.12	0.10	3.18	0.14
0.02	0.00	1.08	0.06	2.14	0.11	3.20	0.14
0.04	0.00	1.10	0.06	2.16	0.11	3.22	0.14
0.06	0.00	1.12	0.06	2.18	0.11	3.24	0.14
0.08	0.01	1.14	0.06	2.20	0.11	3.26	0.14
0.10	0.01	1.16	0.06	2.22	0.11	3.28	0.14
0.12	0.01	1.18	0.06	2.24	0.11	3.30	0.14
0.14	0.02	1.20	0.06	2.26	0.11	3.32	0.15
0.16	0.02	1.22	0.06	2.28	0.11	3.34	0.15
0.18	0.02	1.24	0.06	2.30	0.11	3.36	0.15
0.20	0.02	1.26	0.06	2.32	0.11	3.38	0.15
0.22	0.02	1.28	0.07	2.34	0.11	3.40	0.15
0.24	0.02	1.30	0.07	2.36	0.11	3.42	0.15
0.26	0.03	1.32	0.07	2.38	0.11	3.44	0.15
0.28	0.03	1.34	0.07	2.40	0.11	3.46	0.15
0.30	0.03	1.36	0.07	2.42	0.12	3.48	0.15
0.32	0.03	1.38	0.07	2.44	0.12	3.50	0.15
0.34	0.03	1.40	0.07	2.46	0.12	3.52	0.15
0.36	0.03	1.42	0.07	2.48	0.12		
0.38	0.03	1.44	0.07	2.50	0.12		
0.40	0.03	1.46	0.07	2.52	0.12		
0.42	0.04	1.48	0.07	2.54	0.12		
0.44	0.04	1.50	0.07	2.56	0.12		
0.46	0.04	1.52	0.07	2.58	0.12		
0.48	0.04	1.54	0.07	2.60	0.12		
0.50	0.04	1.56	0.08	2.62	0.12		
0.52	0.04	1.58	0.08	2.64	0.12		
0.54	0.04	1.60	0.08	2.66	0.12		
0.56	0.04	1.62	0.08	2.68	0.12		
0.58	0.04	1.64	0.08	2.70	0.12		
0.60	0.04	1.66	0.08	2.72	0.12		
0.62	0.04	1.68	0.08	2.74	0.13		
0.64	0.04	1.70	0.09	2.76	0.13		
0.66	0.05	1.72	0.09	2.78	0.13		
0.68	0.05	1.74	0.09	2.80	0.13		
0.70	0.05	1.76	0.09	2.82	0.13		
0.72	0.05	1.78	0.09	2.84	0.13		
0.74	0.05	1.80	0.09	2.86	0.13		
0.76	0.05	1.82	0.09	2.88	0.13		
0.78	0.05	1.84	0.09	2.90	0.13		
0.80	0.05	1.86	0.09	2.92	0.13		
0.82	0.05	1.88	0.09	2.94	0.13		
0.84	0.05	1.90	0.10	2.96	0.13		
0.86	0.05	1.92	0.10	2.98	0.13		
0.88	0.05	1.94	0.10	3.00	0.13		
0.90	0.05	1.96	0.10	3.02	0.13		
0.92	0.05	1.98	0.10	3.04	0.14		
0.94	0.06	2.00	0.10	3.06	0.14		
0.96	0.06	2.02	0.10	3.08	0.14		
0.98	0.06	2.04	0.10	3.10	0.14		
1.00	0.06	2.06	0.10	3.12	0.14		
1.02	0.06	2.08	0.10	3.14	0.14		
1.04	0.06	2.10	0.10	3.16	0.14		

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 44

Stage-Area-Storage for Pond 1P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

Capps Road and 120th

Type IA 24-hr 10 Y Rainfall=3.40"

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Page 45

Summary for Pond 2P: Chambermaxx

Inflow Area = 1.039 ac, 100.00% Impervious, Inflow Depth > 3.17" for 10 Y event
 Inflow = 0.84 cfs @ 7.78 hrs, Volume= 0.274 af
 Outflow = 0.09 cfs @ 19.19 hrs, Volume= 0.122 af, Atten= 89%, Lag= 684.7 min
 Primary = 0.09 cfs @ 19.19 hrs, Volume= 0.122 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 2.21' @ 19.19 hrs Surf.Area= 0.100 ac Storage= 0.157 af

Plug-Flow detention time= 551.2 min calculated for 0.122 af (44% of inflow)
 Center-of-Mass det. time= 269.3 min (927.6 - 658.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.2" Vert. Orifice/Grate C= 0.600
#2	Primary	1.75'	1.5" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.09 cfs @ 19.19 hrs HW=2.21' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.06 cfs @ 7.07 fps)
- 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 3.02 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx2016 (Contech® ChamberMaxx@capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

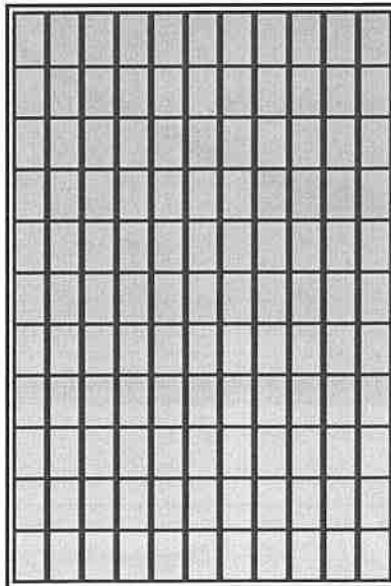
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

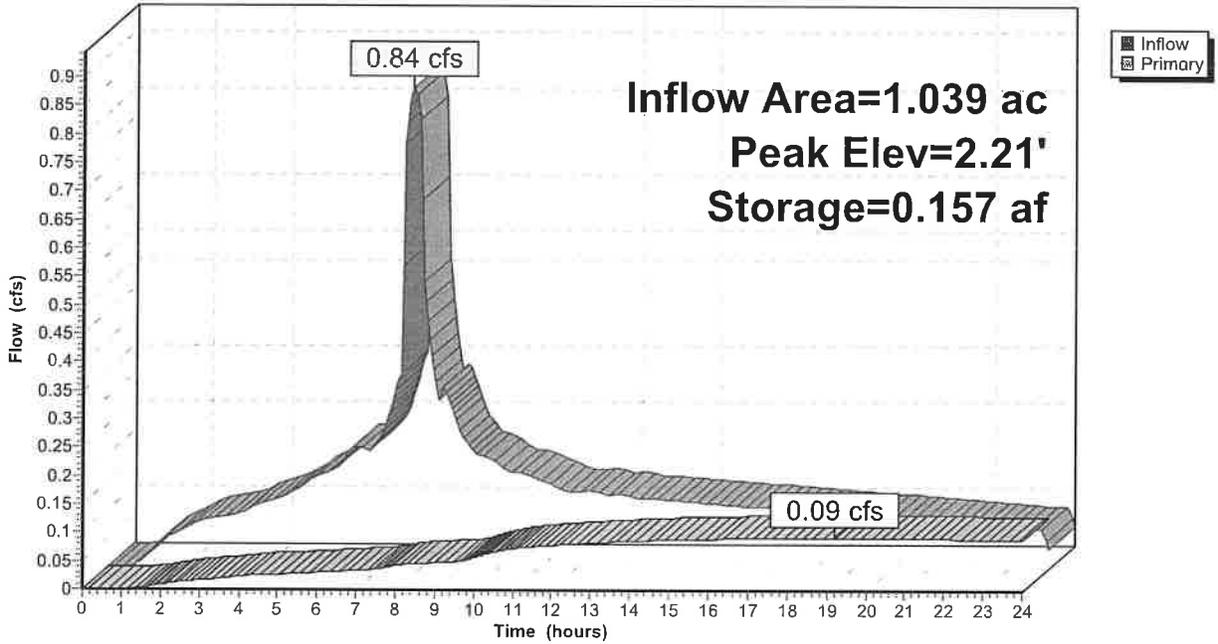
566.0 cy Field

344.3 cy Stone



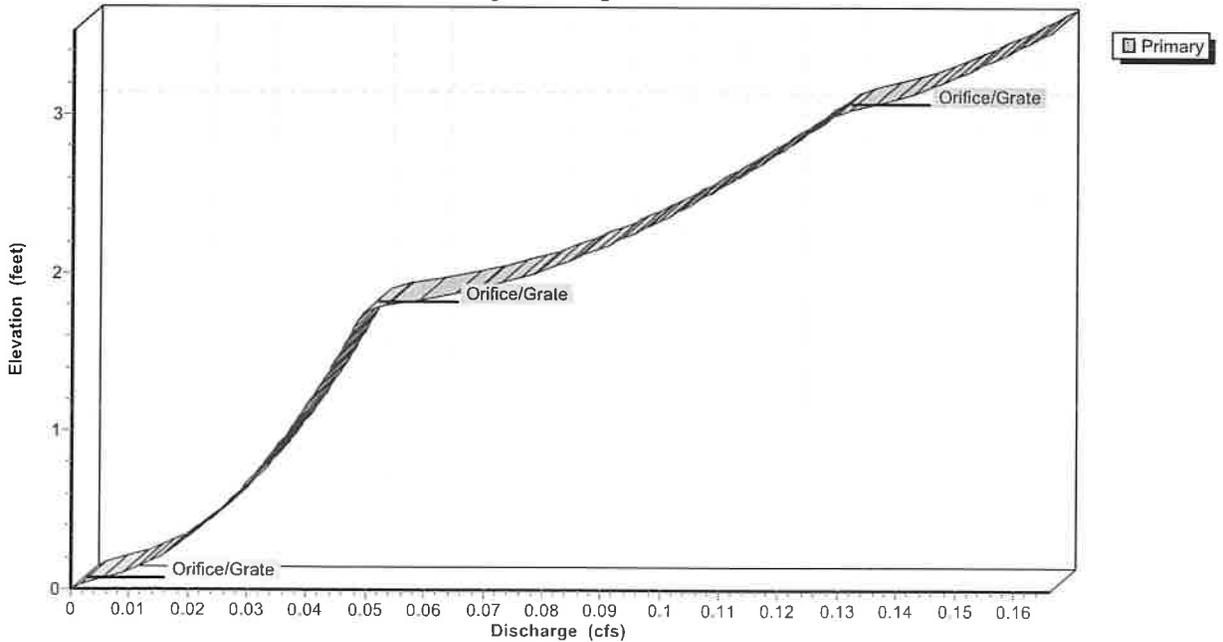
Pond 2P: Chambermaxx

Hydrograph



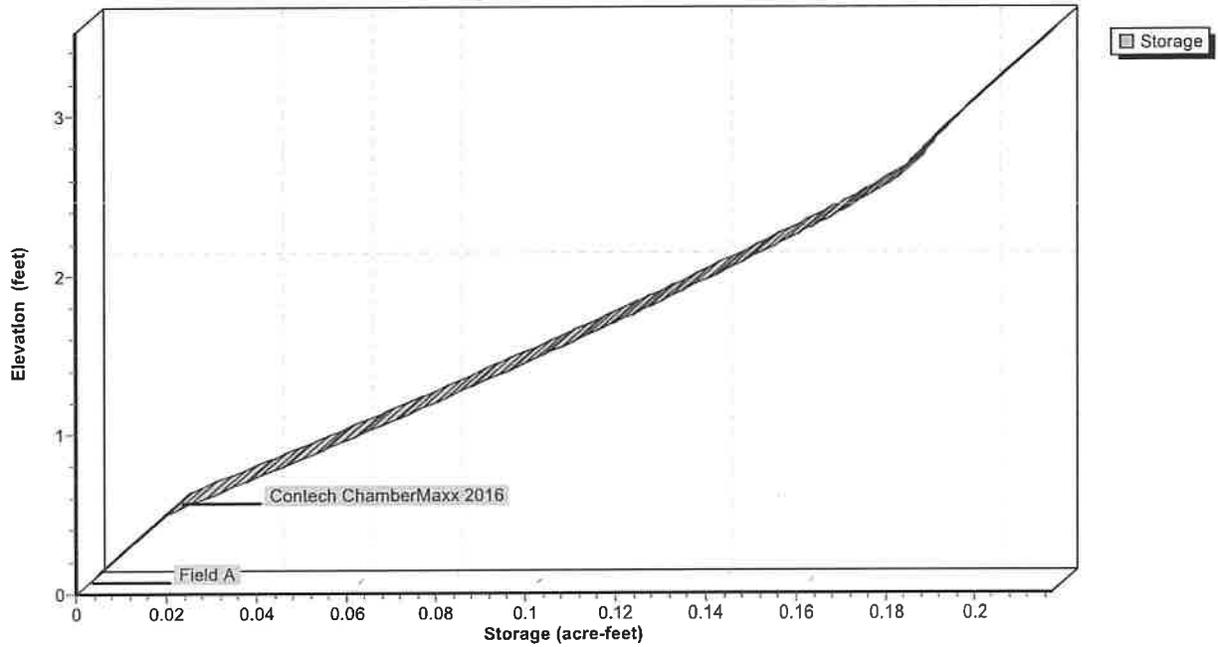
Pond 2P: Chambermaxx

Stage-Discharge



Pond 2P: Chambermaxx

Stage-Area-Storage



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Page 49

Hydrograph for Pond 2P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.02	0.000	0.01	0.00
1.50	0.05	0.002	0.05	0.00
2.00	0.07	0.004	0.10	0.01
2.50	0.08	0.007	0.17	0.01
3.00	0.09	0.010	0.24	0.02
3.50	0.10	0.013	0.32	0.02
4.00	0.11	0.016	0.41	0.02
4.50	0.13	0.020	0.51	0.03
5.00	0.15	0.025	0.56	0.03
5.50	0.16	0.030	0.62	0.03
6.00	0.19	0.036	0.69	0.03
6.50	0.21	0.044	0.77	0.03
7.00	0.24	0.051	0.86	0.03
7.50	0.53	0.062	0.99	0.04
8.00	0.65	0.093	1.36	0.04
8.50	0.30	0.107	1.54	0.05
9.00	0.24	0.117	1.66	0.05
9.50	0.20	0.124	1.75	0.05
10.00	0.18	0.129	1.82	0.06
10.50	0.17	0.134	1.88	0.07
11.00	0.16	0.137	1.94	0.07
11.50	0.14	0.141	1.98	0.08
12.00	0.13	0.143	2.01	0.08
12.50	0.13	0.145	2.04	0.08
13.00	0.13	0.147	2.07	0.08
13.50	0.12	0.149	2.09	0.09
14.00	0.12	0.150	2.11	0.09
14.50	0.12	0.152	2.13	0.09
15.00	0.12	0.153	2.15	0.09
15.50	0.11	0.154	2.16	0.09
16.00	0.11	0.155	2.17	0.09
16.50	0.11	0.155	2.18	0.09
17.00	0.10	0.156	2.19	0.09
17.50	0.10	0.156	2.20	0.09
18.00	0.10	0.157	2.20	0.09
18.50	0.10	0.157	2.21	0.09
19.00	0.09	0.157	2.21	0.09
19.50	0.09	0.157	2.21	0.09
20.00	0.09	0.157	2.21	0.09
20.50	0.09	0.157	2.20	0.09
21.00	0.08	0.156	2.20	0.09
21.50	0.08	0.156	2.19	0.09
22.00	0.08	0.155	2.18	0.09
22.50	0.07	0.155	2.17	0.09
23.00	0.07	0.154	2.16	0.09
23.50	0.07	0.153	2.15	0.09
24.00	0.03	0.152	2.14	0.09

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Type IA 24-hr 10 Y Rainfall=3.40"

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Page 50

Stage-Discharge for Pond 2P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.04	2.12	0.09	3.18	0.15
0.02	0.00	1.08	0.04	2.14	0.09	3.20	0.15
0.04	0.00	1.10	0.04	2.16	0.09	3.22	0.15
0.06	0.00	1.12	0.04	2.18	0.09	3.24	0.15
0.08	0.01	1.14	0.04	2.20	0.09	3.26	0.15
0.10	0.01	1.16	0.04	2.22	0.09	3.28	0.15
0.12	0.01	1.18	0.04	2.24	0.09	3.30	0.15
0.14	0.01	1.20	0.04	2.26	0.10	3.32	0.15
0.16	0.01	1.22	0.04	2.28	0.10	3.34	0.16
0.18	0.01	1.24	0.04	2.30	0.10	3.36	0.16
0.20	0.01	1.26	0.04	2.32	0.10	3.38	0.16
0.22	0.02	1.28	0.04	2.34	0.10	3.40	0.16
0.24	0.02	1.30	0.04	2.36	0.10	3.42	0.16
0.26	0.02	1.32	0.04	2.38	0.10	3.44	0.16
0.28	0.02	1.34	0.04	2.40	0.10	3.46	0.16
0.30	0.02	1.36	0.04	2.42	0.10	3.48	0.16
0.32	0.02	1.38	0.04	2.44	0.11	3.50	0.16
0.34	0.02	1.40	0.04	2.46	0.11	3.52	0.17
0.36	0.02	1.42	0.04	2.48	0.11		
0.38	0.02	1.44	0.04	2.50	0.11		
0.40	0.02	1.46	0.04	2.52	0.11		
0.42	0.02	1.48	0.05	2.54	0.11		
0.44	0.02	1.50	0.05	2.56	0.11		
0.46	0.02	1.52	0.05	2.58	0.11		
0.48	0.02	1.54	0.05	2.60	0.11		
0.50	0.03	1.56	0.05	2.62	0.11		
0.52	0.03	1.58	0.05	2.64	0.11		
0.54	0.03	1.60	0.05	2.66	0.12		
0.56	0.03	1.62	0.05	2.68	0.12		
0.58	0.03	1.64	0.05	2.70	0.12		
0.60	0.03	1.66	0.05	2.72	0.12		
0.62	0.03	1.68	0.05	2.74	0.12		
0.64	0.03	1.70	0.05	2.76	0.12		
0.66	0.03	1.72	0.05	2.78	0.12		
0.68	0.03	1.74	0.05	2.80	0.12		
0.70	0.03	1.76	0.05	2.82	0.12		
0.72	0.03	1.78	0.05	2.84	0.12		
0.74	0.03	1.80	0.05	2.86	0.12		
0.76	0.03	1.82	0.06	2.88	0.12		
0.78	0.03	1.84	0.06	2.90	0.13		
0.80	0.03	1.86	0.06	2.92	0.13		
0.82	0.03	1.88	0.07	2.94	0.13		
0.84	0.03	1.90	0.07	2.96	0.13		
0.86	0.03	1.92	0.07	2.98	0.13		
0.88	0.03	1.94	0.07	3.00	0.13		
0.90	0.03	1.96	0.07	3.02	0.13		
0.92	0.04	1.98	0.08	3.04	0.13		
0.94	0.04	2.00	0.08	3.06	0.14		
0.96	0.04	2.02	0.08	3.08	0.14		
0.98	0.04	2.04	0.08	3.10	0.14		
1.00	0.04	2.06	0.08	3.12	0.14		
1.02	0.04	2.08	0.08	3.14	0.14		
1.04	0.04	2.10	0.09	3.16	0.14		

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Type IA 24-hr 10 Y Rainfall=3.40"

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Page 51

Stage-Area-Storage for Pond 2P: Chambermaxx

<u>Elevation</u> (feet)	<u>Storage</u> (acre-feet)	<u>Elevation</u> (feet)	<u>Storage</u> (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

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Type IA 24-hr 25 Y Rainfall=4.00"

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Page 52

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: East Post Developed Runoff Area=45,603 sf 100.00% Impervious Runoff Depth>3.77"
Tc=0.0 min CN=98 Runoff=1.00 cfs 0.328 af

Subcatchment 2S: East Predeveloped Runoff Area=56,135 sf 0.00% Impervious Runoff Depth>1.60"
Tc=0.0 min CN=74 Runoff=0.45 cfs 0.171 af

Subcatchment 3S: East Predeveloped Runoff Area=52,488 sf 0.00% Impervious Runoff Depth>1.60"
Tc=0.0 min CN=74 Runoff=0.42 cfs 0.160 af

Subcatchment 4S: East Post Developed Runoff Area=45,278 sf 100.00% Impervious Runoff Depth>3.77"
Tc=0.0 min CN=98 Runoff=1.00 cfs 0.326 af

Pond 1P: Chambermaxx Peak Elev=2.39' Storage=0.170 af Inflow=1.00 cfs 0.328 af
Outflow=0.11 cfs 0.167 af

Pond 2P: Chambermaxx Peak Elev=2.58' Storage=0.182 af Inflow=1.00 cfs 0.326 af
Outflow=0.11 cfs 0.151 af

Total Runoff Area = 4.580 ac Runoff Volume = 0.986 af Average Runoff Depth = 2.58"
54.45% Pervious = 2.494 ac 45.55% Impervious = 2.086 ac

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Type IA 24-hr 25 Y Rainfall=4.00"

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Page 53

Summary for Subcatchment 1S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

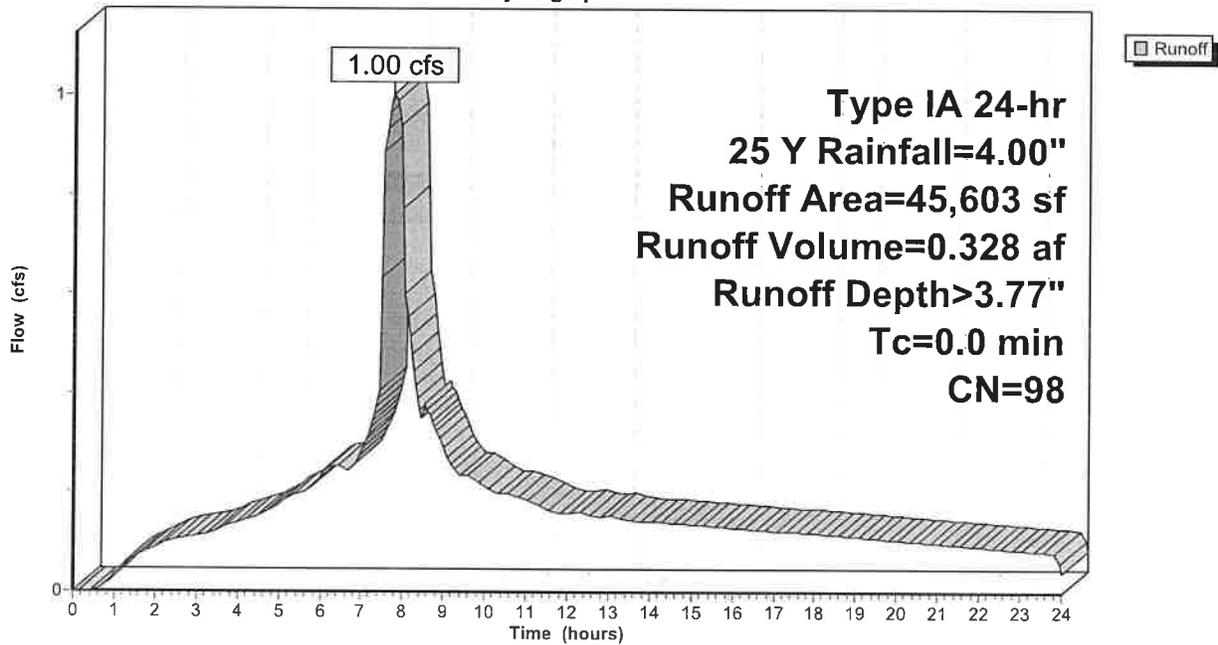
Runoff = 1.00 cfs @ 7.78 hrs, Volume= 0.328 af, Depth> 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Y Rainfall=4.00"

Area (sf)	CN	Description
26,308	98	Unconnected roofs, HSG A
19,295	98	Paved parking, HSG A
45,603	98	Weighted Average
45,603	98	100.00% Impervious Area
26,308		57.69% Unconnected

Subcatchment 1S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 54

Hydrograph for Subcatchment 1S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.84	2.61	0.15
0.25	0.02	0.00	0.00	13.50	2.88	2.64	0.15
0.50	0.04	0.00	0.00	13.75	2.91	2.68	0.14
0.75	0.06	0.00	0.01	14.00	2.94	2.71	0.14
1.00	0.08	0.01	0.03	14.25	2.98	2.75	0.14
1.25	0.11	0.02	0.06	14.50	3.01	2.78	0.14
1.50	0.14	0.03	0.07	14.75	3.04	2.81	0.14
1.75	0.17	0.05	0.08	15.00	3.08	2.84	0.14
2.00	0.20	0.07	0.09	15.25	3.11	2.88	0.14
2.25	0.23	0.09	0.10	15.50	3.14	2.91	0.13
2.50	0.26	0.12	0.11	15.75	3.17	2.94	0.13
2.75	0.30	0.14	0.11	16.00	3.20	2.97	0.13
3.00	0.33	0.17	0.11	16.25	3.23	3.00	0.13
3.25	0.36	0.19	0.11	16.50	3.26	3.03	0.13
3.50	0.39	0.22	0.12	16.75	3.30	3.06	0.13
3.75	0.43	0.25	0.13	17.00	3.32	3.09	0.12
4.00	0.46	0.29	0.14	17.25	3.35	3.12	0.12
4.25	0.50	0.32	0.15	17.50	3.38	3.15	0.12
4.50	0.54	0.35	0.15	17.75	3.41	3.18	0.12
4.75	0.58	0.39	0.16	18.00	3.44	3.21	0.12
5.00	0.62	0.43	0.18	18.25	3.47	3.23	0.12
5.25	0.67	0.48	0.19	18.50	3.49	3.26	0.11
5.50	0.72	0.52	0.20	18.75	3.52	3.29	0.11
5.75	0.77	0.57	0.21	19.00	3.55	3.31	0.11
6.00	0.82	0.62	0.23	19.25	3.57	3.34	0.11
6.25	0.88	0.68	0.25	19.50	3.60	3.37	0.11
6.50	0.95	0.74	0.25	19.75	3.63	3.39	0.11
6.75	1.01	0.80	0.25	20.00	3.65	3.42	0.10
7.00	1.07	0.86	0.28	20.25	3.68	3.44	0.10
7.25	1.15	0.93	0.34	20.50	3.70	3.47	0.10
7.50	1.24	1.02	0.63	20.75	3.72	3.49	0.10
7.75	1.47	1.25	1.00	21.00	3.75	3.51	0.10
8.00	1.70	1.48	0.77	21.25	3.77	3.54	0.10
8.25	1.83	1.60	0.44	21.50	3.79	3.56	0.10
8.50	1.92	1.70	0.36	21.75	3.82	3.58	0.09
8.75	2.01	1.78	0.33	22.00	3.84	3.60	0.09
9.00	2.08	1.85	0.28	22.25	3.86	3.62	0.09
9.25	2.14	1.92	0.25	22.50	3.88	3.65	0.09
9.50	2.20	1.97	0.23	22.75	3.90	3.67	0.09
9.75	2.26	2.03	0.23	23.00	3.92	3.69	0.09
10.00	2.31	2.08	0.21	23.25	3.94	3.71	0.08
10.25	2.36	2.13	0.20	23.50	3.96	3.73	0.08
10.50	2.40	2.18	0.20	23.75	3.98	3.75	0.08
10.75	2.45	2.22	0.19	24.00	4.00	3.77	0.04
11.00	2.50	2.27	0.18				
11.25	2.54	2.31	0.18				
11.50	2.58	2.35	0.17				
11.75	2.62	2.39	0.16				
12.00	2.66	2.43	0.16				
12.25	2.69	2.46	0.16				
12.50	2.73	2.50	0.16				
12.75	2.77	2.54	0.15				
13.00	2.80	2.57	0.15				

Summary for Subcatchment 2S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

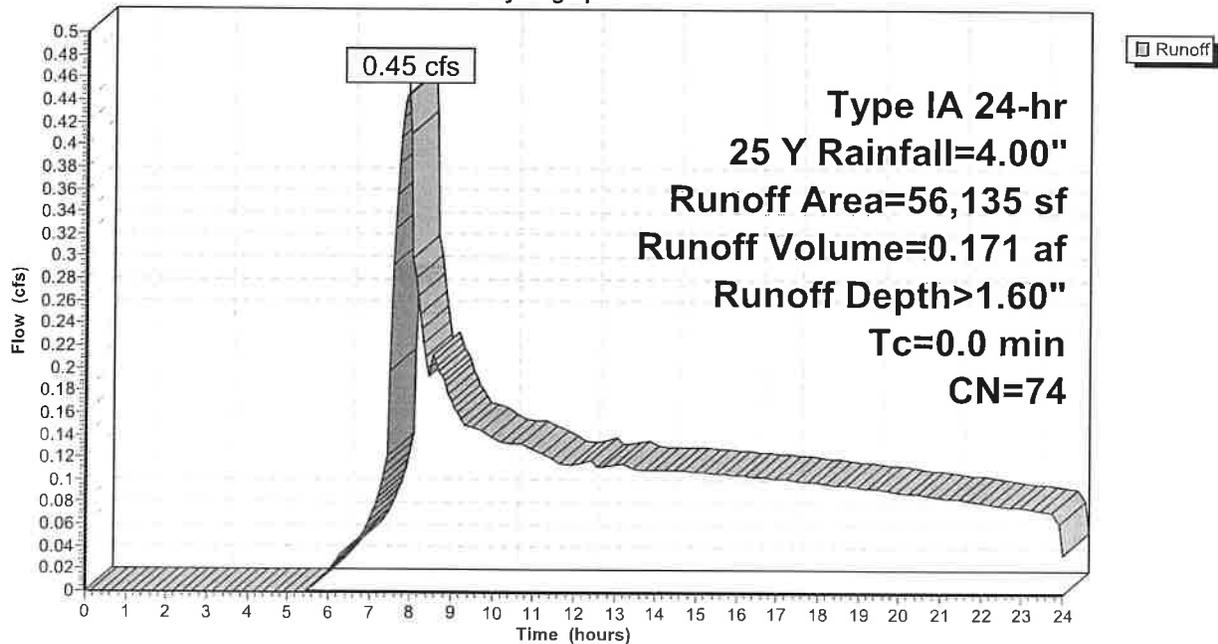
Runoff = 0.45 cfs @ 7.92 hrs, Volume= 0.171 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 25 Y Rainfall=4.00"

Area (sf)	CN	Description
56,135	74	>75% Grass cover, Good, HSG C
56,135	74	100.00% Pervious Area

Subcatchment 2S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 56

Hydrograph for Subcatchment 2S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.84	0.81	0.11
0.25	0.02	0.00	0.00	13.50	2.88	0.83	0.11
0.50	0.04	0.00	0.00	13.75	2.91	0.85	0.11
0.75	0.06	0.00	0.00	14.00	2.94	0.87	0.11
1.00	0.08	0.00	0.00	14.25	2.98	0.89	0.11
1.25	0.11	0.00	0.00	14.50	3.01	0.92	0.11
1.50	0.14	0.00	0.00	14.75	3.04	0.94	0.11
1.75	0.17	0.00	0.00	15.00	3.08	0.96	0.11
2.00	0.20	0.00	0.00	15.25	3.11	0.98	0.11
2.25	0.23	0.00	0.00	15.50	3.14	1.00	0.11
2.50	0.26	0.00	0.00	15.75	3.17	1.02	0.11
2.75	0.30	0.00	0.00	16.00	3.20	1.04	0.11
3.00	0.33	0.00	0.00	16.25	3.23	1.06	0.11
3.25	0.36	0.00	0.00	16.50	3.26	1.08	0.10
3.50	0.39	0.00	0.00	16.75	3.30	1.10	0.10
3.75	0.43	0.00	0.00	17.00	3.32	1.12	0.10
4.00	0.46	0.00	0.00	17.25	3.35	1.14	0.10
4.25	0.50	0.00	0.00	17.50	3.38	1.16	0.10
4.50	0.54	0.00	0.00	17.75	3.41	1.18	0.10
4.75	0.58	0.00	0.00	18.00	3.44	1.20	0.10
5.00	0.62	0.00	0.00	18.25	3.47	1.22	0.10
5.25	0.67	0.00	0.00	18.50	3.49	1.24	0.10
5.50	0.72	0.00	0.00	18.75	3.52	1.25	0.10
5.75	0.77	0.00	0.01	19.00	3.55	1.27	0.10
6.00	0.82	0.00	0.02	19.25	3.57	1.29	0.09
6.25	0.88	0.01	0.03	19.50	3.60	1.31	0.09
6.50	0.95	0.02	0.04	19.75	3.63	1.33	0.09
6.75	1.01	0.02	0.05	20.00	3.65	1.34	0.09
7.00	1.07	0.04	0.07	20.25	3.68	1.36	0.09
7.25	1.15	0.05	0.09	20.50	3.70	1.38	0.09
7.50	1.24	0.07	0.20	20.75	3.72	1.40	0.09
7.75	1.47	0.14	0.41	21.00	3.75	1.41	0.09
8.00	1.70	0.22	0.38	21.25	3.77	1.43	0.09
8.25	1.83	0.27	0.24	21.50	3.79	1.45	0.08
8.50	1.92	0.31	0.20	21.75	3.82	1.46	0.08
8.75	2.01	0.35	0.19	22.00	3.84	1.48	0.08
9.00	2.08	0.39	0.17	22.25	3.86	1.49	0.08
9.25	2.14	0.42	0.15	22.50	3.88	1.51	0.08
9.50	2.20	0.45	0.15	22.75	3.90	1.52	0.08
9.75	2.26	0.48	0.15	23.00	3.92	1.54	0.08
10.00	2.31	0.50	0.14	23.25	3.94	1.55	0.08
10.25	2.36	0.53	0.13	23.50	3.96	1.57	0.07
10.50	2.40	0.56	0.13	23.75	3.98	1.58	0.07
10.75	2.45	0.58	0.13	24.00	4.00	1.60	0.04
11.00	2.50	0.61	0.13				
11.25	2.54	0.63	0.12				
11.50	2.58	0.65	0.12				
11.75	2.62	0.68	0.11				
12.00	2.66	0.70	0.11				
12.25	2.69	0.72	0.12				
12.50	2.73	0.74	0.12				
12.75	2.77	0.76	0.11				
13.00	2.80	0.79	0.12				

Capps Road and 120th

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Type IA 24-hr 25 Y Rainfall=4.00"

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Page 57

Summary for Subcatchment 3S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

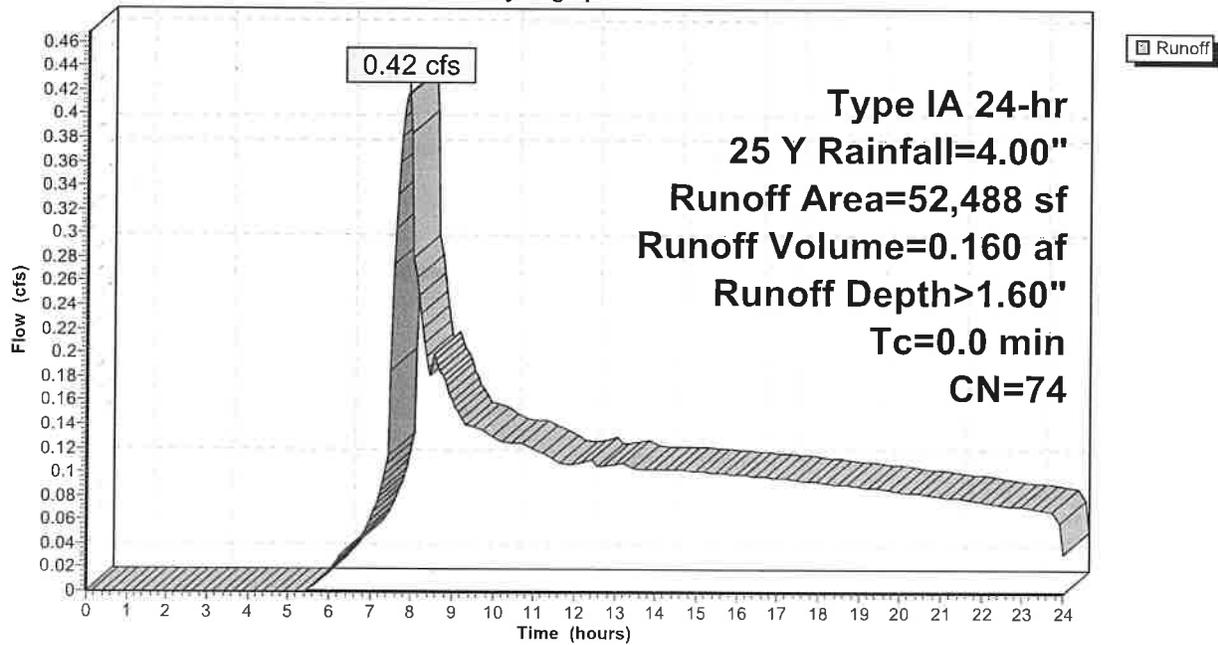
Runoff = 0.42 cfs @ 7.92 hrs, Volume= 0.160 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Y Rainfall=4.00"

Area (sf)	CN	Description
52,488	74	>75% Grass cover, Good, HSG C
52,488	74	100.00% Pervious Area

Subcatchment 3S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 58

Hydrograph for Subcatchment 3S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.84	0.81	0.11
0.25	0.02	0.00	0.00	13.50	2.88	0.83	0.10
0.50	0.04	0.00	0.00	13.75	2.91	0.85	0.10
0.75	0.06	0.00	0.00	14.00	2.94	0.87	0.10
1.00	0.08	0.00	0.00	14.25	2.98	0.89	0.10
1.25	0.11	0.00	0.00	14.50	3.01	0.92	0.10
1.50	0.14	0.00	0.00	14.75	3.04	0.94	0.10
1.75	0.17	0.00	0.00	15.00	3.08	0.96	0.10
2.00	0.20	0.00	0.00	15.25	3.11	0.98	0.10
2.25	0.23	0.00	0.00	15.50	3.14	1.00	0.10
2.50	0.26	0.00	0.00	15.75	3.17	1.02	0.10
2.75	0.30	0.00	0.00	16.00	3.20	1.04	0.10
3.00	0.33	0.00	0.00	16.25	3.23	1.06	0.10
3.25	0.36	0.00	0.00	16.50	3.26	1.08	0.10
3.50	0.39	0.00	0.00	16.75	3.30	1.10	0.10
3.75	0.43	0.00	0.00	17.00	3.32	1.12	0.10
4.00	0.46	0.00	0.00	17.25	3.35	1.14	0.10
4.25	0.50	0.00	0.00	17.50	3.38	1.16	0.09
4.50	0.54	0.00	0.00	17.75	3.41	1.18	0.09
4.75	0.58	0.00	0.00	18.00	3.44	1.20	0.09
5.00	0.62	0.00	0.00	18.25	3.47	1.22	0.09
5.25	0.67	0.00	0.00	18.50	3.49	1.24	0.09
5.50	0.72	0.00	0.00	18.75	3.52	1.25	0.09
5.75	0.77	0.00	0.01	19.00	3.55	1.27	0.09
6.00	0.82	0.00	0.02	19.25	3.57	1.29	0.09
6.25	0.88	0.01	0.03	19.50	3.60	1.31	0.09
6.50	0.95	0.02	0.04	19.75	3.63	1.33	0.09
6.75	1.01	0.02	0.05	20.00	3.65	1.34	0.09
7.00	1.07	0.04	0.06	20.25	3.68	1.36	0.08
7.25	1.15	0.05	0.09	20.50	3.70	1.38	0.08
7.50	1.24	0.07	0.19	20.75	3.72	1.40	0.08
7.75	1.47	0.14	0.38	21.00	3.75	1.41	0.08
8.00	1.70	0.22	0.35	21.25	3.77	1.43	0.08
8.25	1.83	0.27	0.22	21.50	3.79	1.45	0.08
8.50	1.92	0.31	0.19	21.75	3.82	1.46	0.08
8.75	2.01	0.35	0.18	22.00	3.84	1.48	0.08
9.00	2.08	0.39	0.16	22.25	3.86	1.49	0.08
9.25	2.14	0.42	0.14	22.50	3.88	1.51	0.07
9.50	2.20	0.45	0.14	22.75	3.90	1.52	0.07
9.75	2.26	0.48	0.14	23.00	3.92	1.54	0.07
10.00	2.31	0.50	0.13	23.25	3.94	1.55	0.07
10.25	2.36	0.53	0.13	23.50	3.96	1.57	0.07
10.50	2.40	0.56	0.13	23.75	3.98	1.58	0.07
10.75	2.45	0.58	0.12	24.00	4.00	1.60	0.03
11.00	2.50	0.61	0.12				
11.25	2.54	0.63	0.12				
11.50	2.58	0.65	0.11				
11.75	2.62	0.68	0.11				
12.00	2.66	0.70	0.11				
12.25	2.69	0.72	0.11				
12.50	2.73	0.74	0.11				
12.75	2.77	0.76	0.11				
13.00	2.80	0.79	0.11				

Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 59

Summary for Subcatchment 4S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

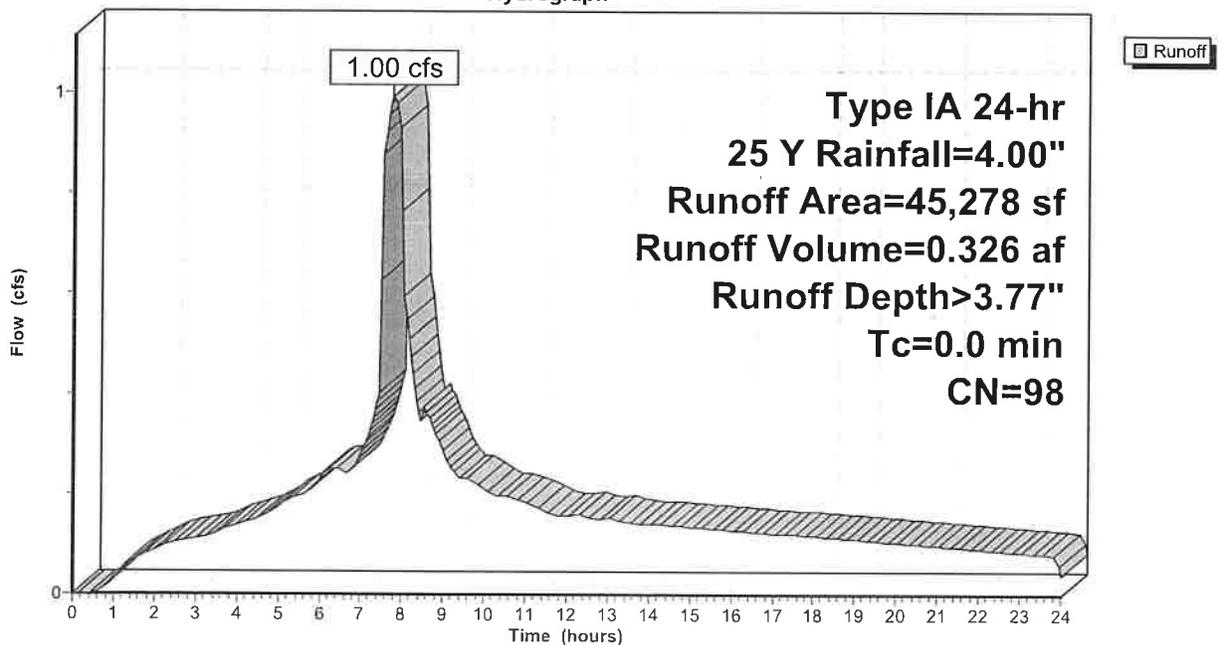
Runoff = 1.00 cfs @ 7.78 hrs, Volume= 0.326 af, Depth> 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Y Rainfall=4.00"

Area (sf)	CN	Description
22,959	98	Unconnected roofs, HSG A
22,319	98	Paved parking, HSG A
45,278	98	Weighted Average
45,278	98	100.00% Impervious Area
22,959		50.71% Unconnected

Subcatchment 4S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 60

Hydrograph for Subcatchment 4S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.84	2.61	0.15
0.25	0.02	0.00	0.00	13.50	2.88	2.64	0.14
0.50	0.04	0.00	0.00	13.75	2.91	2.68	0.14
0.75	0.06	0.00	0.01	14.00	2.94	2.71	0.14
1.00	0.08	0.01	0.03	14.25	2.98	2.75	0.14
1.25	0.11	0.02	0.06	14.50	3.01	2.78	0.14
1.50	0.14	0.03	0.07	14.75	3.04	2.81	0.14
1.75	0.17	0.05	0.08	15.00	3.08	2.84	0.14
2.00	0.20	0.07	0.09	15.25	3.11	2.88	0.13
2.25	0.23	0.09	0.10	15.50	3.14	2.91	0.13
2.50	0.26	0.12	0.10	15.75	3.17	2.94	0.13
2.75	0.30	0.14	0.11	16.00	3.20	2.97	0.13
3.00	0.33	0.17	0.11	16.25	3.23	3.00	0.13
3.25	0.36	0.19	0.11	16.50	3.26	3.03	0.13
3.50	0.39	0.22	0.12	16.75	3.30	3.06	0.12
3.75	0.43	0.25	0.13	17.00	3.32	3.09	0.12
4.00	0.46	0.29	0.14	17.25	3.35	3.12	0.12
4.25	0.50	0.32	0.14	17.50	3.38	3.15	0.12
4.50	0.54	0.35	0.15	17.75	3.41	3.18	0.12
4.75	0.58	0.39	0.16	18.00	3.44	3.21	0.12
5.00	0.62	0.43	0.18	18.25	3.47	3.23	0.12
5.25	0.67	0.48	0.19	18.50	3.49	3.26	0.11
5.50	0.72	0.52	0.20	18.75	3.52	3.29	0.11
5.75	0.77	0.57	0.21	19.00	3.55	3.31	0.11
6.00	0.82	0.62	0.23	19.25	3.57	3.34	0.11
6.25	0.88	0.68	0.25	19.50	3.60	3.37	0.11
6.50	0.95	0.74	0.25	19.75	3.63	3.39	0.11
6.75	1.01	0.80	0.25	20.00	3.65	3.42	0.10
7.00	1.07	0.86	0.28	20.25	3.68	3.44	0.10
7.25	1.15	0.93	0.34	20.50	3.70	3.47	0.10
7.50	1.24	1.02	0.63	20.75	3.72	3.49	0.10
7.75	1.47	1.25	0.99	21.00	3.75	3.51	0.10
8.00	1.70	1.48	0.76	21.25	3.77	3.54	0.10
8.25	1.83	1.60	0.44	21.50	3.79	3.56	0.09
8.50	1.92	1.70	0.36	21.75	3.82	3.58	0.09
8.75	2.01	1.78	0.33	22.00	3.84	3.60	0.09
9.00	2.08	1.85	0.28	22.25	3.86	3.62	0.09
9.25	2.14	1.92	0.25	22.50	3.88	3.65	0.09
9.50	2.20	1.97	0.23	22.75	3.90	3.67	0.09
9.75	2.26	2.03	0.22	23.00	3.92	3.69	0.08
10.00	2.31	2.08	0.21	23.25	3.94	3.71	0.08
10.25	2.36	2.13	0.20	23.50	3.96	3.73	0.08
10.50	2.40	2.18	0.20	23.75	3.98	3.75	0.08
10.75	2.45	2.22	0.19	24.00	4.00	3.77	0.04
11.00	2.50	2.27	0.18				
11.25	2.54	2.31	0.18				
11.50	2.58	2.35	0.17				
11.75	2.62	2.39	0.16				
12.00	2.66	2.43	0.16				
12.25	2.69	2.46	0.16				
12.50	2.73	2.50	0.16				
12.75	2.77	2.54	0.15				
13.00	2.80	2.57	0.15				

Capps Road and 120th

Type IA 24-hr 25 Y Rainfall=4.00"

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Page 61

Summary for Pond 1P: Chambermaxx

Inflow Area = 1.047 ac, 100.00% Impervious, Inflow Depth > 3.77" for 25 Y event
 Inflow = 1.00 cfs @ 7.78 hrs, Volume= 0.328 af
 Outflow = 0.11 cfs @ 18.49 hrs, Volume= 0.167 af, Alter= 89%, Lag= 642.4 min
 Primary = 0.11 cfs @ 18.49 hrs, Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 2.39' @ 18.49 hrs Surf.Area= 0.100 ac Storage= 0.170 af

Plug-Flow detention time= 497.7 min calculated for 0.166 af (51% of inflow)
 Center-of-Mass det. time= 234.5 min (888.7 - 654.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.5" Vert. Orifice/Grate C= 0.600
#2	Primary	1.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	0.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.11 cfs @ 18.49 hrs HW=2.39' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.09 cfs @ 7.35 fps)
- 2=Orifice/Grate (Orifice Controls 0.02 cfs @ 4.44 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

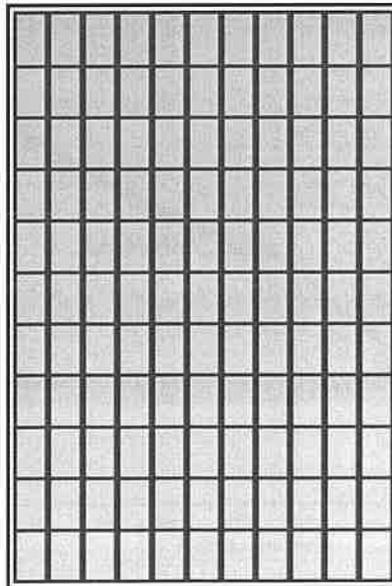
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

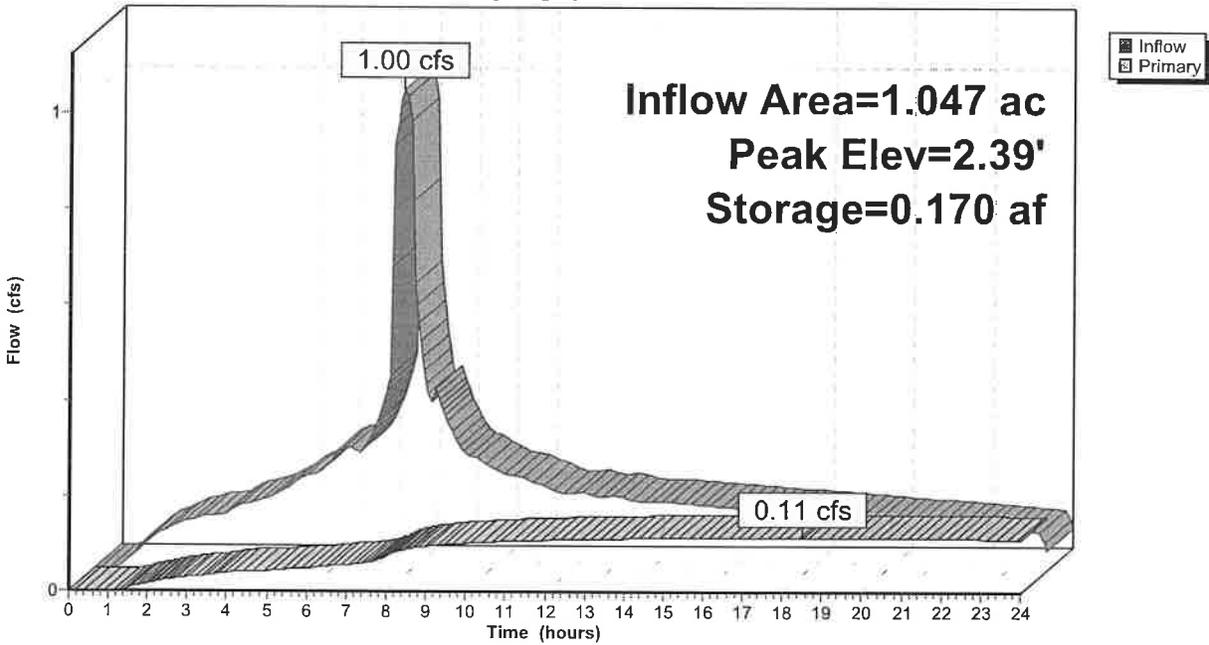
566.0 cy Field

344.3 cy Stone



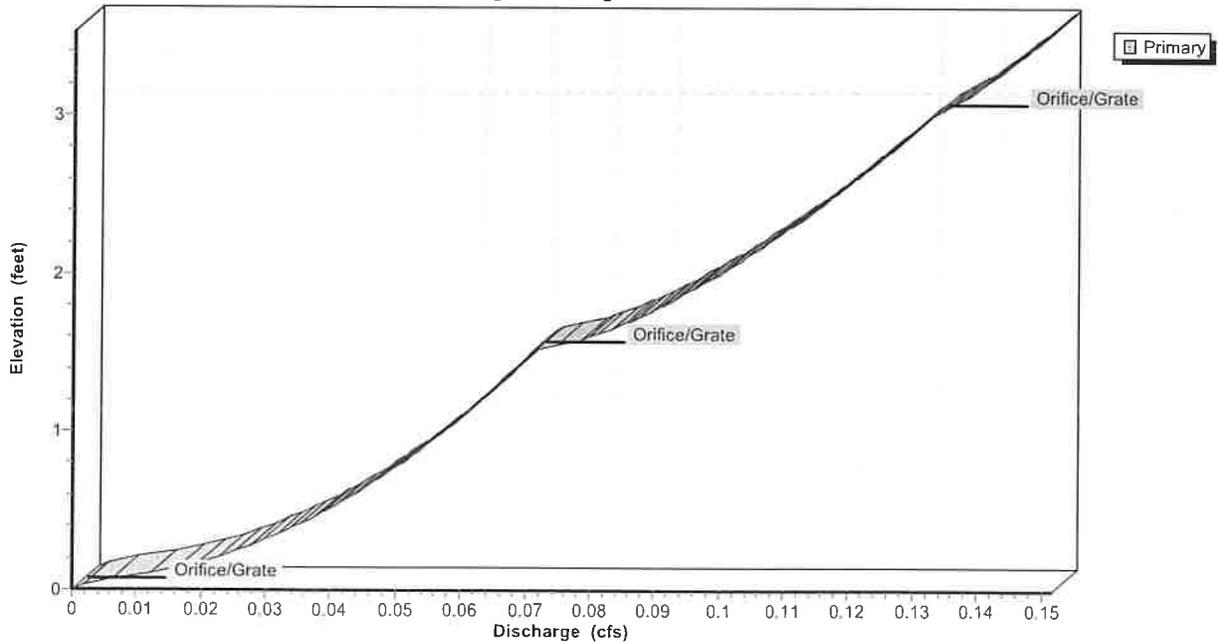
Pond 1P: Chambermaxx

Hydrograph



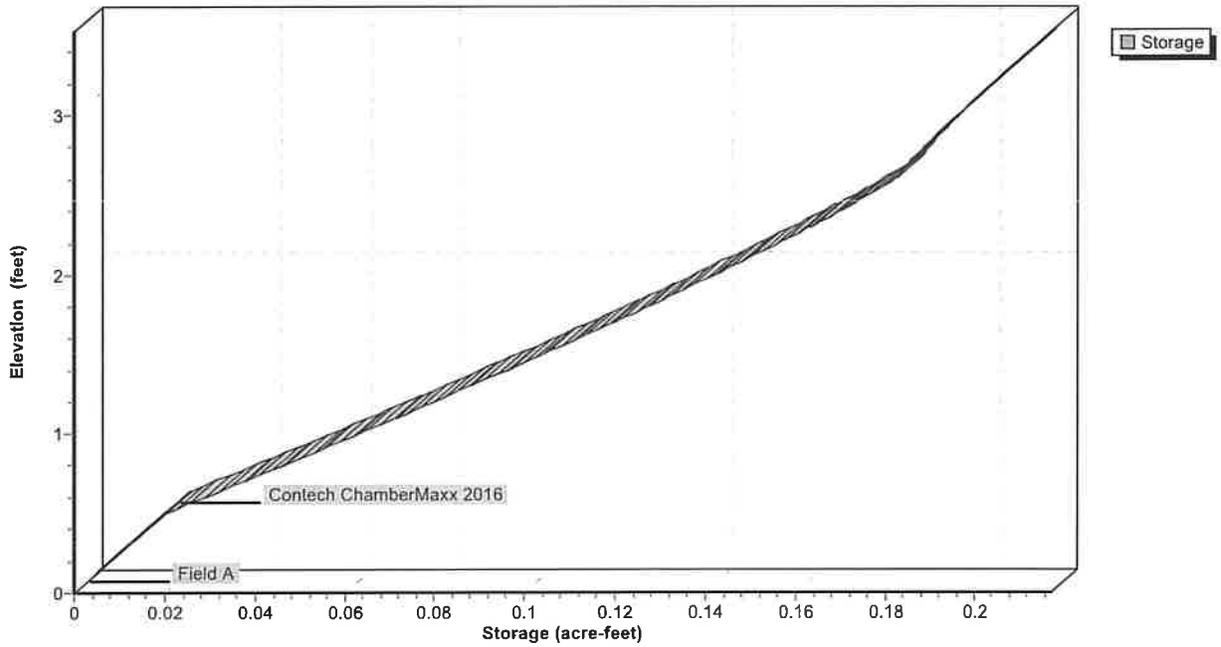
Pond 1P: Chambermaxx

Stage-Discharge



Pond 1P: Chambermaxx

Stage-Area-Storage



Capps Road and 120th

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Page 65

Hydrograph for Pond 1P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.03	0.001	0.01	0.00
1.50	0.07	0.003	0.07	0.01
2.00	0.09	0.006	0.14	0.02
2.50	0.11	0.009	0.22	0.02
3.00	0.11	0.012	0.31	0.03
3.50	0.12	0.016	0.39	0.03
4.00	0.14	0.020	0.49	0.04
4.50	0.15	0.024	0.55	0.04
5.00	0.18	0.029	0.60	0.04
5.50	0.20	0.035	0.67	0.05
6.00	0.23	0.042	0.75	0.05
6.50	0.25	0.050	0.85	0.05
7.00	0.28	0.058	0.94	0.06
7.50	0.63	0.071	1.09	0.06
8.00	0.77	0.107	1.53	0.07
8.50	0.36	0.123	1.74	0.09
9.00	0.28	0.133	1.87	0.09
9.50	0.23	0.139	1.96	0.10
10.00	0.21	0.144	2.03	0.10
10.50	0.20	0.148	2.08	0.10
11.00	0.18	0.152	2.14	0.11
11.50	0.17	0.155	2.18	0.11
12.00	0.16	0.157	2.21	0.11
12.50	0.16	0.159	2.24	0.11
13.00	0.15	0.161	2.26	0.11
13.50	0.15	0.163	2.29	0.11
14.00	0.14	0.164	2.31	0.11
14.50	0.14	0.165	2.33	0.11
15.00	0.14	0.166	2.34	0.11
15.50	0.13	0.167	2.36	0.11
16.00	0.13	0.168	2.37	0.11
16.50	0.13	0.168	2.38	0.11
17.00	0.12	0.169	2.38	0.11
17.50	0.12	0.169	2.39	0.11
18.00	0.12	0.169	2.39	0.11
18.50	0.11	0.170	2.39	0.11
19.00	0.11	0.169	2.39	0.11
19.50	0.11	0.169	2.39	0.11
20.00	0.10	0.169	2.38	0.11
20.50	0.10	0.168	2.38	0.11
21.00	0.10	0.168	2.37	0.11
21.50	0.10	0.167	2.36	0.11
22.00	0.09	0.166	2.35	0.11
22.50	0.09	0.166	2.33	0.11
23.00	0.09	0.164	2.32	0.11
23.50	0.08	0.163	2.30	0.11
24.00	0.04	0.162	2.28	0.11

Capps Road and 120th

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Page 66

Stage-Discharge for Pond 1P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.06	2.12	0.10	3.18	0.14
0.02	0.00	1.08	0.06	2.14	0.11	3.20	0.14
0.04	0.00	1.10	0.06	2.16	0.11	3.22	0.14
0.06	0.00	1.12	0.06	2.18	0.11	3.24	0.14
0.08	0.01	1.14	0.06	2.20	0.11	3.26	0.14
0.10	0.01	1.16	0.06	2.22	0.11	3.28	0.14
0.12	0.01	1.18	0.06	2.24	0.11	3.30	0.14
0.14	0.02	1.20	0.06	2.26	0.11	3.32	0.15
0.16	0.02	1.22	0.06	2.28	0.11	3.34	0.15
0.18	0.02	1.24	0.06	2.30	0.11	3.36	0.15
0.20	0.02	1.26	0.06	2.32	0.11	3.38	0.15
0.22	0.02	1.28	0.07	2.34	0.11	3.40	0.15
0.24	0.02	1.30	0.07	2.36	0.11	3.42	0.15
0.26	0.03	1.32	0.07	2.38	0.11	3.44	0.15
0.28	0.03	1.34	0.07	2.40	0.11	3.46	0.15
0.30	0.03	1.36	0.07	2.42	0.12	3.48	0.15
0.32	0.03	1.38	0.07	2.44	0.12	3.50	0.15
0.34	0.03	1.40	0.07	2.46	0.12	3.52	0.15
0.36	0.03	1.42	0.07	2.48	0.12		
0.38	0.03	1.44	0.07	2.50	0.12		
0.40	0.03	1.46	0.07	2.52	0.12		
0.42	0.04	1.48	0.07	2.54	0.12		
0.44	0.04	1.50	0.07	2.56	0.12		
0.46	0.04	1.52	0.07	2.58	0.12		
0.48	0.04	1.54	0.07	2.60	0.12		
0.50	0.04	1.56	0.08	2.62	0.12		
0.52	0.04	1.58	0.08	2.64	0.12		
0.54	0.04	1.60	0.08	2.66	0.12		
0.56	0.04	1.62	0.08	2.68	0.12		
0.58	0.04	1.64	0.08	2.70	0.12		
0.60	0.04	1.66	0.08	2.72	0.12		
0.62	0.04	1.68	0.08	2.74	0.13		
0.64	0.04	1.70	0.09	2.76	0.13		
0.66	0.05	1.72	0.09	2.78	0.13		
0.68	0.05	1.74	0.09	2.80	0.13		
0.70	0.05	1.76	0.09	2.82	0.13		
0.72	0.05	1.78	0.09	2.84	0.13		
0.74	0.05	1.80	0.09	2.86	0.13		
0.76	0.05	1.82	0.09	2.88	0.13		
0.78	0.05	1.84	0.09	2.90	0.13		
0.80	0.05	1.86	0.09	2.92	0.13		
0.82	0.05	1.88	0.09	2.94	0.13		
0.84	0.05	1.90	0.10	2.96	0.13		
0.86	0.05	1.92	0.10	2.98	0.13		
0.88	0.05	1.94	0.10	3.00	0.13		
0.90	0.05	1.96	0.10	3.02	0.13		
0.92	0.05	1.98	0.10	3.04	0.14		
0.94	0.06	2.00	0.10	3.06	0.14		
0.96	0.06	2.02	0.10	3.08	0.14		
0.98	0.06	2.04	0.10	3.10	0.14		
1.00	0.06	2.06	0.10	3.12	0.14		
1.02	0.06	2.08	0.10	3.14	0.14		
1.04	0.06	2.10	0.10	3.16	0.14		

Capps Road and 120th

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Page 67

Stage-Area-Storage for Pond 1P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

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Page 68

Summary for Pond 2P: Chambermaxx

Inflow Area = 1.039 ac, 100.00% Impervious, Inflow Depth > 3.77" for 25 Y event
 Inflow = 1.00 cfs @ 7.78 hrs, Volume= 0.326 af
 Outflow = 0.11 cfs @ 18.72 hrs, Volume= 0.151 af, Atten= 89%, Lag= 656.4 min
 Primary = 0.11 cfs @ 18.72 hrs, Volume= 0.151 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 2.58' @ 18.72 hrs Surf.Area= 0.100 ac Storage= 0.182 af

Plug-Flow detention time= 546.1 min calculated for 0.151 af (46% of inflow)
 Center-of-Mass det. time= 268.5 min (922.8 - 654.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.2" Vert. Orifice/Grate C= 0.600
#2	Primary	1.75'	1.5" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.11 cfs @ 18.72 hrs HW=2.58' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.06 cfs @ 7.67 fps)
- 2=Orifice/Grate (Orifice Controls 0.05 cfs @ 4.23 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 2P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

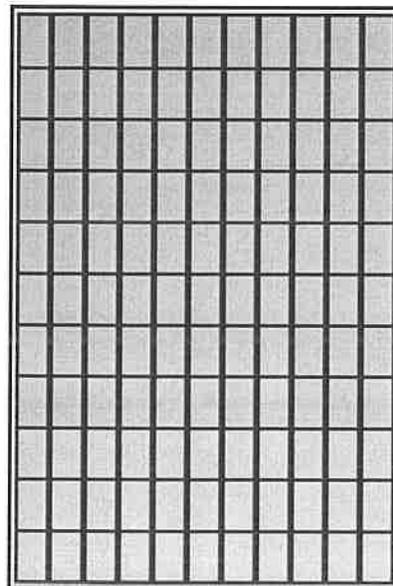
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

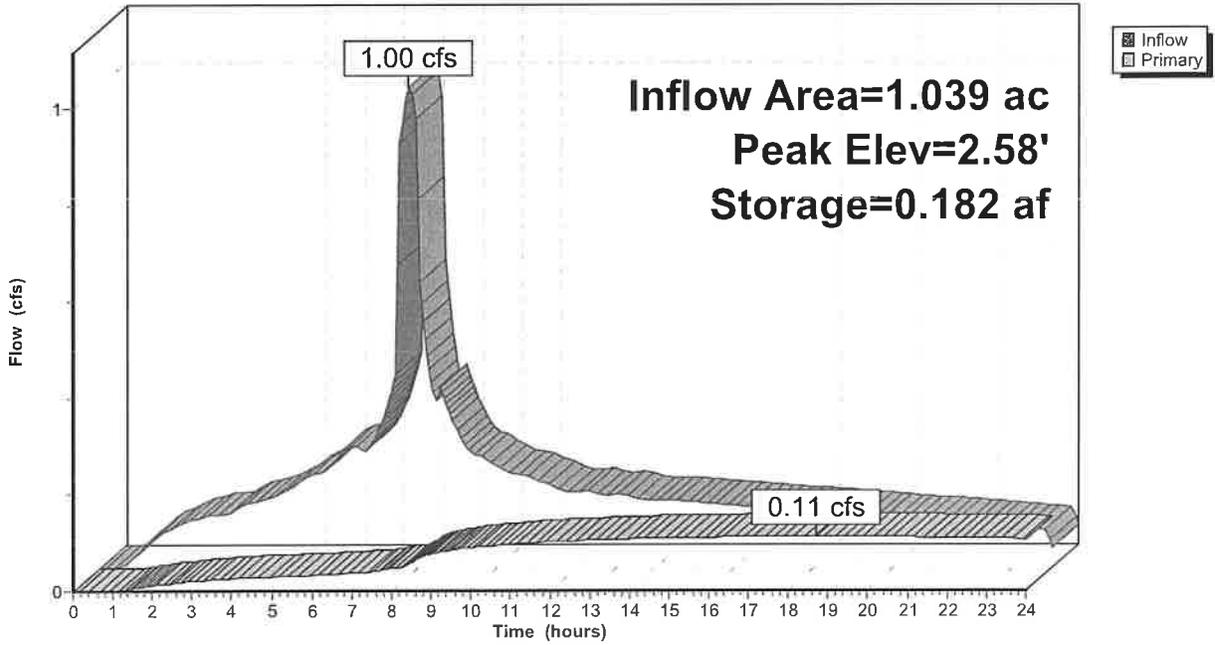
566.0 cy Field

344.3 cy Stone



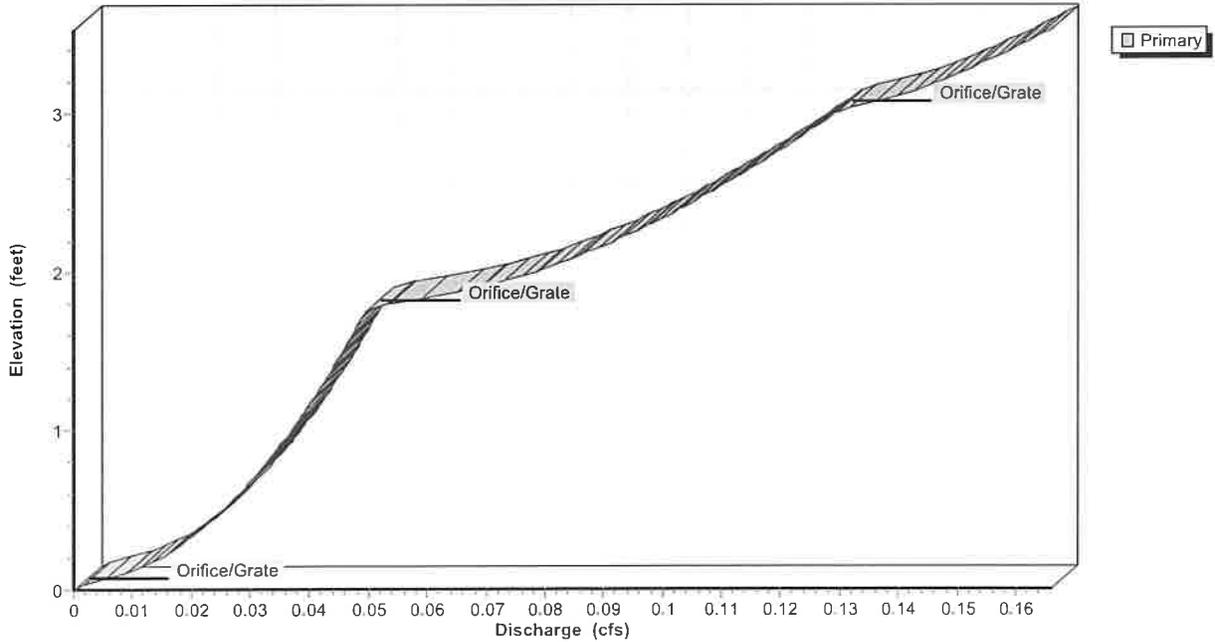
Pond 2P: Chambermaxx

Hydrograph



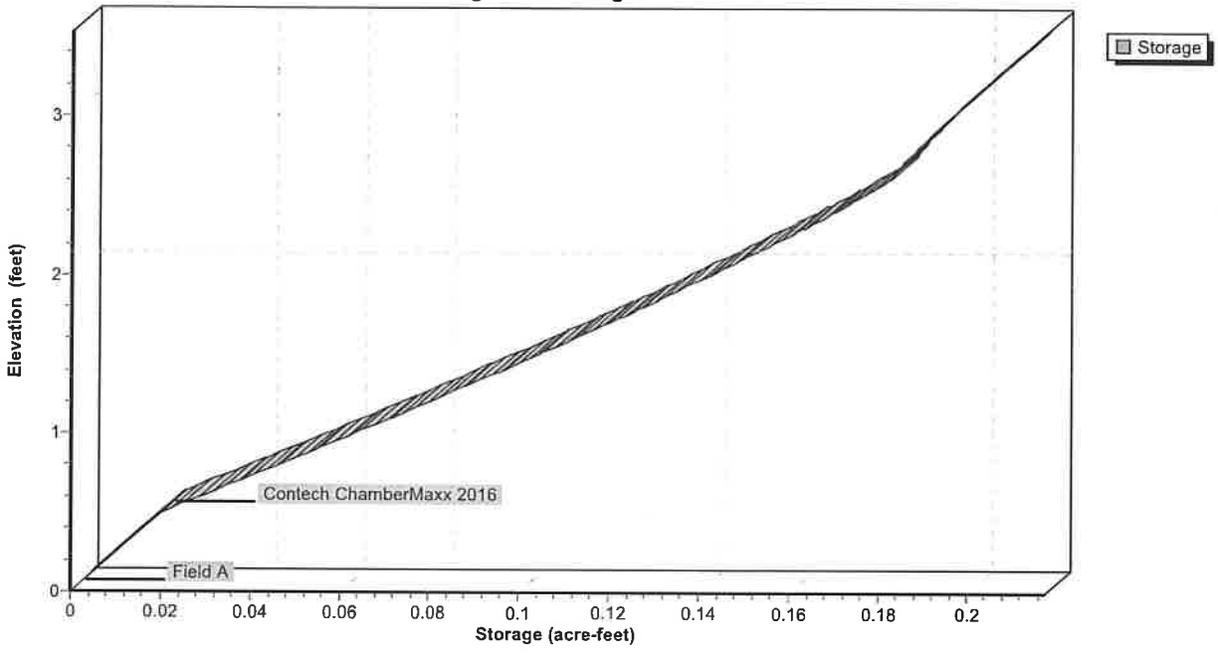
Pond 2P: Chambermaxx

Stage-Discharge



Pond 2P: Chambermaxx

Stage-Area-Storage



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Page 72

Hydrograph for Pond 2P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.03	0.001	0.01	0.00
1.50	0.07	0.003	0.07	0.01
2.00	0.09	0.006	0.14	0.01
2.50	0.10	0.009	0.23	0.02
3.00	0.11	0.013	0.32	0.02
3.50	0.12	0.017	0.42	0.02
4.00	0.14	0.021	0.51	0.03
4.50	0.15	0.026	0.57	0.03
5.00	0.18	0.032	0.63	0.03
5.50	0.20	0.038	0.71	0.03
6.00	0.23	0.045	0.79	0.03
6.50	0.25	0.054	0.90	0.03
7.00	0.28	0.063	1.00	0.04
7.50	0.63	0.076	1.16	0.04
8.00	0.76	0.113	1.61	0.05
8.50	0.36	0.130	1.84	0.06
9.00	0.28	0.141	1.98	0.08
9.50	0.23	0.148	2.08	0.08
10.00	0.21	0.154	2.16	0.09
10.50	0.20	0.158	2.22	0.09
11.00	0.18	0.162	2.28	0.10
11.50	0.17	0.165	2.33	0.10
12.00	0.16	0.168	2.36	0.10
12.50	0.16	0.170	2.40	0.10
13.00	0.15	0.172	2.43	0.10
13.50	0.14	0.174	2.46	0.11
14.00	0.14	0.175	2.48	0.11
14.50	0.14	0.176	2.50	0.11
15.00	0.14	0.178	2.52	0.11
15.50	0.13	0.179	2.54	0.11
16.00	0.13	0.180	2.55	0.11
16.50	0.13	0.180	2.56	0.11
17.00	0.12	0.181	2.57	0.11
17.50	0.12	0.181	2.58	0.11
18.00	0.12	0.181	2.58	0.11
18.50	0.11	0.182	2.58	0.11
19.00	0.11	0.182	2.58	0.11
19.50	0.11	0.181	2.58	0.11
20.00	0.10	0.181	2.58	0.11
20.50	0.10	0.181	2.57	0.11
21.00	0.10	0.180	2.56	0.11
21.50	0.09	0.180	2.55	0.11
22.00	0.09	0.179	2.54	0.11
22.50	0.09	0.178	2.53	0.11
23.00	0.08	0.177	2.51	0.11
23.50	0.08	0.176	2.50	0.11
24.00	0.04	0.175	2.48	0.11

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Page 73

Stage-Discharge for Pond 2P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.04	2.12	0.09	3.18	0.15
0.02	0.00	1.08	0.04	2.14	0.09	3.20	0.15
0.04	0.00	1.10	0.04	2.16	0.09	3.22	0.15
0.06	0.00	1.12	0.04	2.18	0.09	3.24	0.15
0.08	0.01	1.14	0.04	2.20	0.09	3.26	0.15
0.10	0.01	1.16	0.04	2.22	0.09	3.28	0.15
0.12	0.01	1.18	0.04	2.24	0.09	3.30	0.15
0.14	0.01	1.20	0.04	2.26	0.10	3.32	0.15
0.16	0.01	1.22	0.04	2.28	0.10	3.34	0.16
0.18	0.01	1.24	0.04	2.30	0.10	3.36	0.16
0.20	0.01	1.26	0.04	2.32	0.10	3.38	0.16
0.22	0.02	1.28	0.04	2.34	0.10	3.40	0.16
0.24	0.02	1.30	0.04	2.36	0.10	3.42	0.16
0.26	0.02	1.32	0.04	2.38	0.10	3.44	0.16
0.28	0.02	1.34	0.04	2.40	0.10	3.46	0.16
0.30	0.02	1.36	0.04	2.42	0.10	3.48	0.16
0.32	0.02	1.38	0.04	2.44	0.11	3.50	0.16
0.34	0.02	1.40	0.04	2.46	0.11	3.52	0.17
0.36	0.02	1.42	0.04	2.48	0.11		
0.38	0.02	1.44	0.04	2.50	0.11		
0.40	0.02	1.46	0.04	2.52	0.11		
0.42	0.02	1.48	0.05	2.54	0.11		
0.44	0.02	1.50	0.05	2.56	0.11		
0.46	0.02	1.52	0.05	2.58	0.11		
0.48	0.02	1.54	0.05	2.60	0.11		
0.50	0.03	1.56	0.05	2.62	0.11		
0.52	0.03	1.58	0.05	2.64	0.11		
0.54	0.03	1.60	0.05	2.66	0.12		
0.56	0.03	1.62	0.05	2.68	0.12		
0.58	0.03	1.64	0.05	2.70	0.12		
0.60	0.03	1.66	0.05	2.72	0.12		
0.62	0.03	1.68	0.05	2.74	0.12		
0.64	0.03	1.70	0.05	2.76	0.12		
0.66	0.03	1.72	0.05	2.78	0.12		
0.68	0.03	1.74	0.05	2.80	0.12		
0.70	0.03	1.76	0.05	2.82	0.12		
0.72	0.03	1.78	0.05	2.84	0.12		
0.74	0.03	1.80	0.05	2.86	0.12		
0.76	0.03	1.82	0.06	2.88	0.12		
0.78	0.03	1.84	0.06	2.90	0.13		
0.80	0.03	1.86	0.06	2.92	0.13		
0.82	0.03	1.88	0.07	2.94	0.13		
0.84	0.03	1.90	0.07	2.96	0.13		
0.86	0.03	1.92	0.07	2.98	0.13		
0.88	0.03	1.94	0.07	3.00	0.13		
0.90	0.03	1.96	0.07	3.02	0.13		
0.92	0.04	1.98	0.08	3.04	0.13		
0.94	0.04	2.00	0.08	3.06	0.14		
0.96	0.04	2.02	0.08	3.08	0.14		
0.98	0.04	2.04	0.08	3.10	0.14		
1.00	0.04	2.06	0.08	3.12	0.14		
1.02	0.04	2.08	0.08	3.14	0.14		
1.04	0.04	2.10	0.09	3.16	0.14		

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Page 74

Stage-Area-Storage for Pond 2P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 75

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: East Post Developed Runoff Area=45,603 sf 100.00% Impervious Runoff Depth>4.56"
Tc=0.0 min CN=98 Runoff=1.21 cfs 0.398 af

Subcatchment 2S: East Predeveloped Runoff Area=56,135 sf 0.00% Impervious Runoff Depth>2.21"
Tc=0.0 min CN=74 Runoff=0.66 cfs 0.237 af

Subcatchment 3S: East Predeveloped Runoff Area=52,488 sf 0.00% Impervious Runoff Depth>2.21"
Tc=0.0 min CN=74 Runoff=0.61 cfs 0.221 af

Subcatchment 4S: East Post Developed Runoff Area=45,278 sf 100.00% Impervious Runoff Depth>4.56"
Tc=0.0 min CN=98 Runoff=1.20 cfs 0.395 af

Pond 1P: Chambermaxx Peak Elev=3.26' Storage=0.206 af Inflow=1.21 cfs 0.398 af
Outflow=0.14 cfs 0.203 af

Pond 2P: Chambermaxx Peak Elev=3.30' Storage=0.208 af Inflow=1.20 cfs 0.395 af
Outflow=0.15 cfs 0.201 af

Total Runoff Area = 4.580 ac Runoff Volume = 1.252 af Average Runoff Depth = 3.28"
54.45% Pervious = 2.494 ac 45.55% Impervious = 2.086 ac

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 76

Summary for Subcatchment 1S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

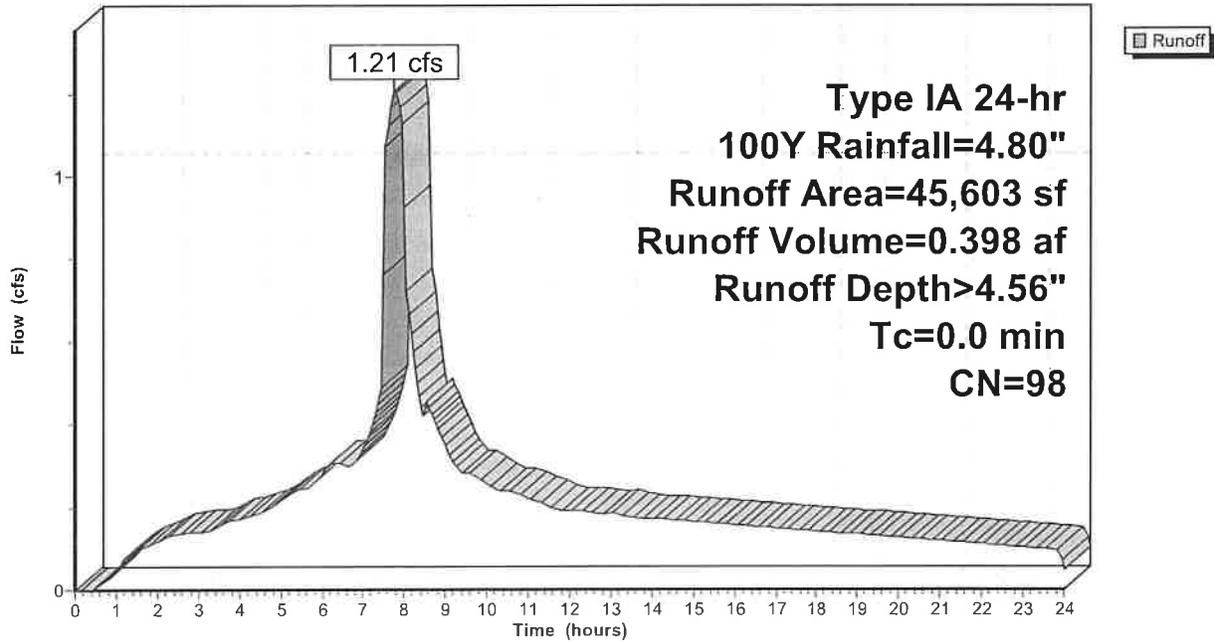
Runoff = 1.21 cfs @ 7.78 hrs, Volume= 0.398 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100Y Rainfall=4.80"

Area (sf)	CN	Description
26,308	98	Unconnected roofs, HSG A
19,295	98	Paved parking, HSG A
45,603	98	Weighted Average
45,603	98	100.00% Impervious Area
26,308		57.69% Unconnected

Subcatchment 1S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 77

Hydrograph for Subcatchment 1S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	3.41	3.18	0.18
0.25	0.03	0.00	0.00	13.50	3.45	3.22	0.18
0.50	0.05	0.00	0.01	13.75	3.49	3.26	0.17
0.75	0.07	0.00	0.02	14.00	3.53	3.30	0.17
1.00	0.10	0.01	0.05	14.25	3.57	3.34	0.17
1.25	0.13	0.03	0.08	14.50	3.61	3.38	0.17
1.50	0.17	0.05	0.10	14.75	3.65	3.42	0.17
1.75	0.20	0.07	0.10	15.00	3.69	3.46	0.16
2.00	0.24	0.10	0.12	15.25	3.73	3.50	0.16
2.25	0.28	0.13	0.13	15.50	3.77	3.54	0.16
2.50	0.32	0.16	0.13	15.75	3.81	3.57	0.16
2.75	0.36	0.19	0.14	16.00	3.84	3.61	0.16
3.00	0.39	0.22	0.14	16.25	3.88	3.65	0.15
3.25	0.43	0.26	0.14	16.50	3.92	3.68	0.15
3.50	0.47	0.29	0.15	16.75	3.95	3.72	0.15
3.75	0.51	0.33	0.17	17.00	3.99	3.75	0.15
4.00	0.56	0.37	0.17	17.25	4.02	3.79	0.15
4.25	0.60	0.41	0.18	17.50	4.06	3.82	0.14
4.50	0.65	0.45	0.19	17.75	4.09	3.86	0.14
4.75	0.70	0.50	0.20	18.00	4.13	3.89	0.14
5.00	0.75	0.55	0.22	18.25	4.16	3.93	0.14
5.25	0.80	0.60	0.23	18.50	4.19	3.96	0.14
5.50	0.86	0.66	0.24	18.75	4.23	3.99	0.14
5.75	0.92	0.72	0.25	19.00	4.26	4.02	0.13
6.00	0.99	0.78	0.28	19.25	4.29	4.05	0.13
6.25	1.06	0.85	0.31	19.50	4.32	4.08	0.13
6.50	1.14	0.92	0.30	19.75	4.35	4.11	0.13
6.75	1.21	0.99	0.30	20.00	4.38	4.14	0.13
7.00	1.29	1.07	0.34	20.25	4.41	4.17	0.12
7.25	1.38	1.16	0.41	20.50	4.44	4.20	0.12
7.50	1.49	1.27	0.76	20.75	4.47	4.23	0.12
7.75	1.76	1.54	1.21	21.00	4.50	4.26	0.12
8.00	2.04	1.81	0.93	21.25	4.52	4.29	0.12
8.25	2.19	1.97	0.53	21.50	4.55	4.32	0.11
8.50	2.30	2.08	0.44	21.75	4.58	4.34	0.11
8.75	2.41	2.18	0.40	22.00	4.60	4.37	0.11
9.00	2.50	2.27	0.34	22.25	4.63	4.39	0.11
9.25	2.57	2.34	0.30	22.50	4.66	4.42	0.11
9.50	2.64	2.41	0.28	22.75	4.68	4.45	0.10
9.75	2.71	2.48	0.27	23.00	4.71	4.47	0.10
10.00	2.77	2.54	0.26	23.25	4.73	4.49	0.10
10.25	2.83	2.60	0.24	23.50	4.75	4.52	0.10
10.50	2.88	2.65	0.24	23.75	4.78	4.54	0.10
10.75	2.94	2.71	0.23	24.00	4.80	4.56	0.05
11.00	3.00	2.76	0.22				
11.25	3.05	2.81	0.21				
11.50	3.10	2.86	0.20				
11.75	3.14	2.91	0.19				
12.00	3.19	2.95	0.19				
12.25	3.23	3.00	0.19				
12.50	3.28	3.05	0.19				
12.75	3.32	3.09	0.18				
13.00	3.36	3.13	0.18				

Summary for Subcatchment 2S: East Predeveloped

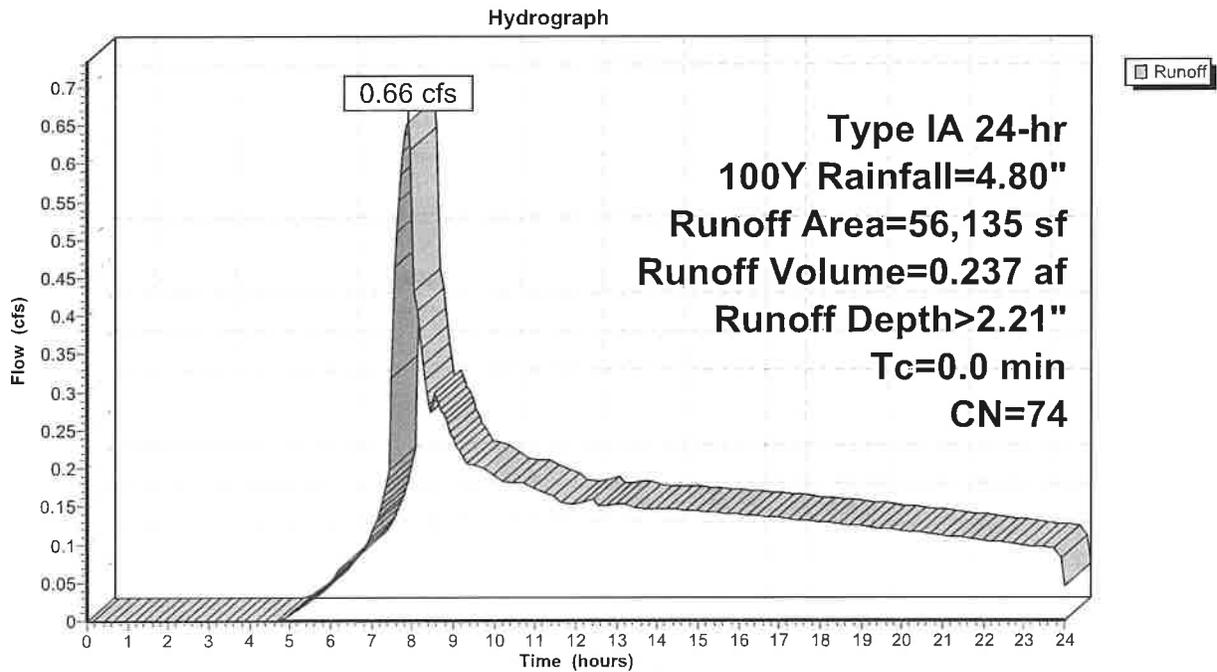
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.66 cfs @ 7.90 hrs, Volume= 0.237 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr 100Y Rainfall=4.80"

Area (sf)	CN	Description
56,135	74	>75% Grass cover, Good, HSG C
56,135	74	100.00% Pervious Area

Subcatchment 2S: East Predeveloped



Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 79

Hydrograph for Subcatchment 2S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	3.41	1.18	0.15
0.25	0.03	0.00	0.00	13.50	3.45	1.21	0.15
0.50	0.05	0.00	0.00	13.75	3.49	1.23	0.15
0.75	0.07	0.00	0.00	14.00	3.53	1.26	0.15
1.00	0.10	0.00	0.00	14.25	3.57	1.29	0.15
1.25	0.13	0.00	0.00	14.50	3.61	1.32	0.15
1.50	0.17	0.00	0.00	14.75	3.65	1.35	0.14
1.75	0.20	0.00	0.00	15.00	3.69	1.37	0.14
2.00	0.24	0.00	0.00	15.25	3.73	1.40	0.14
2.25	0.28	0.00	0.00	15.50	3.77	1.43	0.14
2.50	0.32	0.00	0.00	15.75	3.81	1.46	0.14
2.75	0.36	0.00	0.00	16.00	3.84	1.48	0.14
3.00	0.39	0.00	0.00	16.25	3.88	1.51	0.14
3.25	0.43	0.00	0.00	16.50	3.92	1.54	0.14
3.50	0.47	0.00	0.00	16.75	3.95	1.56	0.14
3.75	0.51	0.00	0.00	17.00	3.99	1.59	0.13
4.00	0.56	0.00	0.00	17.25	4.02	1.61	0.13
4.25	0.60	0.00	0.00	17.50	4.06	1.64	0.13
4.50	0.65	0.00	0.00	17.75	4.09	1.67	0.13
4.75	0.70	0.00	0.00	18.00	4.13	1.69	0.13
5.00	0.75	0.00	0.01	18.25	4.16	1.72	0.13
5.25	0.80	0.00	0.02	18.50	4.19	1.74	0.13
5.50	0.86	0.01	0.03	18.75	4.23	1.76	0.13
5.75	0.92	0.01	0.04	19.00	4.26	1.79	0.12
6.00	0.99	0.02	0.05	19.25	4.29	1.81	0.12
6.25	1.06	0.03	0.07	19.50	4.32	1.84	0.12
6.50	1.14	0.05	0.08	19.75	4.35	1.86	0.12
6.75	1.21	0.06	0.09	20.00	4.38	1.88	0.12
7.00	1.29	0.08	0.11	20.25	4.41	1.90	0.12
7.25	1.38	0.11	0.15	20.50	4.44	1.93	0.12
7.50	1.49	0.14	0.32	20.75	4.47	1.95	0.11
7.75	1.76	0.24	0.61	21.00	4.50	1.97	0.11
8.00	2.04	0.37	0.55	21.25	4.52	1.99	0.11
8.25	2.19	0.44	0.34	21.50	4.55	2.01	0.11
8.50	2.30	0.50	0.29	21.75	4.58	2.03	0.11
8.75	2.41	0.56	0.27	22.00	4.60	2.05	0.11
9.00	2.50	0.61	0.24	22.25	4.63	2.07	0.10
9.25	2.57	0.65	0.21	22.50	4.66	2.09	0.10
9.50	2.64	0.69	0.20	22.75	4.68	2.11	0.10
9.75	2.71	0.73	0.20	23.00	4.71	2.13	0.10
10.00	2.77	0.77	0.19	23.25	4.73	2.15	0.10
10.25	2.83	0.80	0.18	23.50	4.75	2.17	0.10
10.50	2.88	0.84	0.18	23.75	4.78	2.19	0.09
10.75	2.94	0.87	0.18	24.00	4.80	2.21	0.05
11.00	3.00	0.91	0.17				
11.25	3.05	0.94	0.17				
11.50	3.10	0.97	0.16				
11.75	3.14	1.00	0.15				
12.00	3.19	1.03	0.15				
12.25	3.23	1.06	0.16				
12.50	3.28	1.09	0.16				
12.75	3.32	1.12	0.15				
13.00	3.36	1.15	0.15				

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 80

Summary for Subcatchment 3S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

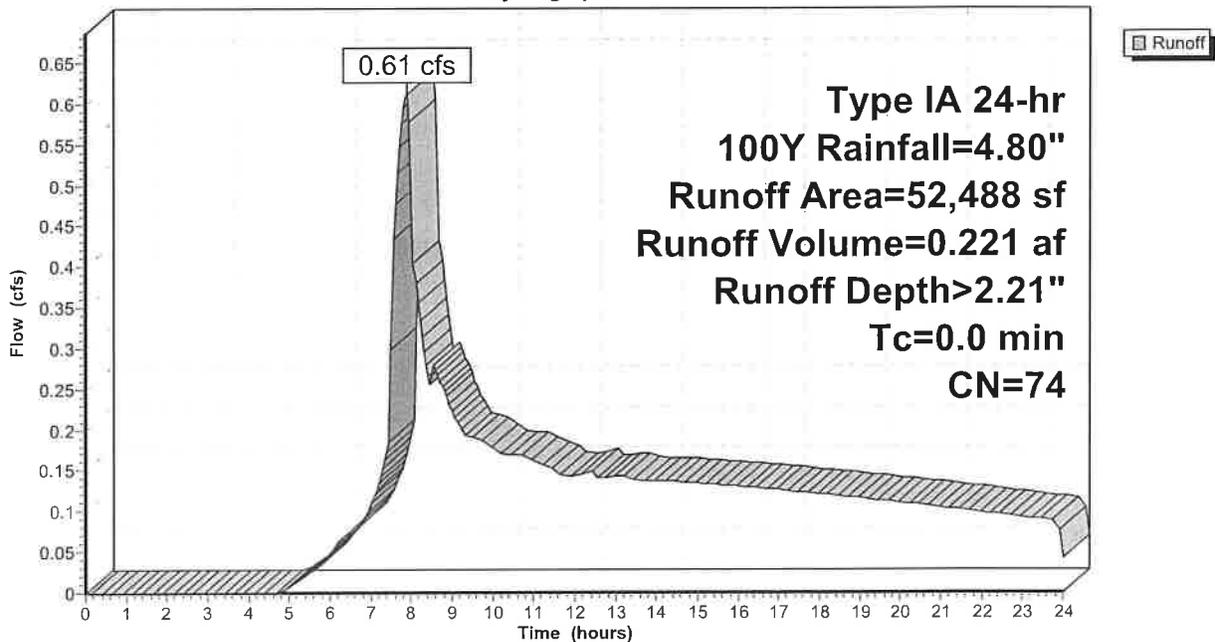
Runoff = 0.61 cfs @ 7.90 hrs, Volume= 0.221 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100Y Rainfall=4.80"

Area (sf)	CN	Description
52,488	74	>75% Grass cover, Good, HSG C
52,488	74	100.00% Pervious Area

Subcatchment 3S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 81

Hydrograph for Subcatchment 3S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	3.41	1.18	0.14
0.25	0.03	0.00	0.00	13.50	3.45	1.21	0.14
0.50	0.05	0.00	0.00	13.75	3.49	1.23	0.14
0.75	0.07	0.00	0.00	14.00	3.53	1.26	0.14
1.00	0.10	0.00	0.00	14.25	3.57	1.29	0.14
1.25	0.13	0.00	0.00	14.50	3.61	1.32	0.14
1.50	0.17	0.00	0.00	14.75	3.65	1.35	0.14
1.75	0.20	0.00	0.00	15.00	3.69	1.37	0.13
2.00	0.24	0.00	0.00	15.25	3.73	1.40	0.13
2.25	0.28	0.00	0.00	15.50	3.77	1.43	0.13
2.50	0.32	0.00	0.00	15.75	3.81	1.46	0.13
2.75	0.36	0.00	0.00	16.00	3.84	1.48	0.13
3.00	0.39	0.00	0.00	16.25	3.88	1.51	0.13
3.25	0.43	0.00	0.00	16.50	3.92	1.54	0.13
3.50	0.47	0.00	0.00	16.75	3.95	1.56	0.13
3.75	0.51	0.00	0.00	17.00	3.99	1.59	0.13
4.00	0.56	0.00	0.00	17.25	4.02	1.61	0.12
4.25	0.60	0.00	0.00	17.50	4.06	1.64	0.12
4.50	0.65	0.00	0.00	17.75	4.09	1.67	0.12
4.75	0.70	0.00	0.00	18.00	4.13	1.69	0.12
5.00	0.75	0.00	0.01	18.25	4.16	1.72	0.12
5.25	0.80	0.00	0.02	18.50	4.19	1.74	0.12
5.50	0.86	0.01	0.02	18.75	4.23	1.76	0.12
5.75	0.92	0.01	0.03	19.00	4.26	1.79	0.12
6.00	0.99	0.02	0.05	19.25	4.29	1.81	0.11
6.25	1.06	0.03	0.06	19.50	4.32	1.84	0.11
6.50	1.14	0.05	0.07	19.75	4.35	1.86	0.11
6.75	1.21	0.06	0.08	20.00	4.38	1.88	0.11
7.00	1.29	0.08	0.11	20.25	4.41	1.90	0.11
7.25	1.38	0.11	0.14	20.50	4.44	1.93	0.11
7.50	1.49	0.14	0.30	20.75	4.47	1.95	0.11
7.75	1.76	0.24	0.57	21.00	4.50	1.97	0.10
8.00	2.04	0.37	0.51	21.25	4.52	1.99	0.10
8.25	2.19	0.44	0.31	21.50	4.55	2.01	0.10
8.50	2.30	0.50	0.27	21.75	4.58	2.03	0.10
8.75	2.41	0.56	0.25	22.00	4.60	2.05	0.10
9.00	2.50	0.61	0.22	22.25	4.63	2.07	0.10
9.25	2.57	0.65	0.20	22.50	4.66	2.09	0.10
9.50	2.64	0.69	0.19	22.75	4.68	2.11	0.09
9.75	2.71	0.73	0.19	23.00	4.71	2.13	0.09
10.00	2.77	0.77	0.18	23.25	4.73	2.15	0.09
10.25	2.83	0.80	0.17	23.50	4.75	2.17	0.09
10.50	2.88	0.84	0.17	23.75	4.78	2.19	0.09
10.75	2.94	0.87	0.17	24.00	4.80	2.21	0.04
11.00	3.00	0.91	0.16				
11.25	3.05	0.94	0.16				
11.50	3.10	0.97	0.15				
11.75	3.14	1.00	0.14				
12.00	3.19	1.03	0.14				
12.25	3.23	1.06	0.15				
12.50	3.28	1.09	0.15				
12.75	3.32	1.12	0.14				
13.00	3.36	1.15	0.14				

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 82

Summary for Subcatchment 4S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

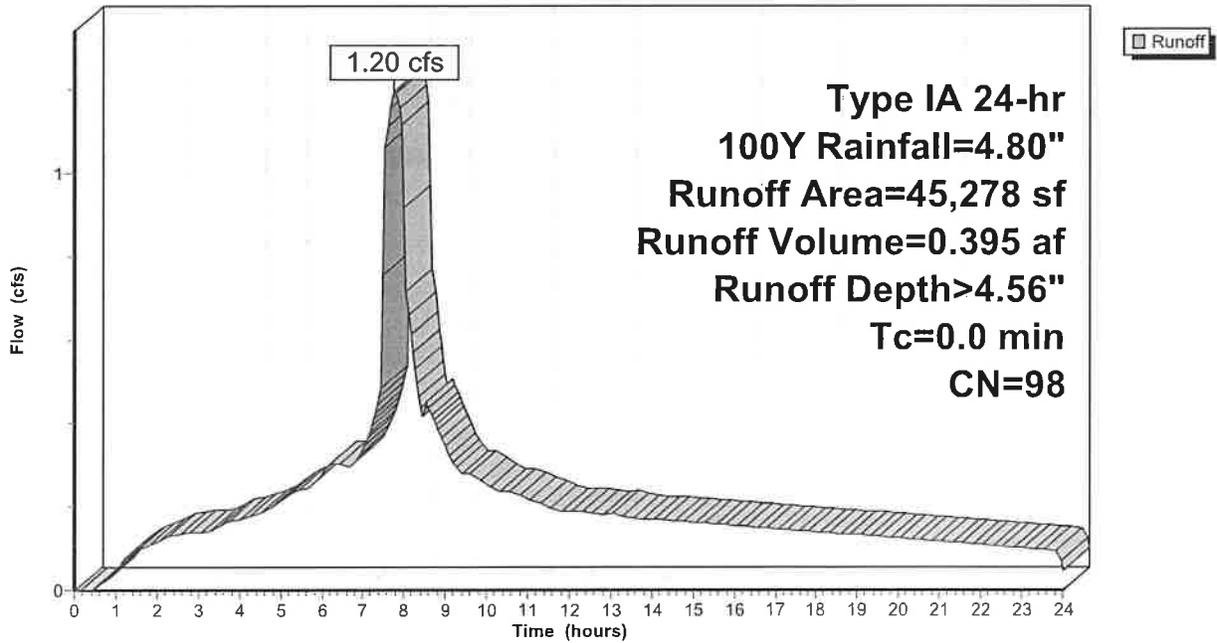
Runoff = 1.20 cfs @ 7.78 hrs, Volume= 0.395 af, Depth> 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 100Y Rainfall=4.80"

Area (sf)	CN	Description
22,959	98	Unconnected roofs, HSG A
22,319	98	Paved parking, HSG A
45,278	98	Weighted Average
45,278	98	100.00% Impervious Area
22,959		50.71% Unconnected

Subcatchment 4S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 83

Hydrograph for Subcatchment 4S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	3.41	3.18	0.18
0.25	0.03	0.00	0.00	13.50	3.45	3.22	0.17
0.50	0.05	0.00	0.01	13.75	3.49	3.26	0.17
0.75	0.07	0.00	0.02	14.00	3.53	3.30	0.17
1.00	0.10	0.01	0.05	14.25	3.57	3.34	0.17
1.25	0.13	0.03	0.08	14.50	3.61	3.38	0.17
1.50	0.17	0.05	0.10	14.75	3.65	3.42	0.16
1.75	0.20	0.07	0.10	15.00	3.69	3.46	0.16
2.00	0.24	0.10	0.12	15.25	3.73	3.50	0.16
2.25	0.28	0.13	0.13	15.50	3.77	3.54	0.16
2.50	0.32	0.16	0.13	15.75	3.81	3.57	0.16
2.75	0.36	0.19	0.14	16.00	3.84	3.61	0.16
3.00	0.39	0.22	0.14	16.25	3.88	3.65	0.15
3.25	0.43	0.26	0.14	16.50	3.92	3.68	0.15
3.50	0.47	0.29	0.15	16.75	3.95	3.72	0.15
3.75	0.51	0.33	0.16	17.00	3.99	3.75	0.15
4.00	0.56	0.37	0.17	17.25	4.02	3.79	0.15
4.25	0.60	0.41	0.18	17.50	4.06	3.82	0.14
4.50	0.65	0.45	0.19	17.75	4.09	3.86	0.14
4.75	0.70	0.50	0.20	18.00	4.13	3.89	0.14
5.00	0.75	0.55	0.22	18.25	4.16	3.93	0.14
5.25	0.80	0.60	0.23	18.50	4.19	3.96	0.14
5.50	0.86	0.66	0.24	18.75	4.23	3.99	0.13
5.75	0.92	0.72	0.25	19.00	4.26	4.02	0.13
6.00	0.99	0.78	0.28	19.25	4.29	4.05	0.13
6.25	1.06	0.85	0.31	19.50	4.32	4.08	0.13
6.50	1.14	0.92	0.30	19.75	4.35	4.11	0.13
6.75	1.21	0.99	0.30	20.00	4.38	4.14	0.12
7.00	1.29	1.07	0.34	20.25	4.41	4.17	0.12
7.25	1.38	1.16	0.41	20.50	4.44	4.20	0.12
7.50	1.49	1.27	0.76	20.75	4.47	4.23	0.12
7.75	1.76	1.54	1.20	21.00	4.50	4.26	0.12
8.00	2.04	1.81	0.92	21.25	4.52	4.29	0.12
8.25	2.19	1.97	0.53	21.50	4.55	4.32	0.11
8.50	2.30	2.08	0.43	21.75	4.58	4.34	0.11
8.75	2.41	2.18	0.40	22.00	4.60	4.37	0.11
9.00	2.50	2.27	0.34	22.25	4.63	4.39	0.11
9.25	2.57	2.34	0.30	22.50	4.66	4.42	0.11
9.50	2.64	2.41	0.28	22.75	4.68	4.45	0.10
9.75	2.71	2.48	0.27	23.00	4.71	4.47	0.10
10.00	2.77	2.54	0.25	23.25	4.73	4.49	0.10
10.25	2.83	2.60	0.24	23.50	4.75	4.52	0.10
10.50	2.88	2.65	0.24	23.75	4.78	4.54	0.10
10.75	2.94	2.71	0.23	24.00	4.80	4.56	0.05
11.00	3.00	2.76	0.22				
11.25	3.05	2.81	0.21				
11.50	3.10	2.86	0.20				
11.75	3.14	2.91	0.19				
12.00	3.19	2.95	0.19				
12.25	3.23	3.00	0.19				
12.50	3.28	3.05	0.19				
12.75	3.32	3.09	0.18				
13.00	3.36	3.13	0.18				

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 84

Summary for Pond 1P: Chambermaxx

Inflow Area = 1.047 ac, 100.00% Impervious, Inflow Depth > 4.56" for 100Y event
 Inflow = 1.21 cfs @ 7.78 hrs, Volume= 0.398 af
 Outflow = 0.14 cfs @ 17.74 hrs, Volume= 0.203 af, Atten= 88%, Lag= 597.6 min
 Primary = 0.14 cfs @ 17.74 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 3.26' @ 17.74 hrs Surf.Area= 0.100 ac Storage= 0.206 af

Plug-Flow detention time= 508.7 min calculated for 0.202 af (51% of inflow)
 Center-of-Mass det. time= 245.5 min (895.7 - 650.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.5" Vert. Orifice/Grate C= 0.600
#2	Primary	1.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	0.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.14 cfs @ 17.74 hrs HW=3.26' (Free Discharge)

- └─1=Orifice/Grate (Orifice Controls 0.11 cfs @ 8.60 fps)
- └─2=Orifice/Grate (Orifice Controls 0.03 cfs @ 6.30 fps)
- └─3=Orifice/Grate (Orifice Controls 0.00 cfs @ 2.34 fps)

Pond 1P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

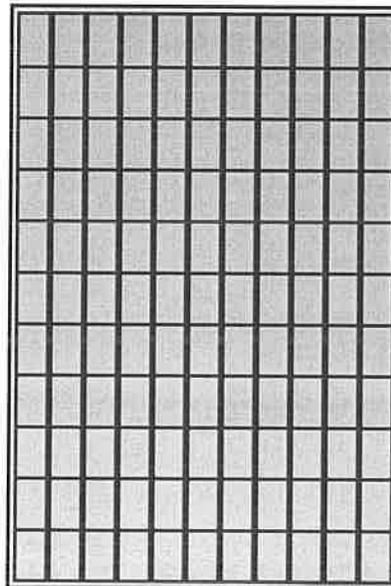
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

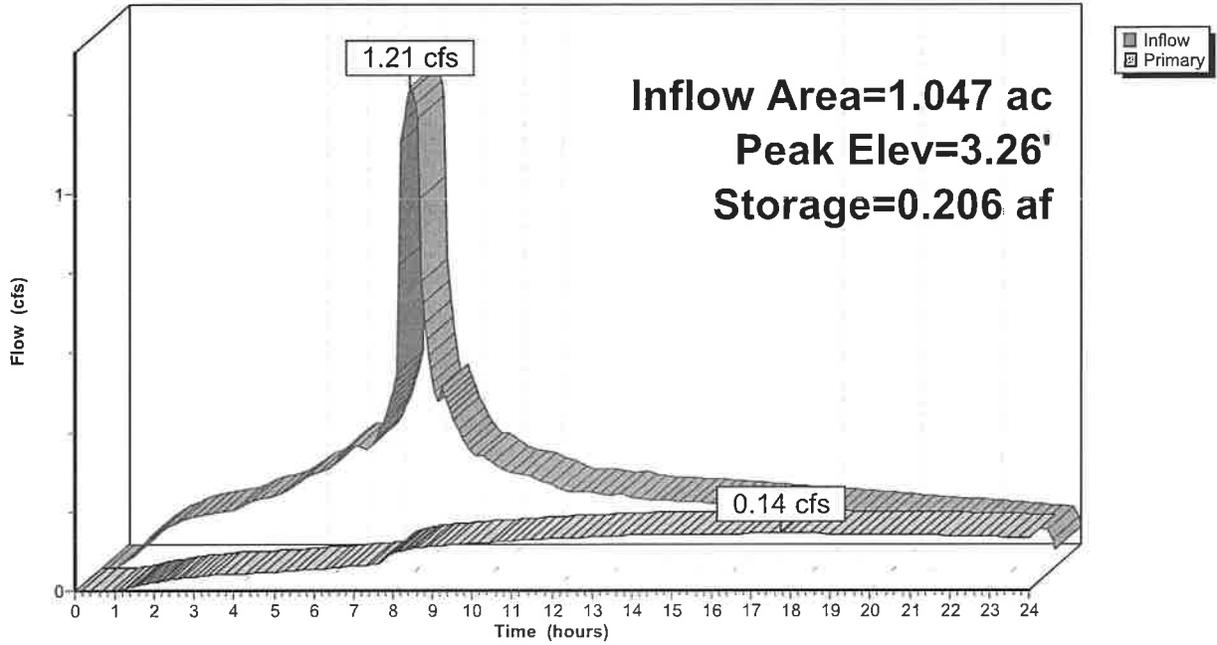
566.0 cy Field

344.3 cy Stone



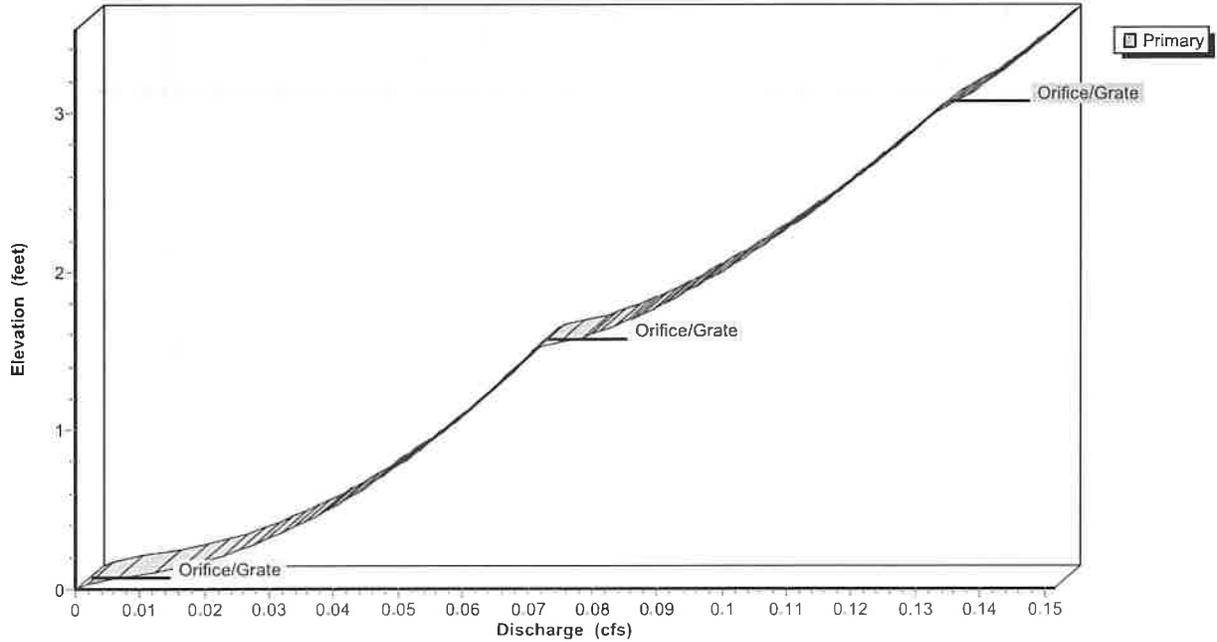
Pond 1P: Chambermaxx

Hydrograph



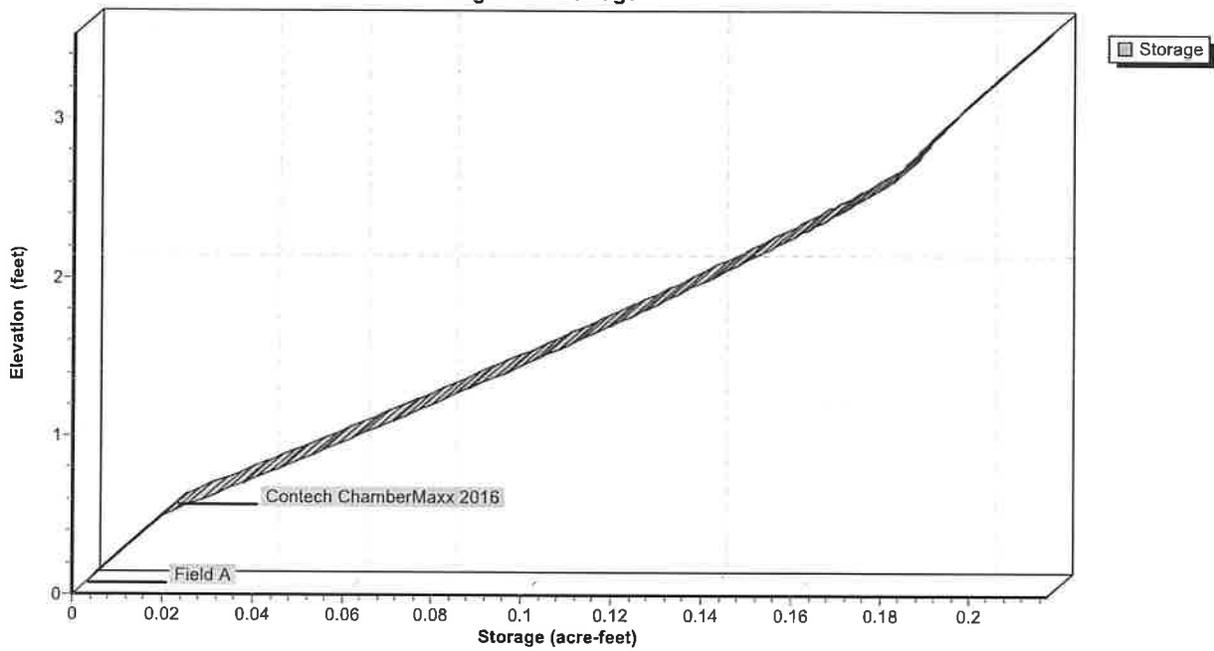
Pond 1P: Chambermaxx

Stage-Discharge



Pond 1P: Chambermaxx

Stage-Area-Storage



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Page 88

Hydrograph for Pond 1P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.01	0.000	0.00	0.00
1.00	0.05	0.001	0.03	0.00
1.50	0.10	0.004	0.10	0.01
2.00	0.12	0.008	0.19	0.02
2.50	0.13	0.012	0.30	0.03
3.00	0.14	0.016	0.41	0.03
3.50	0.15	0.021	0.51	0.04
4.00	0.17	0.026	0.57	0.04
4.50	0.19	0.031	0.63	0.04
5.00	0.22	0.038	0.70	0.05
5.50	0.24	0.045	0.79	0.05
6.00	0.28	0.054	0.89	0.05
6.50	0.30	0.064	1.01	0.06
7.00	0.34	0.074	1.13	0.06
7.50	0.76	0.089	1.32	0.07
8.00	0.93	0.133	1.87	0.09
8.50	0.44	0.152	2.14	0.11
9.00	0.34	0.164	2.31	0.11
9.50	0.28	0.172	2.43	0.12
10.00	0.26	0.178	2.53	0.12
10.50	0.24	0.183	2.63	0.12
11.00	0.22	0.188	2.78	0.13
11.50	0.20	0.191	2.87	0.13
12.00	0.19	0.194	2.94	0.13
12.50	0.19	0.196	3.00	0.13
13.00	0.18	0.198	3.05	0.14
13.50	0.18	0.200	3.10	0.14
14.00	0.17	0.201	3.13	0.14
14.50	0.17	0.203	3.17	0.14
15.00	0.16	0.204	3.19	0.14
15.50	0.16	0.205	3.21	0.14
16.00	0.16	0.205	3.23	0.14
16.50	0.15	0.206	3.24	0.14
17.00	0.15	0.206	3.25	0.14
17.50	0.14	0.206	3.26	0.14
18.00	0.14	0.206	3.26	0.14
18.50	0.14	0.206	3.25	0.14
19.00	0.13	0.206	3.24	0.14
19.50	0.13	0.205	3.23	0.14
20.00	0.13	0.205	3.22	0.14
20.50	0.12	0.204	3.20	0.14
21.00	0.12	0.203	3.18	0.14
21.50	0.11	0.202	3.15	0.14
22.00	0.11	0.201	3.13	0.14
22.50	0.11	0.200	3.09	0.14
23.00	0.10	0.199	3.06	0.14
23.50	0.10	0.197	3.03	0.13
24.00	0.05	0.196	2.99	0.13

Capps Road and 120th

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Page 89

Stage-Discharge for Pond 1P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.06	2.12	0.10	3.18	0.14
0.02	0.00	1.08	0.06	2.14	0.11	3.20	0.14
0.04	0.00	1.10	0.06	2.16	0.11	3.22	0.14
0.06	0.00	1.12	0.06	2.18	0.11	3.24	0.14
0.08	0.01	1.14	0.06	2.20	0.11	3.26	0.14
0.10	0.01	1.16	0.06	2.22	0.11	3.28	0.14
0.12	0.01	1.18	0.06	2.24	0.11	3.30	0.14
0.14	0.02	1.20	0.06	2.26	0.11	3.32	0.15
0.16	0.02	1.22	0.06	2.28	0.11	3.34	0.15
0.18	0.02	1.24	0.06	2.30	0.11	3.36	0.15
0.20	0.02	1.26	0.06	2.32	0.11	3.38	0.15
0.22	0.02	1.28	0.07	2.34	0.11	3.40	0.15
0.24	0.02	1.30	0.07	2.36	0.11	3.42	0.15
0.26	0.03	1.32	0.07	2.38	0.11	3.44	0.15
0.28	0.03	1.34	0.07	2.40	0.11	3.46	0.15
0.30	0.03	1.36	0.07	2.42	0.12	3.48	0.15
0.32	0.03	1.38	0.07	2.44	0.12	3.50	0.15
0.34	0.03	1.40	0.07	2.46	0.12	3.52	0.15
0.36	0.03	1.42	0.07	2.48	0.12		
0.38	0.03	1.44	0.07	2.50	0.12		
0.40	0.03	1.46	0.07	2.52	0.12		
0.42	0.04	1.48	0.07	2.54	0.12		
0.44	0.04	1.50	0.07	2.56	0.12		
0.46	0.04	1.52	0.07	2.58	0.12		
0.48	0.04	1.54	0.07	2.60	0.12		
0.50	0.04	1.56	0.08	2.62	0.12		
0.52	0.04	1.58	0.08	2.64	0.12		
0.54	0.04	1.60	0.08	2.66	0.12		
0.56	0.04	1.62	0.08	2.68	0.12		
0.58	0.04	1.64	0.08	2.70	0.12		
0.60	0.04	1.66	0.08	2.72	0.12		
0.62	0.04	1.68	0.08	2.74	0.13		
0.64	0.04	1.70	0.09	2.76	0.13		
0.66	0.05	1.72	0.09	2.78	0.13		
0.68	0.05	1.74	0.09	2.80	0.13		
0.70	0.05	1.76	0.09	2.82	0.13		
0.72	0.05	1.78	0.09	2.84	0.13		
0.74	0.05	1.80	0.09	2.86	0.13		
0.76	0.05	1.82	0.09	2.88	0.13		
0.78	0.05	1.84	0.09	2.90	0.13		
0.80	0.05	1.86	0.09	2.92	0.13		
0.82	0.05	1.88	0.09	2.94	0.13		
0.84	0.05	1.90	0.10	2.96	0.13		
0.86	0.05	1.92	0.10	2.98	0.13		
0.88	0.05	1.94	0.10	3.00	0.13		
0.90	0.05	1.96	0.10	3.02	0.13		
0.92	0.05	1.98	0.10	3.04	0.14		
0.94	0.06	2.00	0.10	3.06	0.14		
0.96	0.06	2.02	0.10	3.08	0.14		
0.98	0.06	2.04	0.10	3.10	0.14		
1.00	0.06	2.06	0.10	3.12	0.14		
1.02	0.06	2.08	0.10	3.14	0.14		
1.04	0.06	2.10	0.10	3.16	0.14		

Capps Road and 120th

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Page 90

Stage-Area-Storage for Pond 1P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

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Page 91

Summary for Pond 2P: Chambermaxx

Inflow Area = 1.039 ac, 100.00% Impervious, Inflow Depth > 4.56" for 100Y event
 Inflow = 1.20 cfs @ 7.78 hrs, Volume= 0.395 af
 Outflow = 0.15 cfs @ 16.22 hrs, Volume= 0.201 af, Allen= 87%, Lag= 506.6 min
 Primary = 0.15 cfs @ 16.22 hrs, Volume= 0.201 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 3.30' @ 16.22 hrs Surf.Area= 0.100 ac Storage= 0.208 af

Plug-Flow detention time= 535.8 min calculated for 0.200 af (51% of inflow)
 Center-of-Mass det. time= 272.0 min (922.2 - 650.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.2" Vert. Orifice/Grate C= 0.600
#2	Primary	1.75'	1.5" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.15 cfs @ 16.22 hrs HW=3.30' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.07 cfs @ 8.68 fps)
- 2=Orifice/Grate (Orifice Controls 0.07 cfs @ 5.88 fps)
- 3=Orifice/Grate (Orifice Controls 0.01 cfs @ 2.45 fps)

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Page 92

Pond 2P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

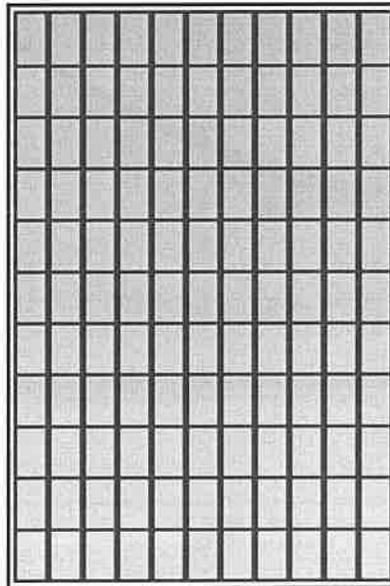
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

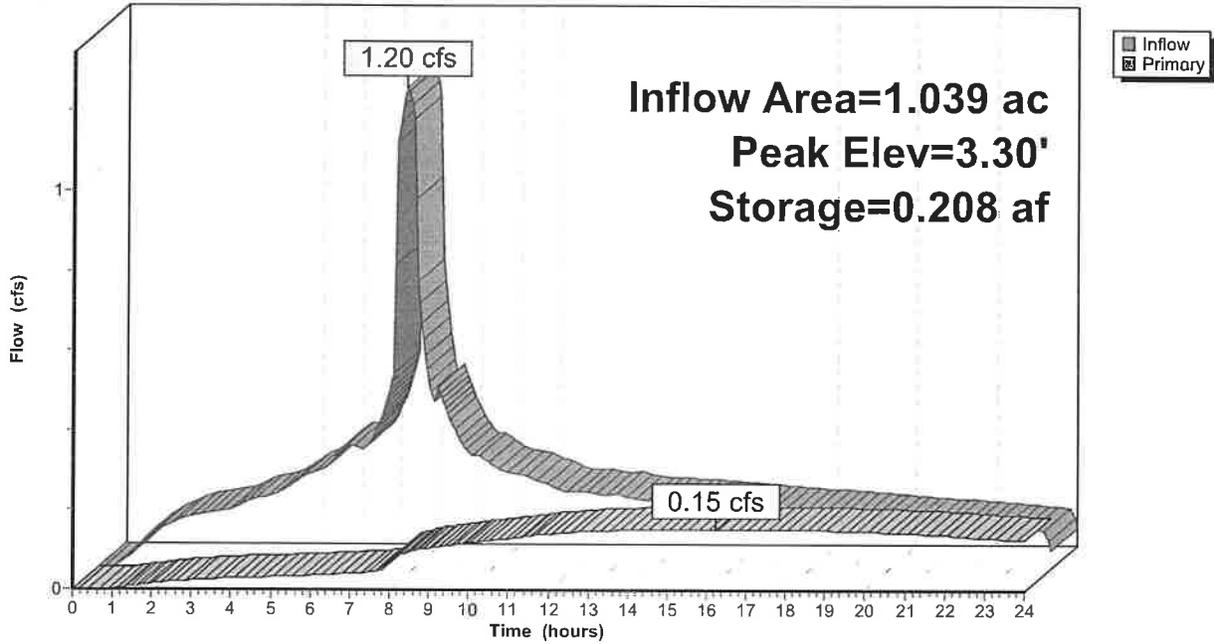
566.0 cy Field

344.3 cy Stone



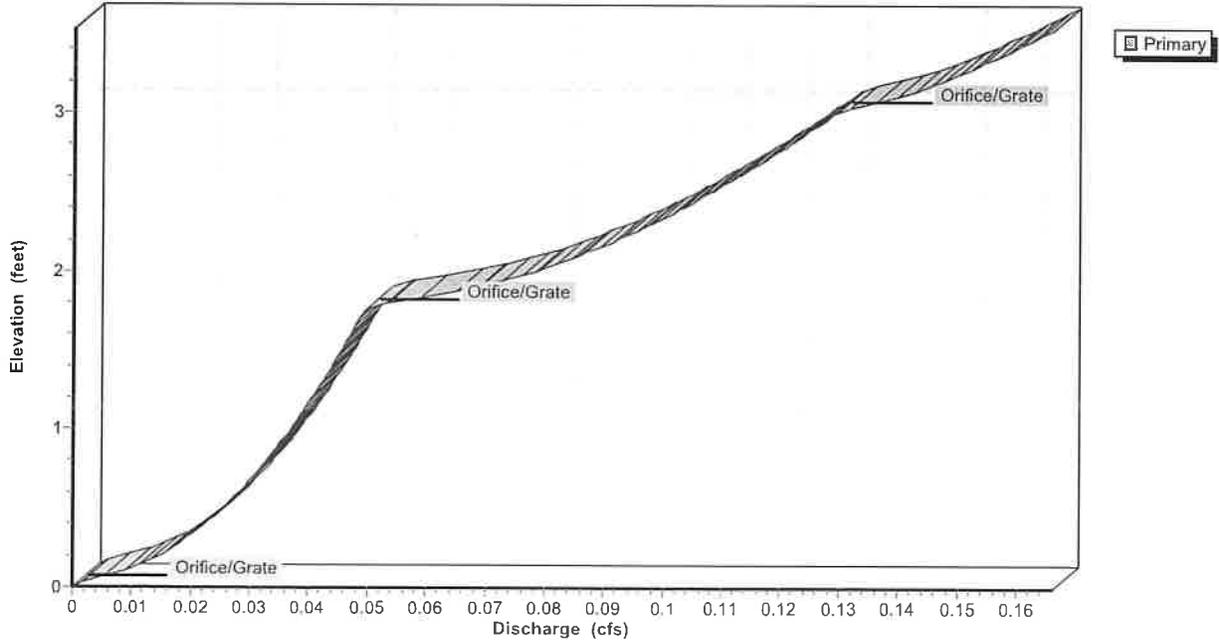
Pond 2P: Chambermaxx

Hydrograph



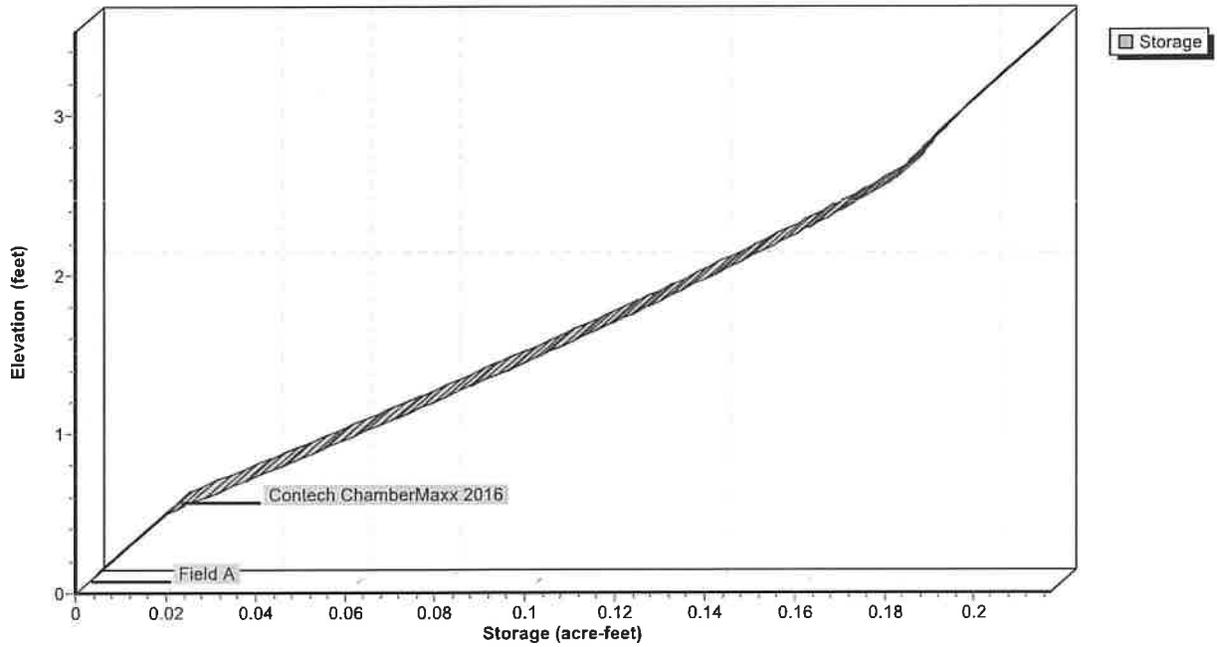
Pond 2P: Chambermaxx

Stage-Discharge



Pond 2P: Chambermaxx

Stage-Area-Storage



Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 95

Hydrograph for Pond 2P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.01	0.000	0.00	0.00
1.00	0.05	0.001	0.03	0.00
1.50	0.10	0.004	0.10	0.01
2.00	0.12	0.008	0.20	0.01
2.50	0.13	0.012	0.31	0.02
3.00	0.14	0.017	0.43	0.02
3.50	0.15	0.022	0.52	0.03
4.00	0.17	0.028	0.59	0.03
4.50	0.19	0.034	0.66	0.03
5.00	0.22	0.041	0.74	0.03
5.50	0.24	0.049	0.83	0.03
6.00	0.28	0.058	0.94	0.04
6.50	0.30	0.069	1.07	0.04
7.00	0.34	0.080	1.20	0.04
7.50	0.76	0.096	1.40	0.04
8.00	0.92	0.140	1.97	0.08
8.50	0.43	0.160	2.24	0.09
9.00	0.34	0.172	2.43	0.10
9.50	0.28	0.180	2.56	0.11
10.00	0.25	0.186	2.73	0.12
10.50	0.24	0.191	2.87	0.12
11.00	0.22	0.195	2.98	0.13
11.50	0.20	0.199	3.07	0.14
12.00	0.19	0.201	3.12	0.14
12.50	0.19	0.203	3.17	0.14
13.00	0.18	0.204	3.21	0.15
13.50	0.17	0.206	3.24	0.15
14.00	0.17	0.206	3.26	0.15
14.50	0.17	0.207	3.28	0.15
15.00	0.16	0.208	3.29	0.15
15.50	0.16	0.208	3.30	0.15
16.00	0.16	0.208	3.30	0.15
16.50	0.15	0.208	3.30	0.15
17.00	0.15	0.208	3.30	0.15
17.50	0.14	0.208	3.29	0.15
18.00	0.14	0.207	3.28	0.15
18.50	0.14	0.207	3.26	0.15
19.00	0.13	0.206	3.25	0.15
19.50	0.13	0.205	3.23	0.15
20.00	0.12	0.204	3.21	0.15
20.50	0.12	0.203	3.18	0.15
21.00	0.12	0.202	3.15	0.14
21.50	0.11	0.201	3.13	0.14
22.00	0.11	0.200	3.10	0.14
22.50	0.11	0.199	3.07	0.14
23.00	0.10	0.197	3.03	0.13
23.50	0.10	0.196	3.00	0.13
24.00	0.05	0.195	2.97	0.13

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 96

Stage-Discharge for Pond 2P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.04	2.12	0.09	3.18	0.15
0.02	0.00	1.08	0.04	2.14	0.09	3.20	0.15
0.04	0.00	1.10	0.04	2.16	0.09	3.22	0.15
0.06	0.00	1.12	0.04	2.18	0.09	3.24	0.15
0.08	0.01	1.14	0.04	2.20	0.09	3.26	0.15
0.10	0.01	1.16	0.04	2.22	0.09	3.28	0.15
0.12	0.01	1.18	0.04	2.24	0.09	3.30	0.15
0.14	0.01	1.20	0.04	2.26	0.10	3.32	0.15
0.16	0.01	1.22	0.04	2.28	0.10	3.34	0.16
0.18	0.01	1.24	0.04	2.30	0.10	3.36	0.16
0.20	0.01	1.26	0.04	2.32	0.10	3.38	0.16
0.22	0.02	1.28	0.04	2.34	0.10	3.40	0.16
0.24	0.02	1.30	0.04	2.36	0.10	3.42	0.16
0.26	0.02	1.32	0.04	2.38	0.10	3.44	0.16
0.28	0.02	1.34	0.04	2.40	0.10	3.46	0.16
0.30	0.02	1.36	0.04	2.42	0.10	3.48	0.16
0.32	0.02	1.38	0.04	2.44	0.11	3.50	0.16
0.34	0.02	1.40	0.04	2.46	0.11	3.52	0.17
0.36	0.02	1.42	0.04	2.48	0.11		
0.38	0.02	1.44	0.04	2.50	0.11		
0.40	0.02	1.46	0.04	2.52	0.11		
0.42	0.02	1.48	0.05	2.54	0.11		
0.44	0.02	1.50	0.05	2.56	0.11		
0.46	0.02	1.52	0.05	2.58	0.11		
0.48	0.02	1.54	0.05	2.60	0.11		
0.50	0.03	1.56	0.05	2.62	0.11		
0.52	0.03	1.58	0.05	2.64	0.11		
0.54	0.03	1.60	0.05	2.66	0.12		
0.56	0.03	1.62	0.05	2.68	0.12		
0.58	0.03	1.64	0.05	2.70	0.12		
0.60	0.03	1.66	0.05	2.72	0.12		
0.62	0.03	1.68	0.05	2.74	0.12		
0.64	0.03	1.70	0.05	2.76	0.12		
0.66	0.03	1.72	0.05	2.78	0.12		
0.68	0.03	1.74	0.05	2.80	0.12		
0.70	0.03	1.76	0.05	2.82	0.12		
0.72	0.03	1.78	0.05	2.84	0.12		
0.74	0.03	1.80	0.05	2.86	0.12		
0.76	0.03	1.82	0.06	2.88	0.12		
0.78	0.03	1.84	0.06	2.90	0.13		
0.80	0.03	1.86	0.06	2.92	0.13		
0.82	0.03	1.88	0.07	2.94	0.13		
0.84	0.03	1.90	0.07	2.96	0.13		
0.86	0.03	1.92	0.07	2.98	0.13		
0.88	0.03	1.94	0.07	3.00	0.13		
0.90	0.03	1.96	0.07	3.02	0.13		
0.92	0.04	1.98	0.08	3.04	0.13		
0.94	0.04	2.00	0.08	3.06	0.14		
0.96	0.04	2.02	0.08	3.08	0.14		
0.98	0.04	2.04	0.08	3.10	0.14		
1.00	0.04	2.06	0.08	3.12	0.14		
1.02	0.04	2.08	0.08	3.14	0.14		
1.04	0.04	2.10	0.09	3.16	0.14		

Capps Road and 120th

Type IA 24-hr 100Y Rainfall=4.80"

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Page 97

Stage-Area-Storage for Pond 2P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 98

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: East Post Developed Runoff Area=45,603 sf 100.00% Impervious Runoff Depth>0.79"
Tc=0.0 min CN=98 Runoff=0.22 cfs 0.069 af

Subcatchment 2S: East Predeveloped Runoff Area=56,135 sf 0.00% Impervious Runoff Depth>0.02"
Tc=0.0 min CN=74 Runoff=0.00 cfs 0.002 af

Subcatchment 3S: East Predeveloped Runoff Area=52,488 sf 0.00% Impervious Runoff Depth>0.02"
Tc=0.0 min CN=74 Runoff=0.00 cfs 0.002 af

Subcatchment 4S: East Post Developed Runoff Area=45,278 sf 100.00% Impervious Runoff Depth>0.79"
Tc=0.0 min CN=98 Runoff=0.22 cfs 0.069 af

Pond 1P: Chambermaxx Peak Elev=0.53' Storage=0.023 af Inflow=0.22 cfs 0.069 af
Outflow=0.04 cfs 0.055 af

Pond 2P: Chambermaxx Peak Elev=0.62' Storage=0.030 af Inflow=0.22 cfs 0.069 af
Outflow=0.03 cfs 0.041 af

Total Runoff Area = 4.580 ac Runoff Volume = 0.142 af Average Runoff Depth = 0.37"
54.45% Pervious = 2.494 ac 45.55% Impervious = 2.086 ac

Summary for Subcatchment 1S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

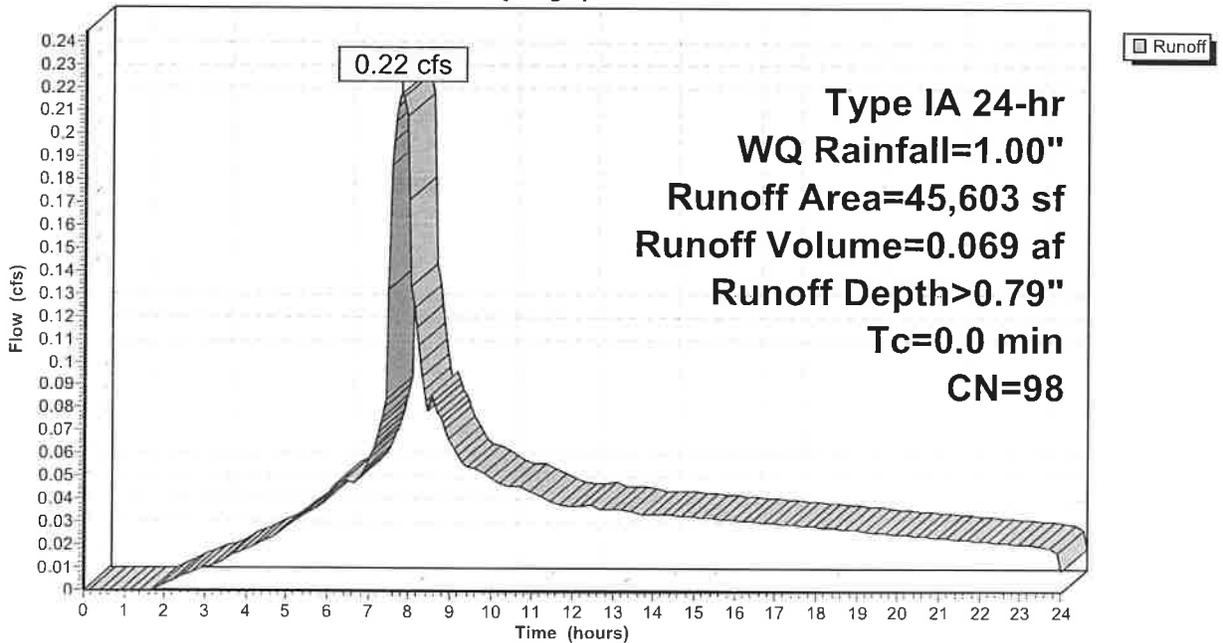
Runoff = 0.22 cfs @ 7.81 hrs, Volume= 0.069 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
26,308	98	Unconnected roofs, HSG A
19,295	98	Paved parking, HSG A
45,603	98	Weighted Average
45,603	98	100.00% Impervious Area
26,308		57.69% Unconnected

Subcatchment 1S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 100

Hydrograph for Subcatchment 1S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	0.71	0.51	0.04
0.25	0.01	0.00	0.00	13.50	0.72	0.52	0.03
0.50	0.01	0.00	0.00	13.75	0.73	0.53	0.03
0.75	0.01	0.00	0.00	14.00	0.74	0.54	0.03
1.00	0.02	0.00	0.00	14.25	0.74	0.55	0.03
1.25	0.03	0.00	0.00	14.50	0.75	0.55	0.03
1.50	0.03	0.00	0.00	14.75	0.76	0.56	0.03
1.75	0.04	0.00	0.00	15.00	0.77	0.57	0.03
2.00	0.05	0.00	0.00	15.25	0.78	0.58	0.03
2.25	0.06	0.00	0.01	15.50	0.79	0.58	0.03
2.50	0.07	0.00	0.01	15.75	0.79	0.59	0.03
2.75	0.07	0.00	0.01	16.00	0.80	0.60	0.03
3.00	0.08	0.01	0.01	16.25	0.81	0.61	0.03
3.25	0.09	0.01	0.01	16.50	0.82	0.61	0.03
3.50	0.10	0.01	0.01	16.75	0.82	0.62	0.03
3.75	0.11	0.02	0.02	17.00	0.83	0.63	0.03
4.00	0.12	0.02	0.02	17.25	0.84	0.64	0.03
4.25	0.13	0.02	0.02	17.50	0.85	0.64	0.03
4.50	0.13	0.03	0.02	17.75	0.85	0.65	0.03
4.75	0.15	0.04	0.02	18.00	0.86	0.66	0.03
5.00	0.16	0.04	0.03	18.25	0.87	0.66	0.03
5.25	0.17	0.05	0.03	18.50	0.87	0.67	0.03
5.50	0.18	0.06	0.03	18.75	0.88	0.68	0.03
5.75	0.19	0.06	0.04	19.00	0.89	0.68	0.03
6.00	0.21	0.07	0.04	19.25	0.89	0.69	0.03
6.25	0.22	0.08	0.05	19.50	0.90	0.69	0.03
6.50	0.24	0.10	0.05	19.75	0.91	0.70	0.03
6.75	0.25	0.11	0.05	20.00	0.91	0.71	0.03
7.00	0.27	0.12	0.06	20.25	0.92	0.71	0.02
7.25	0.29	0.13	0.07	20.50	0.92	0.72	0.02
7.50	0.31	0.15	0.13	20.75	0.93	0.72	0.02
7.75	0.37	0.20	0.22	21.00	0.94	0.73	0.02
8.00	0.43	0.25	0.17	21.25	0.94	0.74	0.02
8.25	0.46	0.28	0.10	21.50	0.95	0.74	0.02
8.50	0.48	0.30	0.08	21.75	0.95	0.75	0.02
8.75	0.50	0.32	0.08	22.00	0.96	0.75	0.02
9.00	0.52	0.34	0.07	22.25	0.96	0.76	0.02
9.25	0.54	0.35	0.06	22.50	0.97	0.76	0.02
9.50	0.55	0.36	0.05	22.75	0.98	0.77	0.02
9.75	0.56	0.38	0.05	23.00	0.98	0.77	0.02
10.00	0.58	0.39	0.05	23.25	0.99	0.78	0.02
10.25	0.59	0.40	0.05	23.50	0.99	0.78	0.02
10.50	0.60	0.41	0.05	23.75	1.00	0.79	0.02
10.75	0.61	0.42	0.05	24.00	1.00	0.79	0.01
11.00	0.62	0.43	0.04				
11.25	0.63	0.44	0.04				
11.50	0.65	0.45	0.04				
11.75	0.65	0.46	0.04				
12.00	0.66	0.47	0.04				
12.25	0.67	0.48	0.04				
12.50	0.68	0.49	0.04				
12.75	0.69	0.50	0.04				
13.00	0.70	0.50	0.04				

Summary for Subcatchment 2S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

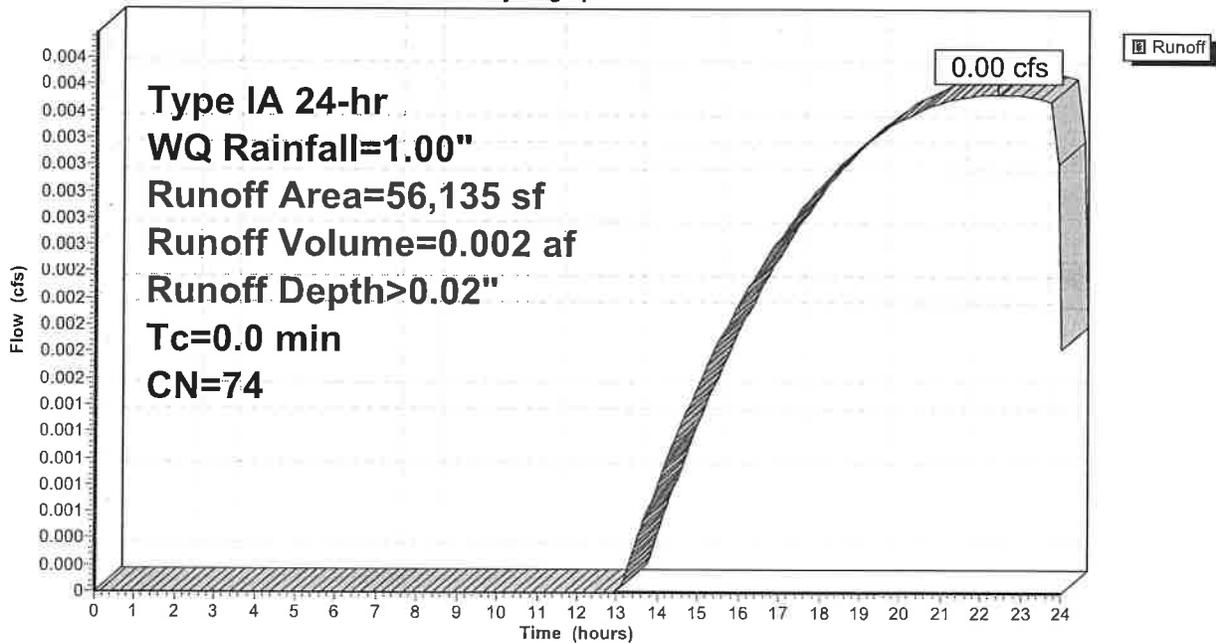
Runoff = 0.00 cfs @ 22.41 hrs, Volume= 0.002 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
56,135	74	>75% Grass cover, Good, HSG C
56,135	74	100.00% Pervious Area

Subcatchment 2S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 102

Hydrograph for Subcatchment 2S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	0.71	0.00	0.00
0.25	0.01	0.00	0.00	13.50	0.72	0.00	0.00
0.50	0.01	0.00	0.00	13.75	0.73	0.00	0.00
0.75	0.01	0.00	0.00	14.00	0.74	0.00	0.00
1.00	0.02	0.00	0.00	14.25	0.74	0.00	0.00
1.25	0.03	0.00	0.00	14.50	0.75	0.00	0.00
1.50	0.03	0.00	0.00	14.75	0.76	0.00	0.00
1.75	0.04	0.00	0.00	15.00	0.77	0.00	0.00
2.00	0.05	0.00	0.00	15.25	0.78	0.00	0.00
2.25	0.06	0.00	0.00	15.50	0.79	0.00	0.00
2.50	0.07	0.00	0.00	15.75	0.79	0.00	0.00
2.75	0.07	0.00	0.00	16.00	0.80	0.00	0.00
3.00	0.08	0.00	0.00	16.25	0.81	0.00	0.00
3.25	0.09	0.00	0.00	16.50	0.82	0.00	0.00
3.50	0.10	0.00	0.00	16.75	0.82	0.00	0.00
3.75	0.11	0.00	0.00	17.00	0.83	0.00	0.00
4.00	0.12	0.00	0.00	17.25	0.84	0.01	0.00
4.25	0.13	0.00	0.00	17.50	0.85	0.01	0.00
4.50	0.13	0.00	0.00	17.75	0.85	0.01	0.00
4.75	0.15	0.00	0.00	18.00	0.86	0.01	0.00
5.00	0.16	0.00	0.00	18.25	0.87	0.01	0.00
5.25	0.17	0.00	0.00	18.50	0.87	0.01	0.00
5.50	0.18	0.00	0.00	18.75	0.88	0.01	0.00
5.75	0.19	0.00	0.00	19.00	0.89	0.01	0.00
6.00	0.21	0.00	0.00	19.25	0.89	0.01	0.00
6.25	0.22	0.00	0.00	19.50	0.90	0.01	0.00
6.50	0.24	0.00	0.00	19.75	0.91	0.01	0.00
6.75	0.25	0.00	0.00	20.00	0.91	0.01	0.00
7.00	0.27	0.00	0.00	20.25	0.92	0.01	0.00
7.25	0.29	0.00	0.00	20.50	0.92	0.01	0.00
7.50	0.31	0.00	0.00	20.75	0.93	0.01	0.00
7.75	0.37	0.00	0.00	21.00	0.94	0.01	0.00
8.00	0.43	0.00	0.00	21.25	0.94	0.02	0.00
8.25	0.46	0.00	0.00	21.50	0.95	0.02	0.00
8.50	0.48	0.00	0.00	21.75	0.95	0.02	0.00
8.75	0.50	0.00	0.00	22.00	0.96	0.02	0.00
9.00	0.52	0.00	0.00	22.25	0.96	0.02	0.00
9.25	0.54	0.00	0.00	22.50	0.97	0.02	0.00
9.50	0.55	0.00	0.00	22.75	0.98	0.02	0.00
9.75	0.56	0.00	0.00	23.00	0.98	0.02	0.00
10.00	0.58	0.00	0.00	23.25	0.99	0.02	0.00
10.25	0.59	0.00	0.00	23.50	0.99	0.02	0.00
10.50	0.60	0.00	0.00	23.75	1.00	0.02	0.00
10.75	0.61	0.00	0.00	24.00	1.00	0.02	0.00
11.00	0.62	0.00	0.00				
11.25	0.63	0.00	0.00				
11.50	0.65	0.00	0.00				
11.75	0.65	0.00	0.00				
12.00	0.66	0.00	0.00				
12.25	0.67	0.00	0.00				
12.50	0.68	0.00	0.00				
12.75	0.69	0.00	0.00				
13.00	0.70	0.00	0.00				

Summary for Subcatchment 3S: East Predeveloped

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

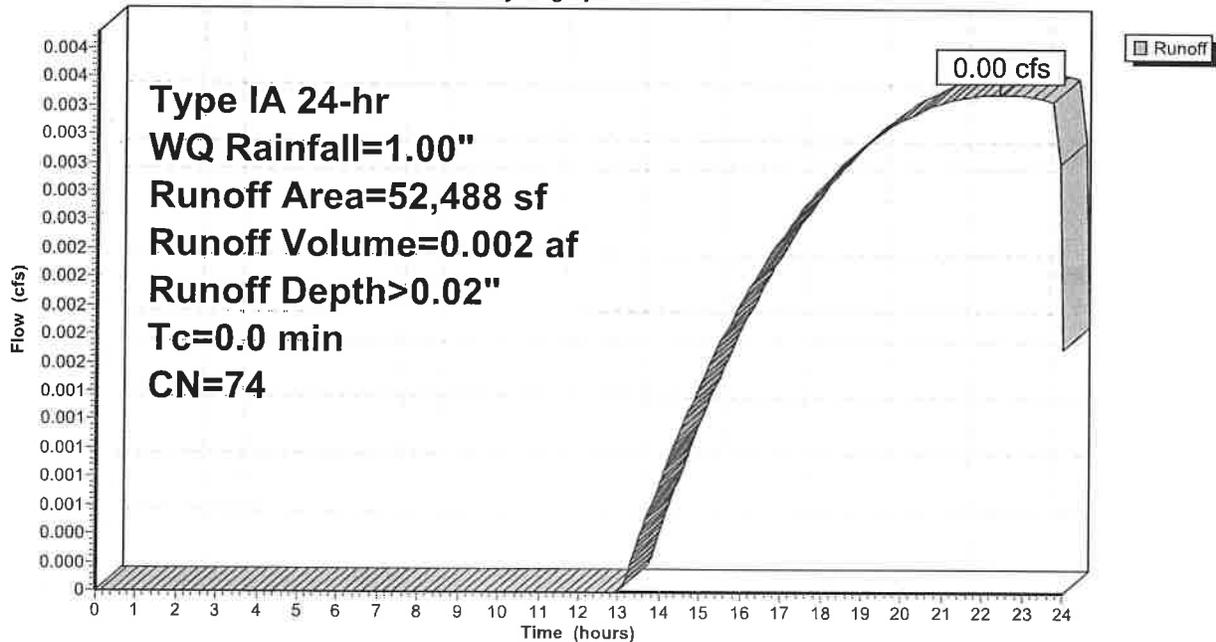
Runoff = 0.00 cfs @ 22.41 hrs, Volume= 0.002 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
52,488	74	>75% Grass cover, Good, HSG C
52,488	74	100.00% Pervious Area

Subcatchment 3S: East Predeveloped

Hydrograph



Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 104

Hydrograph for Subcatchment 3S: East Predeveloped

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	0.71	0.00	0.00
0.25	0.01	0.00	0.00	13.50	0.72	0.00	0.00
0.50	0.01	0.00	0.00	13.75	0.73	0.00	0.00
0.75	0.01	0.00	0.00	14.00	0.74	0.00	0.00
1.00	0.02	0.00	0.00	14.25	0.74	0.00	0.00
1.25	0.03	0.00	0.00	14.50	0.75	0.00	0.00
1.50	0.03	0.00	0.00	14.75	0.76	0.00	0.00
1.75	0.04	0.00	0.00	15.00	0.77	0.00	0.00
2.00	0.05	0.00	0.00	15.25	0.78	0.00	0.00
2.25	0.06	0.00	0.00	15.50	0.79	0.00	0.00
2.50	0.07	0.00	0.00	15.75	0.79	0.00	0.00
2.75	0.07	0.00	0.00	16.00	0.80	0.00	0.00
3.00	0.08	0.00	0.00	16.25	0.81	0.00	0.00
3.25	0.09	0.00	0.00	16.50	0.82	0.00	0.00
3.50	0.10	0.00	0.00	16.75	0.82	0.00	0.00
3.75	0.11	0.00	0.00	17.00	0.83	0.00	0.00
4.00	0.12	0.00	0.00	17.25	0.84	0.01	0.00
4.25	0.13	0.00	0.00	17.50	0.85	0.01	0.00
4.50	0.13	0.00	0.00	17.75	0.85	0.01	0.00
4.75	0.15	0.00	0.00	18.00	0.86	0.01	0.00
5.00	0.16	0.00	0.00	18.25	0.87	0.01	0.00
5.25	0.17	0.00	0.00	18.50	0.87	0.01	0.00
5.50	0.18	0.00	0.00	18.75	0.88	0.01	0.00
5.75	0.19	0.00	0.00	19.00	0.89	0.01	0.00
6.00	0.21	0.00	0.00	19.25	0.89	0.01	0.00
6.25	0.22	0.00	0.00	19.50	0.90	0.01	0.00
6.50	0.24	0.00	0.00	19.75	0.91	0.01	0.00
6.75	0.25	0.00	0.00	20.00	0.91	0.01	0.00
7.00	0.27	0.00	0.00	20.25	0.92	0.01	0.00
7.25	0.29	0.00	0.00	20.50	0.92	0.01	0.00
7.50	0.31	0.00	0.00	20.75	0.93	0.01	0.00
7.75	0.37	0.00	0.00	21.00	0.94	0.01	0.00
8.00	0.43	0.00	0.00	21.25	0.94	0.02	0.00
8.25	0.46	0.00	0.00	21.50	0.95	0.02	0.00
8.50	0.48	0.00	0.00	21.75	0.95	0.02	0.00
8.75	0.50	0.00	0.00	22.00	0.96	0.02	0.00
9.00	0.52	0.00	0.00	22.25	0.96	0.02	0.00
9.25	0.54	0.00	0.00	22.50	0.97	0.02	0.00
9.50	0.55	0.00	0.00	22.75	0.98	0.02	0.00
9.75	0.56	0.00	0.00	23.00	0.98	0.02	0.00
10.00	0.58	0.00	0.00	23.25	0.99	0.02	0.00
10.25	0.59	0.00	0.00	23.50	0.99	0.02	0.00
10.50	0.60	0.00	0.00	23.75	1.00	0.02	0.00
10.75	0.61	0.00	0.00	24.00	1.00	0.02	0.00
11.00	0.62	0.00	0.00				
11.25	0.63	0.00	0.00				
11.50	0.65	0.00	0.00				
11.75	0.65	0.00	0.00				
12.00	0.66	0.00	0.00				
12.25	0.67	0.00	0.00				
12.50	0.68	0.00	0.00				
12.75	0.69	0.00	0.00				
13.00	0.70	0.00	0.00				

Capps Road and 120th

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Type IA 24-hr WQ Rainfall=1.00"

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Page 105

Summary for Subcatchment 4S: East Post Developed

[46] Hint: Tc=0 (Instant runoff peak depends on dt)

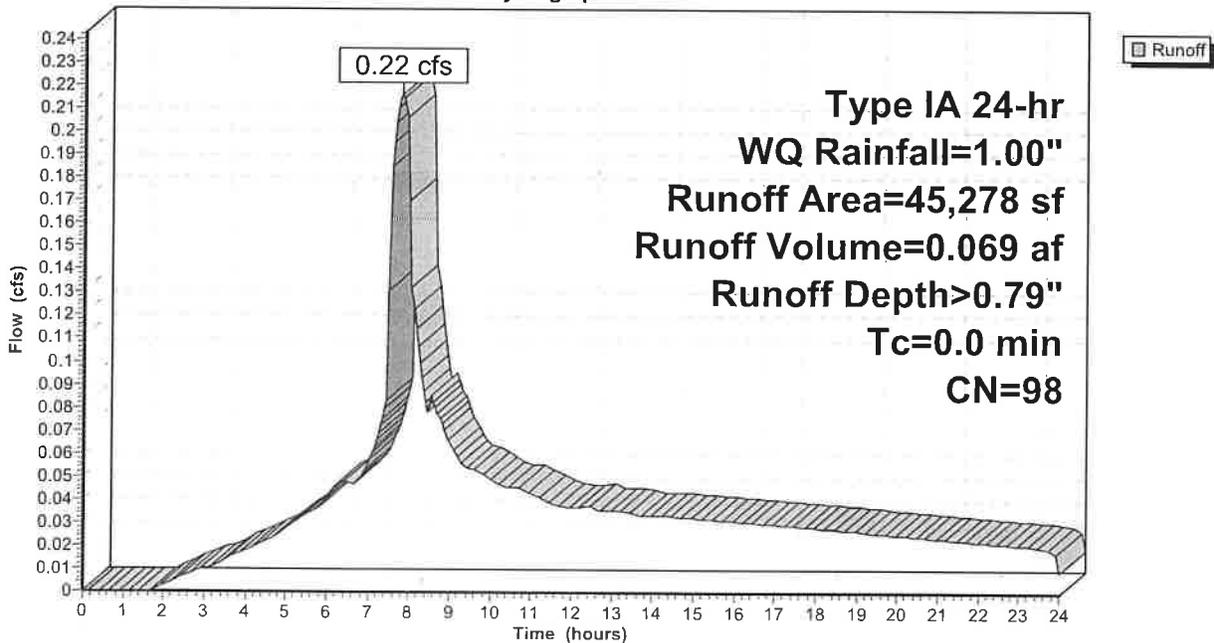
Runoff = 0.22 cfs @ 7.81 hrs, Volume= 0.069 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type IA 24-hr WQ Rainfall=1.00"

Area (sf)	CN	Description
22,959	98	Unconnected roofs, HSG A
22,319	98	Paved parking, HSG A
45,278	98	Weighted Average
45,278	98	100.00% Impervious Area
22,959		50.71% Unconnected

Subcatchment 4S: East Post Developed

Hydrograph



Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 106

Hydrograph for Subcatchment 4S: East Post Developed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	0.71	0.51	0.04
0.25	0.01	0.00	0.00	13.50	0.72	0.52	0.03
0.50	0.01	0.00	0.00	13.75	0.73	0.53	0.03
0.75	0.01	0.00	0.00	14.00	0.74	0.54	0.03
1.00	0.02	0.00	0.00	14.25	0.74	0.55	0.03
1.25	0.03	0.00	0.00	14.50	0.75	0.55	0.03
1.50	0.03	0.00	0.00	14.75	0.76	0.56	0.03
1.75	0.04	0.00	0.00	15.00	0.77	0.57	0.03
2.00	0.05	0.00	0.00	15.25	0.78	0.58	0.03
2.25	0.06	0.00	0.01	15.50	0.79	0.58	0.03
2.50	0.07	0.00	0.01	15.75	0.79	0.59	0.03
2.75	0.07	0.00	0.01	16.00	0.80	0.60	0.03
3.00	0.08	0.01	0.01	16.25	0.81	0.61	0.03
3.25	0.09	0.01	0.01	16.50	0.82	0.61	0.03
3.50	0.10	0.01	0.01	16.75	0.82	0.62	0.03
3.75	0.11	0.02	0.02	17.00	0.83	0.63	0.03
4.00	0.12	0.02	0.02	17.25	0.84	0.64	0.03
4.25	0.13	0.02	0.02	17.50	0.85	0.64	0.03
4.50	0.13	0.03	0.02	17.75	0.85	0.65	0.03
4.75	0.15	0.04	0.02	18.00	0.86	0.66	0.03
5.00	0.16	0.04	0.03	18.25	0.87	0.66	0.03
5.25	0.17	0.05	0.03	18.50	0.87	0.67	0.03
5.50	0.18	0.06	0.03	18.75	0.88	0.68	0.03
5.75	0.19	0.06	0.04	19.00	0.89	0.68	0.03
6.00	0.21	0.07	0.04	19.25	0.89	0.69	0.03
6.25	0.22	0.08	0.05	19.50	0.90	0.69	0.03
6.50	0.24	0.10	0.05	19.75	0.91	0.70	0.03
6.75	0.25	0.11	0.05	20.00	0.91	0.71	0.03
7.00	0.27	0.12	0.06	20.25	0.92	0.71	0.02
7.25	0.29	0.13	0.07	20.50	0.92	0.72	0.02
7.50	0.31	0.15	0.13	20.75	0.93	0.72	0.02
7.75	0.37	0.20	0.22	21.00	0.94	0.73	0.02
8.00	0.43	0.25	0.17	21.25	0.94	0.74	0.02
8.25	0.46	0.28	0.10	21.50	0.95	0.74	0.02
8.50	0.48	0.30	0.08	21.75	0.95	0.75	0.02
8.75	0.50	0.32	0.08	22.00	0.96	0.75	0.02
9.00	0.52	0.34	0.06	22.25	0.96	0.76	0.02
9.25	0.54	0.35	0.06	22.50	0.97	0.76	0.02
9.50	0.55	0.36	0.05	22.75	0.98	0.77	0.02
9.75	0.56	0.38	0.05	23.00	0.98	0.77	0.02
10.00	0.58	0.39	0.05	23.25	0.99	0.78	0.02
10.25	0.59	0.40	0.05	23.50	0.99	0.78	0.02
10.50	0.60	0.41	0.05	23.75	1.00	0.79	0.02
10.75	0.61	0.42	0.04	24.00	1.00	0.79	0.01
11.00	0.62	0.43	0.04				
11.25	0.63	0.44	0.04				
11.50	0.65	0.45	0.04				
11.75	0.65	0.46	0.04				
12.00	0.66	0.47	0.04				
12.25	0.67	0.48	0.04				
12.50	0.68	0.49	0.04				
12.75	0.69	0.50	0.04				
13.00	0.70	0.50	0.04				

Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 107

Summary for Pond 1P: Chambermaxx

Inflow Area = 1.047 ac, 100.00% Impervious, Inflow Depth > 0.79" for WQ event
 Inflow = 0.22 cfs @ 7.81 hrs, Volume= 0.069 af
 Outflow = 0.04 cfs @ 11.37 hrs, Volume= 0.055 af, Atten= 81%, Lag= 213.9 min
 Primary = 0.04 cfs @ 11.37 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 0.53' @ 11.37 hrs Surf.Area= 0.100 ac Storage= 0.023 af

Plug-Flow detention time= 312.0 min calculated for 0.055 af (80% of inflow)
 Center-of-Mass det. time= 185.8 min (893.1 - 707.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.5" Vert. Orifice/Grate C= 0.600
#2	Primary	1.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	0.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.04 cfs @ 11.37 hrs HW=0.53' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.04 cfs @ 3.30 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)

Pond 1P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

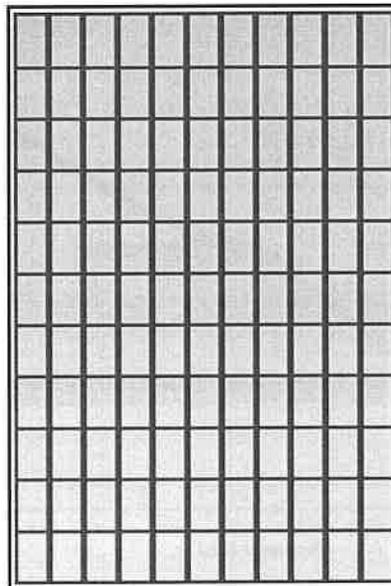
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

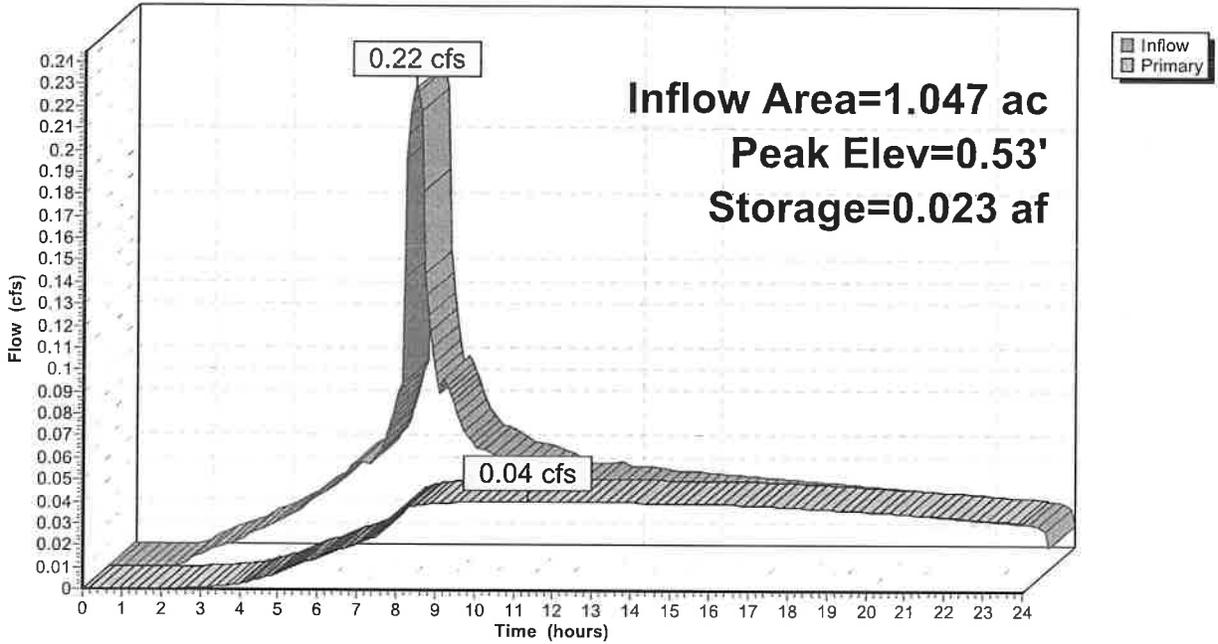
566.0 cy Field

344.3 cy Stone



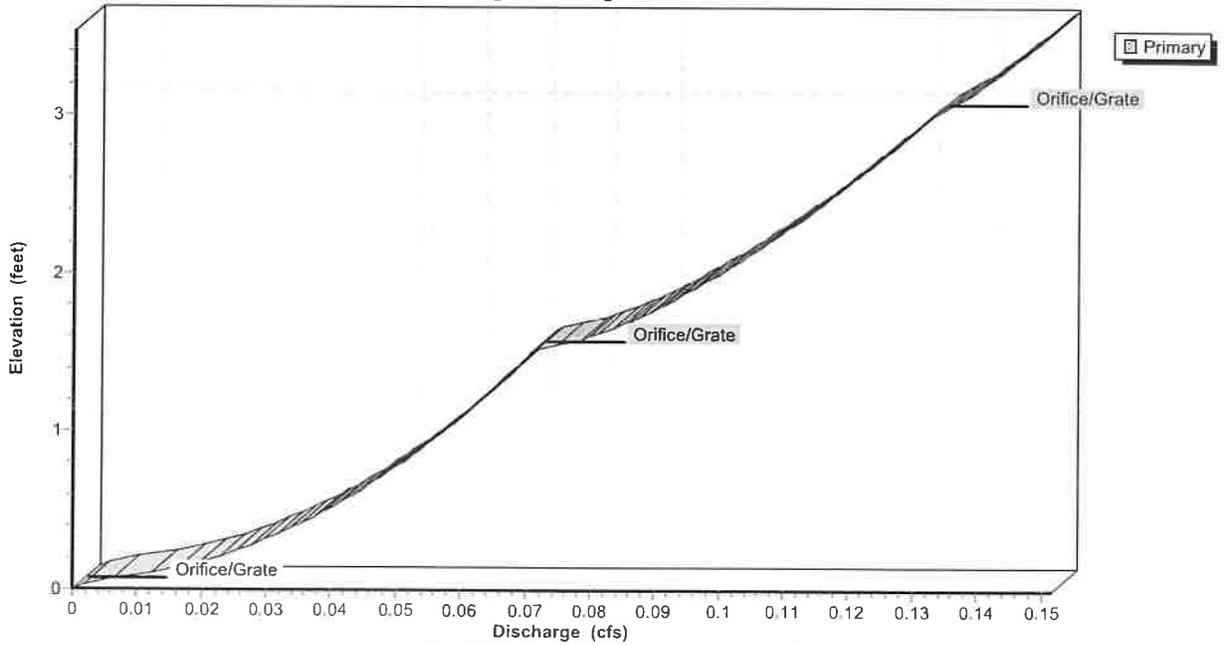
Pond 1P: Chambermaxx

Hydrograph



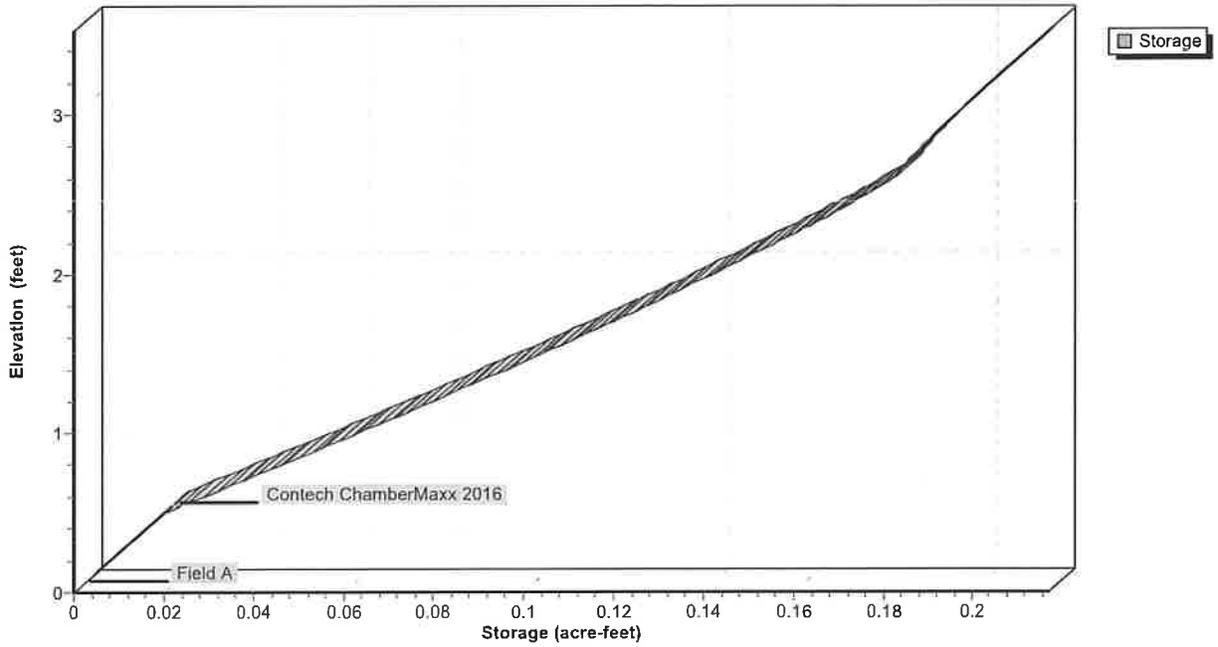
Pond 1P: Chambermaxx

Stage-Discharge



Pond 1P: Chambermaxx

Stage-Area-Storage



Capps Road and 120th

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Page 111

Hydrograph for Pond 1P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.00	0.000	0.00	0.00
1.50	0.00	0.000	0.00	0.00
2.00	0.00	0.000	0.00	0.00
2.50	0.01	0.000	0.01	0.00
3.00	0.01	0.001	0.01	0.00
3.50	0.01	0.001	0.03	0.00
4.00	0.02	0.002	0.04	0.00
4.50	0.02	0.002	0.06	0.00
5.00	0.03	0.003	0.08	0.01
5.50	0.03	0.004	0.10	0.01
6.00	0.04	0.005	0.13	0.01
6.50	0.05	0.006	0.16	0.02
7.00	0.06	0.007	0.19	0.02
7.50	0.13	0.010	0.24	0.02
8.00	0.17	0.017	0.42	0.04
8.50	0.08	0.019	0.49	0.04
9.00	0.07	0.021	0.51	0.04
9.50	0.05	0.022	0.52	0.04
10.00	0.05	0.022	0.53	0.04
10.50	0.05	0.023	0.53	0.04
11.00	0.04	0.023	0.53	0.04
11.50	0.04	0.023	0.53	0.04
12.00	0.04	0.023	0.53	0.04
12.50	0.04	0.023	0.53	0.04
13.00	0.04	0.022	0.53	0.04
13.50	0.03	0.022	0.53	0.04
14.00	0.03	0.022	0.52	0.04
14.50	0.03	0.022	0.52	0.04
15.00	0.03	0.021	0.52	0.04
15.50	0.03	0.021	0.51	0.04
16.00	0.03	0.021	0.51	0.04
16.50	0.03	0.020	0.51	0.04
17.00	0.03	0.020	0.50	0.04
17.50	0.03	0.020	0.49	0.04
18.00	0.03	0.019	0.48	0.04
18.50	0.03	0.019	0.47	0.04
19.00	0.03	0.018	0.46	0.04
19.50	0.03	0.018	0.45	0.04
20.00	0.03	0.017	0.44	0.04
20.50	0.02	0.017	0.43	0.04
21.00	0.02	0.017	0.42	0.04
21.50	0.02	0.016	0.40	0.03
22.00	0.02	0.016	0.39	0.03
22.50	0.02	0.015	0.38	0.03
23.00	0.02	0.015	0.37	0.03
23.50	0.02	0.014	0.36	0.03
24.00	0.01	0.014	0.34	0.03

Capps Road and 120th

Type IA 24-hr WQ Rainfall=1.00"

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Page 112

Stage-Discharge for Pond 1P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.06	2.12	0.10	3.18	0.14
0.02	0.00	1.08	0.06	2.14	0.11	3.20	0.14
0.04	0.00	1.10	0.06	2.16	0.11	3.22	0.14
0.06	0.00	1.12	0.06	2.18	0.11	3.24	0.14
0.08	0.01	1.14	0.06	2.20	0.11	3.26	0.14
0.10	0.01	1.16	0.06	2.22	0.11	3.28	0.14
0.12	0.01	1.18	0.06	2.24	0.11	3.30	0.14
0.14	0.02	1.20	0.06	2.26	0.11	3.32	0.15
0.16	0.02	1.22	0.06	2.28	0.11	3.34	0.15
0.18	0.02	1.24	0.06	2.30	0.11	3.36	0.15
0.20	0.02	1.26	0.06	2.32	0.11	3.38	0.15
0.22	0.02	1.28	0.07	2.34	0.11	3.40	0.15
0.24	0.02	1.30	0.07	2.36	0.11	3.42	0.15
0.26	0.03	1.32	0.07	2.38	0.11	3.44	0.15
0.28	0.03	1.34	0.07	2.40	0.11	3.46	0.15
0.30	0.03	1.36	0.07	2.42	0.12	3.48	0.15
0.32	0.03	1.38	0.07	2.44	0.12	3.50	0.15
0.34	0.03	1.40	0.07	2.46	0.12	3.52	0.15
0.36	0.03	1.42	0.07	2.48	0.12		
0.38	0.03	1.44	0.07	2.50	0.12		
0.40	0.03	1.46	0.07	2.52	0.12		
0.42	0.04	1.48	0.07	2.54	0.12		
0.44	0.04	1.50	0.07	2.56	0.12		
0.46	0.04	1.52	0.07	2.58	0.12		
0.48	0.04	1.54	0.07	2.60	0.12		
0.50	0.04	1.56	0.08	2.62	0.12		
0.52	0.04	1.58	0.08	2.64	0.12		
0.54	0.04	1.60	0.08	2.66	0.12		
0.56	0.04	1.62	0.08	2.68	0.12		
0.58	0.04	1.64	0.08	2.70	0.12		
0.60	0.04	1.66	0.08	2.72	0.12		
0.62	0.04	1.68	0.08	2.74	0.13		
0.64	0.04	1.70	0.09	2.76	0.13		
0.66	0.05	1.72	0.09	2.78	0.13		
0.68	0.05	1.74	0.09	2.80	0.13		
0.70	0.05	1.76	0.09	2.82	0.13		
0.72	0.05	1.78	0.09	2.84	0.13		
0.74	0.05	1.80	0.09	2.86	0.13		
0.76	0.05	1.82	0.09	2.88	0.13		
0.78	0.05	1.84	0.09	2.90	0.13		
0.80	0.05	1.86	0.09	2.92	0.13		
0.82	0.05	1.88	0.09	2.94	0.13		
0.84	0.05	1.90	0.10	2.96	0.13		
0.86	0.05	1.92	0.10	2.98	0.13		
0.88	0.05	1.94	0.10	3.00	0.13		
0.90	0.05	1.96	0.10	3.02	0.13		
0.92	0.05	1.98	0.10	3.04	0.14		
0.94	0.06	2.00	0.10	3.06	0.14		
0.96	0.06	2.02	0.10	3.08	0.14		
0.98	0.06	2.04	0.10	3.10	0.14		
1.00	0.06	2.06	0.10	3.12	0.14		
1.02	0.06	2.08	0.10	3.14	0.14		
1.04	0.06	2.10	0.10	3.16	0.14		

Capps Road and 120th

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Page 113

Stage-Area-Storage for Pond 1P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

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Page 114

Summary for Pond 2P: Chambermaxx

Inflow Area = 1.039 ac, 100.00% Impervious, Inflow Depth > 0.79" for WQ event
 Inflow = 0.22 cfs @ 7.81 hrs, Volume= 0.069 af
 Outflow = 0.03 cfs @ 17.76 hrs, Volume= 0.041 af, Atten= 87%, Lag= 597.3 min
 Primary = 0.03 cfs @ 17.76 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 0.62' @ 17.76 hrs Surf.Area= 0.100 ac Storage= 0.030 af

Plug-Flow detention time= 433.7 min calculated for 0.041 af (59% of inflow)
 Center-of-Mass det. time= 205.0 min (912.3 - 707.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	0.085 af	53.78'W x 80.60'L x 3.52'H Field A 0.351 af Overall - 0.137 af Embedded = 0.213 af x 40.0% Voids
#2A	0.50'	0.132 af	Contech ChamberMaxx 2016 x 121 Inside #1 Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf Row Length Adjustment= +0.32' x 6.63 sf x 11 rows
		0.217 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	1.2" Vert. Orifice/Grate C= 0.600
#2	Primary	1.75'	1.5" Vert. Orifice/Grate C= 0.600
#3	Primary	3.00'	1.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.03 cfs @ 17.76 hrs HW=0.62' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.03 cfs @ 3.62 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)

Capps Road and 120th

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Page 115

Pond 2P: Chambermaxx - Chamber Wizard Field A

Chamber Model = Contech ChamberMaxx 2016 (Contech® ChamberMaxx® capped at 47.2cf for air pocket)

Inside= 49.6"W x 25.2"H => 6.63 sf x 7.12'L = 47.2 cf

Outside= 49.6"W x 30.0"H => 6.92 sf x 7.12'L = 49.3 cf

Row Length Adjustment= +0.32' x 6.63 sf x 11 rows

51.4" Wide + 5.6" Spacing = 57.0" C-C Row Spacing

11 Chambers/Row x 7.12' Long +0.32' Row Adjustment = 78.60' Row Length +12.0" End Stone x 2 = 80.60' Base Length

11 Rows x 51.4" Wide + 5.6" Spacing x 10 + 12.0" Side Stone x 2 = 53.78' Base Width

6.0" Base + 30.3" Chamber Height + 6.0" Cover = 3.52' Field Height

121 Chambers x 47.2 cf +0.32' Row Adjustment x 6.63 sf x 11 Rows = 5,733.5 cf Chamber Storage

121 Chambers x 49.3 cf +0.32' Row Adjustment x 6.92 sf x 11 Rows = 5,984.2 cf Displacement

15,280.7 cf Field - 5,984.2 cf Chambers = 9,296.4 cf Stone x 40.0% Voids = 3,718.6 cf Stone Storage

Chamber Storage + Stone Storage = 9,452.1 cf = 0.217 af

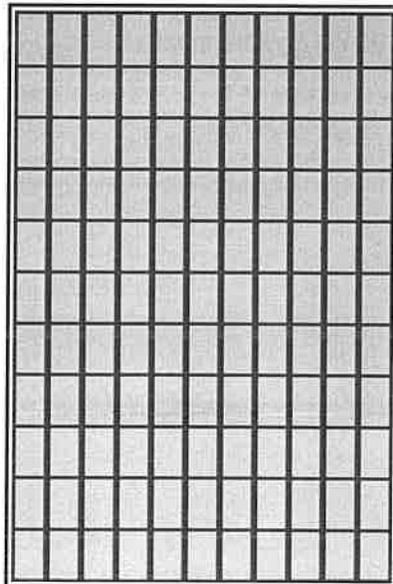
Overall Storage Efficiency = 61.9%

Overall System Size = 80.60' x 53.78' x 3.52'

121 Chambers

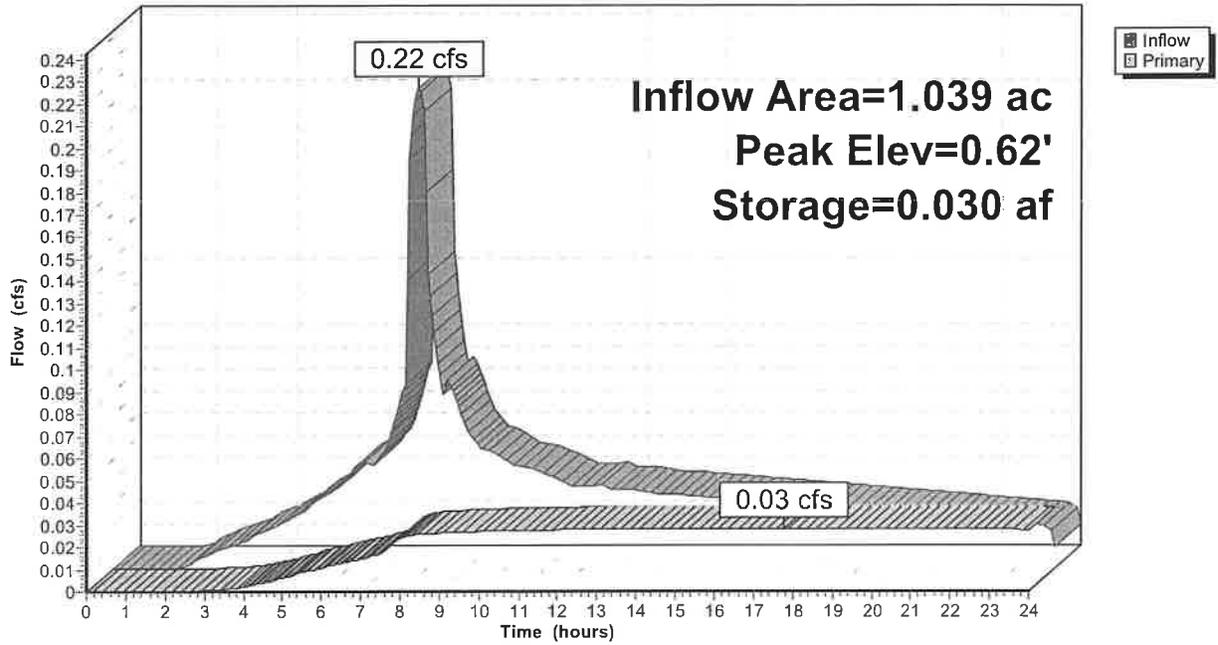
566.0 cy Field

344.3 cy Stone



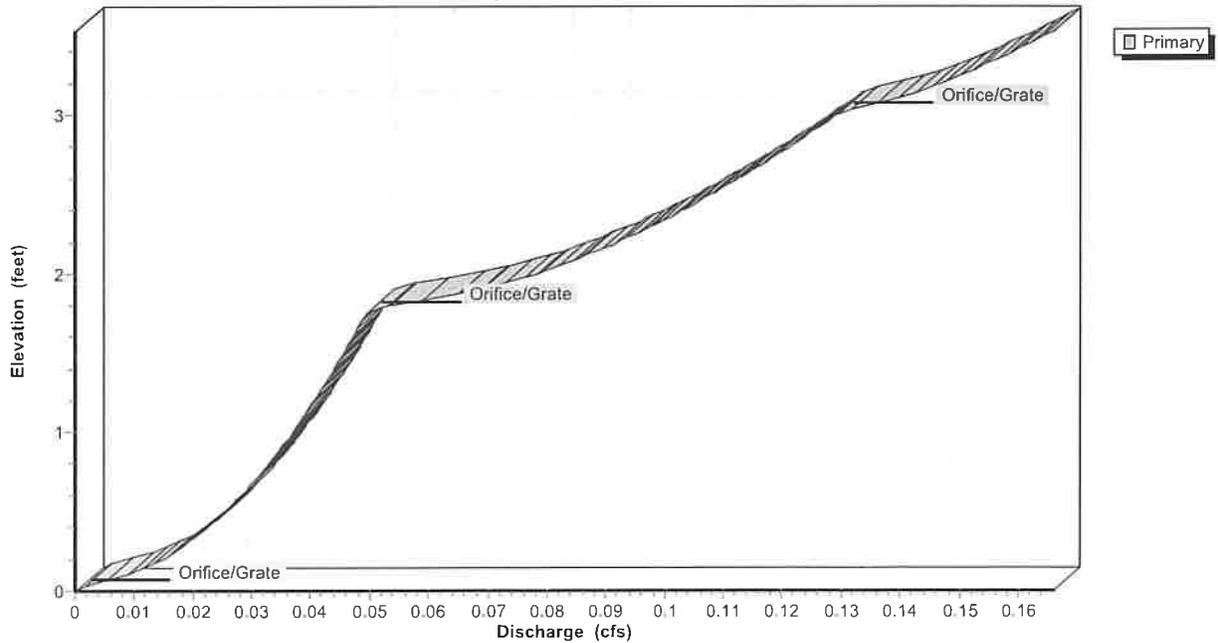
Pond 2P: Chambermaxx

Hydrograph



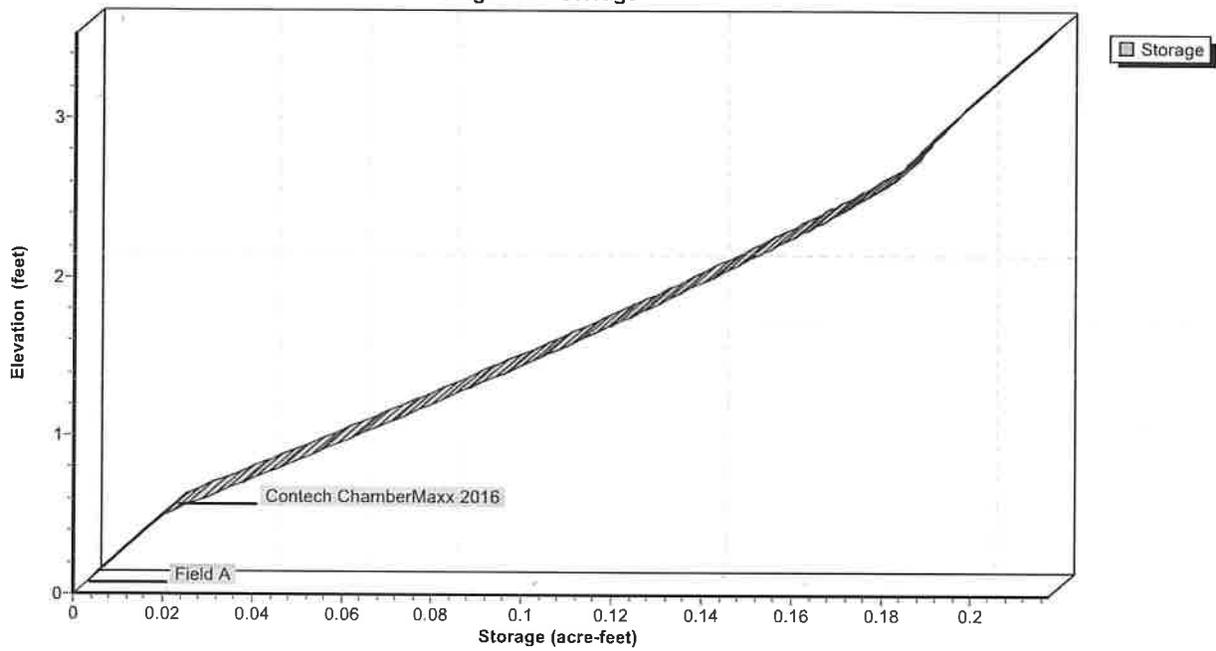
Pond 2P: Chambermaxx

Stage-Discharge



Pond 2P: Chambermaxx

Stage-Area-Storage



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Page 118

Hydrograph for Pond 2P: Chambermaxx

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	0.00	0.00
0.50	0.00	0.000	0.00	0.00
1.00	0.00	0.000	0.00	0.00
1.50	0.00	0.000	0.00	0.00
2.00	0.00	0.000	0.00	0.00
2.50	0.01	0.000	0.01	0.00
3.00	0.01	0.001	0.01	0.00
3.50	0.01	0.001	0.03	0.00
4.00	0.02	0.002	0.04	0.00
4.50	0.02	0.002	0.06	0.00
5.00	0.03	0.003	0.08	0.01
5.50	0.03	0.004	0.10	0.01
6.00	0.04	0.005	0.13	0.01
6.50	0.05	0.007	0.17	0.01
7.00	0.06	0.008	0.20	0.01
7.50	0.13	0.010	0.26	0.02
8.00	0.17	0.018	0.45	0.02
8.50	0.08	0.021	0.51	0.03
9.00	0.06	0.023	0.54	0.03
9.50	0.05	0.025	0.55	0.03
10.00	0.05	0.026	0.56	0.03
10.50	0.05	0.026	0.57	0.03
11.00	0.04	0.027	0.58	0.03
11.50	0.04	0.028	0.59	0.03
12.00	0.04	0.028	0.59	0.03
12.50	0.04	0.028	0.60	0.03
13.00	0.04	0.029	0.60	0.03
13.50	0.03	0.029	0.60	0.03
14.00	0.03	0.029	0.61	0.03
14.50	0.03	0.029	0.61	0.03
15.00	0.03	0.030	0.61	0.03
15.50	0.03	0.030	0.61	0.03
16.00	0.03	0.030	0.61	0.03
16.50	0.03	0.030	0.61	0.03
17.00	0.03	0.030	0.62	0.03
17.50	0.03	0.030	0.62	0.03
18.00	0.03	0.030	0.62	0.03
18.50	0.03	0.030	0.62	0.03
19.00	0.03	0.030	0.61	0.03
19.50	0.03	0.030	0.61	0.03
20.00	0.03	0.030	0.61	0.03
20.50	0.02	0.030	0.61	0.03
21.00	0.02	0.030	0.61	0.03
21.50	0.02	0.029	0.61	0.03
22.00	0.02	0.029	0.60	0.03
22.50	0.02	0.029	0.60	0.03
23.00	0.02	0.029	0.60	0.03
23.50	0.02	0.028	0.59	0.03
24.00	0.01	0.028	0.59	0.03

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Page 119

Stage-Discharge for Pond 2P: Chambermaxx

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	1.06	0.04	2.12	0.09	3.18	0.15
0.02	0.00	1.08	0.04	2.14	0.09	3.20	0.15
0.04	0.00	1.10	0.04	2.16	0.09	3.22	0.15
0.06	0.00	1.12	0.04	2.18	0.09	3.24	0.15
0.08	0.01	1.14	0.04	2.20	0.09	3.26	0.15
0.10	0.01	1.16	0.04	2.22	0.09	3.28	0.15
0.12	0.01	1.18	0.04	2.24	0.09	3.30	0.15
0.14	0.01	1.20	0.04	2.26	0.10	3.32	0.15
0.16	0.01	1.22	0.04	2.28	0.10	3.34	0.16
0.18	0.01	1.24	0.04	2.30	0.10	3.36	0.16
0.20	0.01	1.26	0.04	2.32	0.10	3.38	0.16
0.22	0.02	1.28	0.04	2.34	0.10	3.40	0.16
0.24	0.02	1.30	0.04	2.36	0.10	3.42	0.16
0.26	0.02	1.32	0.04	2.38	0.10	3.44	0.16
0.28	0.02	1.34	0.04	2.40	0.10	3.46	0.16
0.30	0.02	1.36	0.04	2.42	0.10	3.48	0.16
0.32	0.02	1.38	0.04	2.44	0.11	3.50	0.16
0.34	0.02	1.40	0.04	2.46	0.11	3.52	0.17
0.36	0.02	1.42	0.04	2.48	0.11		
0.38	0.02	1.44	0.04	2.50	0.11		
0.40	0.02	1.46	0.04	2.52	0.11		
0.42	0.02	1.48	0.05	2.54	0.11		
0.44	0.02	1.50	0.05	2.56	0.11		
0.46	0.02	1.52	0.05	2.58	0.11		
0.48	0.02	1.54	0.05	2.60	0.11		
0.50	0.03	1.56	0.05	2.62	0.11		
0.52	0.03	1.58	0.05	2.64	0.11		
0.54	0.03	1.60	0.05	2.66	0.12		
0.56	0.03	1.62	0.05	2.68	0.12		
0.58	0.03	1.64	0.05	2.70	0.12		
0.60	0.03	1.66	0.05	2.72	0.12		
0.62	0.03	1.68	0.05	2.74	0.12		
0.64	0.03	1.70	0.05	2.76	0.12		
0.66	0.03	1.72	0.05	2.78	0.12		
0.68	0.03	1.74	0.05	2.80	0.12		
0.70	0.03	1.76	0.05	2.82	0.12		
0.72	0.03	1.78	0.05	2.84	0.12		
0.74	0.03	1.80	0.05	2.86	0.12		
0.76	0.03	1.82	0.06	2.88	0.12		
0.78	0.03	1.84	0.06	2.90	0.13		
0.80	0.03	1.86	0.06	2.92	0.13		
0.82	0.03	1.88	0.07	2.94	0.13		
0.84	0.03	1.90	0.07	2.96	0.13		
0.86	0.03	1.92	0.07	2.98	0.13		
0.88	0.03	1.94	0.07	3.00	0.13		
0.90	0.03	1.96	0.07	3.02	0.13		
0.92	0.04	1.98	0.08	3.04	0.13		
0.94	0.04	2.00	0.08	3.06	0.14		
0.96	0.04	2.02	0.08	3.08	0.14		
0.98	0.04	2.04	0.08	3.10	0.14		
1.00	0.04	2.06	0.08	3.12	0.14		
1.02	0.04	2.08	0.08	3.14	0.14		
1.04	0.04	2.10	0.09	3.16	0.14		

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Page 120

Stage-Area-Storage for Pond 2P: Chambermaxx

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
0.00	0.000	2.65	0.184
0.05	0.002	2.70	0.185
0.10	0.004	2.75	0.187
0.15	0.006	2.80	0.189
0.20	0.008	2.85	0.190
0.25	0.010	2.90	0.192
0.30	0.012	2.95	0.194
0.35	0.014	3.00	0.196
0.40	0.016	3.05	0.198
0.45	0.018	3.10	0.200
0.50	0.020	3.15	0.202
0.55	0.024	3.20	0.204
0.60	0.029	3.25	0.206
0.65	0.033	3.30	0.208
0.70	0.037	3.35	0.210
0.75	0.042	3.40	0.212
0.80	0.046	3.45	0.214
0.85	0.050	3.50	0.216
0.90	0.055		
0.95	0.059		
1.00	0.063		
1.05	0.067		
1.10	0.071		
1.15	0.076		
1.20	0.080		
1.25	0.084		
1.30	0.088		
1.35	0.092		
1.40	0.096		
1.45	0.100		
1.50	0.104		
1.55	0.108		
1.60	0.112		
1.65	0.116		
1.70	0.120		
1.75	0.124		
1.80	0.127		
1.85	0.131		
1.90	0.135		
1.95	0.139		
2.00	0.142		
2.05	0.146		
2.10	0.149		
2.15	0.153		
2.20	0.157		
2.25	0.160		
2.30	0.163		
2.35	0.167		
2.40	0.170		
2.45	0.173		
2.50	0.176		
2.55	0.179		
2.60	0.182		

SE Capps Road and SE 120TH Avenue

Appendix E

Conveyance Calculations

(To be provided with permit submittal)

SE Capps Road and SE 120TH Avenue

Appendix F

Operations and Maintenance Report

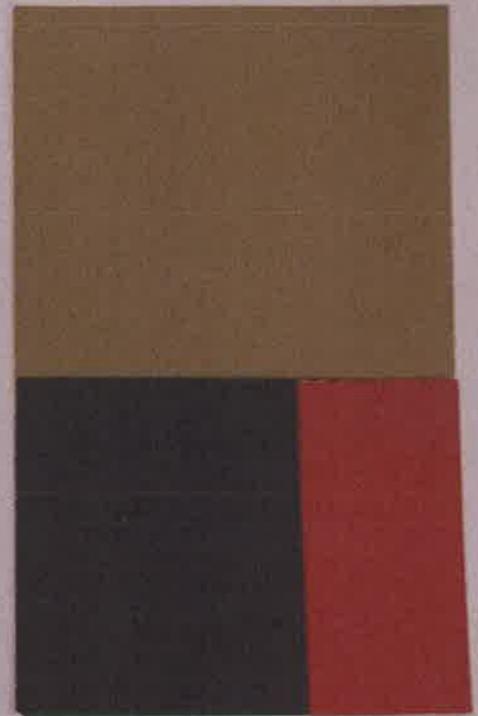
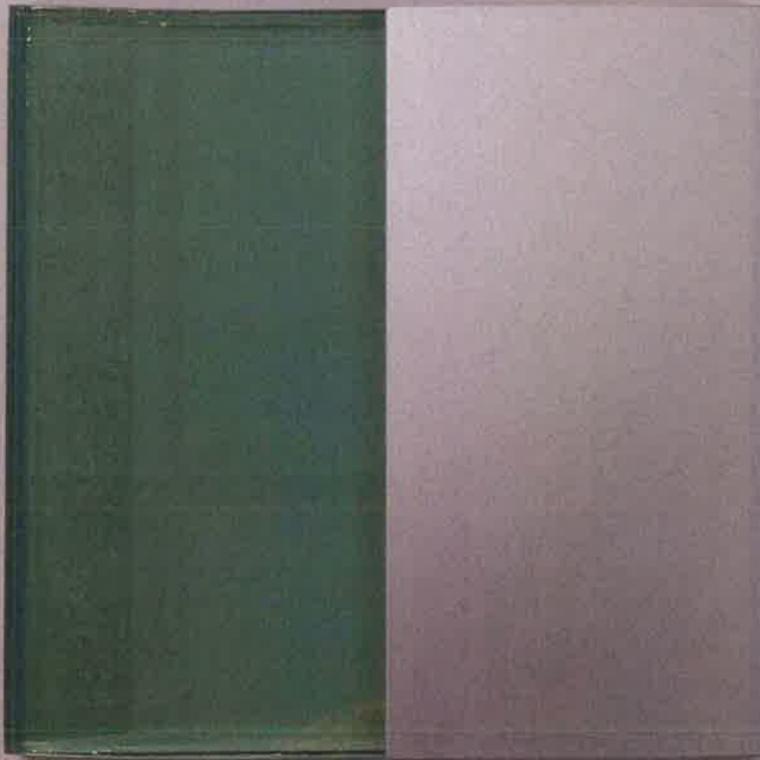
(To be provided with permit submittal)

MILDREN DESIGN GROUP

ARCHITECTURE | INTERIORS

Materials Board

Project: 120th and Capps Road
Project Number: 119161
Date: April 8, 2020



Glass: Pilkington, Evergreen, Eclipse
Paint: Sherwin Williams, "Saw Dust"
Accent: Sherwin Williams, "Current Red" and "Black Bean"
Storefront: US Aluminum-Clear Anodized Aluminum

DESIGN REVIEW PRE-APPLICATION CONFERENCE

ZPAC0150-19

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
LAND USE & ENVIRONMENTAL PLANNING DIVISION
Development Service Building, 150 Beaver Creek Road, Oregon City OR 97045
Phone: (503) 742-4500 Fax: (503) 742-4550

LOCATION: Room 209, Planning, DSB

DATE & TIME: January 15, 2020, 10:00 a.m.

STAFF CONTACT: Anthony Riederer, AICP - Phone: (503) 742-4528 - E-mail:
ariederer@clackamas.us

APPLICANT: Gene Mildren, architect on behalf the developer

LEGAL DESCRIPTION: 22E15A 00701

SITE ADDRESS: 16935 SE 120th Ave, Clackamas, Oregon

TOTAL AREA INVOLVED: Approximately 2.49 Acres

PRESENT ZONING: GI – (General Industrial)

PROPOSAL: Two new 23,000 square foot speculative buildings for industrial/manufacturing uses, totaling approximately 46,000 square feet along with related site improvements.

APPLICABLE AGENCIES & STAFF:

1. **County Planning:** Anthony Riederer, (503) 742-4528, ariederer@clackamas.us
2. **County Engineering:** Ken Kent (503) 742-463, kenken@clackamas.us
3. **County Building:** Richard Carlson, (503) 742-4769, richardcar@clackamas.us
4. **Clackamas Fire:** Michael Bouman, (503)742-2661, mike.boumann@clackamasfire.com
5. **Clackamas County Fire:** Matt Amos, matt.amos@clackamasfire.com
6. **WES:** Eric Carr Bertram, (503) 742-4571, ecarr@clackamas.us
7. **Clackamas River Water:** Betty Johnson, (503) 723-2531, bjohnson@crwater.com
8. **SDC charges:** Wendi Coryell, (503) 742-4657, wendicor@co.clackamas.or.us
9. **County Sustainability:** Emily Murkland, (503) 742-4460, emurkland@clackamas.us

ZDO ORDINANCE STANDARDS:

Note: The information contained in this memo is introductory in nature and is designed to act as a guide to relevant ZDO sections. This is an initial review and is based on the information submitted by the applicant for the pre-application conference.

When the proposal is submitted for design review/land use approval, it will reviewed against all applicable ZDO sections and, through that process, additional considerations may come to light.

1. ZDO Section 602 (General Industrial)

Existing and proposed use (Warehouse and Manufacturing) is permitted in the GI District.

Dimensional Standards:

- Minimum Lot Size: 1 acre
- Maximum Front: Per ZDO 1005.03(E) and 1005.03(H).
- Minimum Front: 20 feet
- Minimum Rear: None
- Minimum Side: None
- Building Height: No maximum

Please note the standards for outdoor operations within the General Industrial district, as indicated in 602.05(C).

2. ZDO Section 1005 – Site and Building Design

1005.03: General Site Design Standards

If feasible, cluster buildings within single and adjacent developments for efficient sharing of site circulation elements and other amenities, per 1005.03(A).

If feasible, design the site so that so that the longest building elevations can be oriented within 20 degrees of true south in order to maximize the south-facing dimensions, per 1005.03(B)

Provide on-site walkway that meets the standards of 1005.03(D).

1005.04: Building Design

Design all facades visible from a public or private street such that they comply with the design standards of 1005.04(A).

Design public building entrances such that they are defined, highly visible, and sheltered by an overhang of at least 4 feet, to comply with the standards of 1005.04(B)(1).

Design of roofline shall be defined by cornice or other architectural treatment to provide visual interest, as per 1005.04(D).

The facades shall be designed to meet the exterior building material standards of 1005.04(E).

- 1. Use architectural style, concepts, colors, materials and other features that are compatible with the neighborhood's intended visual identity.*
- 2. Building materials shall be durable and consistent with the proposed use of the building, level and exposure to public view, exposure to natural elements, and ease of maintenance.*
- 3. Walls shall be surfaced with brick, tile, masonry, stucco, stone or synthetic equivalent, pre-cast masonry, gypsum reinforced fiber concrete, wood lap siding, architecturally treated concrete, glass, wood, or a combination of these or other high-image materials.*
- 4. Notwithstanding Subsection 1005.04(E)(3) metal may be approved as an exterior building material through design review pursuant to Section 1102 for specific high-image surfaces, canopies, awnings, doors, screening of roofmounted fixtures, or other architectural features.*

Design buildings to address the solar access requirements of 1005.04(H).

Fully address the standards related to architectural design features, colors, materials, scale, and minimizing impacts on adjacent uses as provided in 1005.04(I)

Locate and design mechanical equipment so that it is screened as per the standards provided in 1005.04(J).

If any specialized structures are proposed, fully address the requirements of 1005.04(K) for these elements within industrial zoning districts.

1005.05: Outdoor Lighting

Design outdoor lighting to comply with the standards in 1005.05(A) and demonstrate compliance with these standards.

1005.06: Additional Requirements

The total area of work for this project appears to approximately 108,900 square feet of site area. Section 1005.06 requires projects to meet one 'additional requirement' for every 20,000 square feet of site area.

Five (5) additional requirements will be needed for this proposal.

1005.07: Modifications

Modification of any standard identified in **Subsections 1005.03 and 1005.04** may be approved as part of design review if the proposed modification will result in a development that achieves the purposes stated in Subsection 1005.01 as well or better than the requirement listed.

It is the responsibility of the applicant to 'make the case' as to how any proposed modification satisfies this requirement.

4. ZDO Section 1006 - Utility Lines & Facilities

Location, design, installation, and maintenance of utility lines and facilities shall be carried out with minimum feasible disturbance of soil/site and consistent with rules/regulations of districts for surface water management, per 1006.01(A).

New electric, gas, communications services shall be installed pursuant to the requirements of the district/company serving the development and installed underground, unless prohibited by utility district or company, per 1006.01(B).

Easements shall be provided along property lines as deemed necessary by the Department of Transportation and Development, special districts, and utility companies, as per 1006.01(D).

Development that has need for, or will be provided with, public or community water shall install water service facilities and grand necessary easements pursuant to the requirements of the district or company serving the development, per 1006.03(A).

Approval of a development that requires public or community water service shall be granted only if the applicant provides a preliminary statement of feasibility from the water system service provider, per 1006.03(B).

Approval of a development that requires sanitary sewer service shall be granted only if the applicant provides a preliminary statement of feasibility from the sanitary sewage treatment service provider and the collection system service provider, per 1006.04(B).

Approval of a development shall be granted only if the applicant provides a preliminary statement of feasibility from the surface water management regulatory authority. Per 1006.06(C).

5. ZDO Section 1007 & 1015 - Roads, Circulation & Parking

Circulation and parking to be reviewed by Clackamas County Engineering.

Vehicle access to the site is indicated as multiple driveways off of SE Capps Road.

Parking shall meet the standards of 1015.02 as appropriate per the project design.

6. ZDO Section 1009 - Landscaping

The landscape design shall fully address the general provisions as provided per 1009.01.

The application shall demonstrate that the site design meets or exceeds the 15% minimum landscaped area requirement as provided per Table 1009-1.

This area shall not include landscaping in adjacent rights-of-way.

The requirements of landscaping, screening and buffering, landscape strips, and outdoor recreation areas set in 1009 apply regardless of whether those areas exceed 15% of the site area.

Required screening and buffering shall be demonstrated to comply with the requirements of 1009.04.

The application shall demonstrate that the site complies or is legally noncomplying with the landscaping strip requirements of 1009.06.

Graded areas shall be revegetated to ensure erosion control, per 1009.09.

Any new plantings shall be selected, installed, and maintained per the standards of 1009.10.

Note: This proposal would add greater than 5,000 square feet of building area to this site. This means that any currently non-complying landscape elements must be brought into compliance with ZDO 1009, as previously approved through Design Review.

7. ZDO Section 1010 - Signs

All signs must meet standards of ZDO Subsection 1010.06 (Commercial Signs in Commercial and Industrial Districts), where applicable.

8. ZDO Section 1021 - Refuse and Recycling Standards

Please indicate location and dimensions and design of recycling and solid waste areas on plans and include site plans and elevation drawings which demonstrate compliance with the pertinent standards listed in ZDO Section 1021.

These include general design standards, the design of enclosures, gates, and receptacles, vehicle access, and requirements for the placement of signs.

For information on hauling and capacity requirements, please contact Emily Murkland of Clackamas County's Sustainability and Solid Waste program and Waste Management, the local trash/recycling hauler.

APPLICANT SUBMITTED QUESTIONS:

- ❖ What water, sewer, and storm facilities are available to this site?

- ❖ Are as-builts available for the site?
- ❖ Will frontage improvements be required?
 - If so, what are the requirements?
- ❖ Will a right of way dedication or easement be required?
- ❖ What is the available water pressure to the site?
- ❖ What are requirements for fire apparatus access and water hydrants?
- ❖ Are there capacity restrictions for storm or sanitary discharge?
- ❖ What are requirements for storm discharge and what types of systems/approaches are allowed?
- ❖ Is a percolation/infiltration test required?
- ❖ What permits are required for site development aspects of project and what is the timing of those permits?
- ❖ Is a traffic analysis required and, if so, who should the engineer contact for scoping?
- ❖ Are there any natural resources/wetlands identified on the site?

Minimum Completeness Checklist for Design Review Applications

For additional detail on these requirements please see ZDO 1307.07(C) and 1102.02.

1. Pre-application conference held
2. Project narrative
 - a. Narrative should indicate how proposed design meets all applicable ordinance standards
3. Required Statement(s) of Feasibility
4. Site plan information that illustrates the following:
 - a. Property and surrounding area (and uses) at reasonable scale.
 - b. Boundary lines and dimensions of property.
 - c. At least one temporary benchmark.
 - d. Natural features.
 - e. Location, dimensions of all streets, etc.
 - f. Location, dimensions of existing structures.
 - g. Approximate location and size of storm water facilities.
 - h. Relation to transit.
 - i. Parking areas, showing number and dimension of spaces and maneuverability.
 - j. New structures: footprints and building setbacks
 - k. Orientation of buildings (eg, entrances, etc.)
 - l. Site lighting plan
 - m. Loading areas, maneuverability
 - n. Waste/recycling areas, containers
5. Grading plan, if earthwork is proposed.
6. Landscape Plan
7. Architectural Elevations
8. Building Material / Colors Samples
9. Signage plan, if any proposed

Please keep in mind that it is the applicant's responsibility to clearly demonstrate how a proposal meets all applicable ZDO criteria. Frequently, solely meeting the minimum submittal requirements may not provide enough information for staff to make a defensible finding that a project complies with all ordinance standards.

Processing Time

Upon receipt of a complete application, processing time will take approximately 6-8 weeks.



DAN JOHNSON
DIRECTOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DEVELOPMENT SERVICES BUILDING
150 BEAVERCREEK ROAD OREGON CITY, OR 97045

To: Anthony Riederer
From: Emily Murkland
Subj: ZPAC150-19 Two industrial buildings on Capps Rd
Garbage/Recycling Access and Storage

This review is based upon the current ZDO-1021 requirements adopted by Clackamas County. The purpose of this review is to provide applicants a better understanding of garbage and recycling enclosures, to ensure safe and adequate access and maneuverability. Sustainability and Solid Waste staff are available to assist in the development of garbage and recycling enclosures.

The dimensions and details of the refuse & recycling enclosure are not detailed in the plans provided. Additional details including the size of the containers used, the pad on which the containers are to be located, illustration of access to the collection area by the refuse collection company, and screening of the collection area from adjacent properties, are required.

Please feel free to contact me to discuss proposed alternative plans: emurkland@clackamas.us, 503.742.4460.

Further information can be found here: <https://www.clackamas.us/recycling/enclosure.html>

Further information about the status of your application can be found here:

<https://accela.clackamas.us/citizenaccess/>

4 March 2020

Re: SE 120th and SE Capps Road Buildings 1 and 2
Project No. 119161

Pre-Application Conference was held 15 January 2020

Project Description:

We are proposing the development of two new speculative building shells. These buildings will be built on Tax Lot 00701 located in the NE 1/4 Section 15, T2W, R2E, W.M. Clackamas County, Oregon. The buildings will be concrete tilt-up construction and will each have eight (8) dock-high doors located in a concrete dock area, two (2) drive-in overhead doors and storefront with the potential for two (2) tenants each. The buildings will be 26,390 s.f. and 22,710 s.f. gross. The buildings will face each other with parking, loading and entry to the buildings on the front faces. Parking will consist of 34 standard parking stalls and two accessible parking stalls, one of which will be van accessible.

The four additional design elements that meet Zoning & Development Ordinance Section 1005.06 are :

- 1005.06.B.4. The buildings and landscape have been oriented so that winter shading is minimal. Deciduous trees are provided on the south sides of the buildings and at the parking islands between the buildings thereby shading the west windows in both buildings.
- 1005.06.B.8. Skylights will be provided and will be included in the Building Permit submittal.
- 1005.06.C. Use a highly reflective roof material. The roof will be white.
- 1005.06.X. The buildings are located 5'-0" from the side setback line.

SE 120th Ave & SE Capps Road Buildings 1&2

Clackamas County, Oregon



ABBREVIATIONS

AC	AIR CONDITIONING	LAV	LAVATORY
ACT	ACOUSTICAL CEILING TILE	LF	LINEAL FOOT
ADJ	ADJUSTABLE	LKR	LOCKER
AFF	ABOVE FINISH FLOOR	LVR	LOUVER
ALT	ALTERNATE	LVT	LUXURY VINYL TILE
ALUM	ALUMINUM	MATL	MATERIAL
APC	ACOUSTICAL PANEL CEILING	MAX	MAXIMUM
APPROX	APPROXIMATE	MDF	MEDIUM DENSITY BOARD
ARCH	ARCHITURAL	MECH	MECHANICAL
AV	AUDIO VISUAL	MEZZ	MEZZANINE
B	BASE	MFR	MANUFACTURER
BLK	BLOCKING	MIN	MINIMUM
BKR	BACKER	MIR	MIRROR
BLDG	BUILDING	MISC	MISCELLANEOUS
BM	BEAM	MTD	MOUNTED
BOD	BASIS OF DESIGN	MTL	METAL
BOT	BOTTOM	MU	MULLION
C	CARPET	MW	MICROWAVE
CAB	CABINET	NIC	NOT IN CONTRACT
CG	CORNER GUARD	NTS	NOT TO SCALE
CL	CENTER LINE	OC	ON CENTER
CLG	CEILING	OVHD	OVERHEAD
CLO	CLOSER	P	PAINT
CLR	CLEAR	PC	POLISHED CONCRETE
COL	COLUMN	PERF	PERFORATED
CORR	CORRIDOR	PL	PLASTIC LAMINATE
CONC	CONCRETE	PR	PAIR
CWK	CASEWORK	POL	POLISHED
D	DEMOLITION	PP	POWER POLE
DF	DRINKING FOUNTAIN	PWD	PLYWOOD
DIA	DIAMETER	QTY	QUANTITY
DIM	DIMENSION	R	RELOCATED
DW	DISHWASHER	RB	RUBBER BASE
DWG	DRAWING	RCP	REFLECTED CEILING PLAN
DWR	DRAWER	REC	RECESSED
E	EXISTING	REF	REFERENCE
EA	EACH	REV	REVISION OR REVISED
ELEC	ELECTRICAL	RO	ROUGH OPENING
ELEV	ELEVATOR	SC	SEALED CONCRETE
EQ	EQUAL	SD	SOAP DISPENSER
EQUIP	EQUIPMENT	SF	SQUARE FEET/FOOT
EXT	EXTERIOR	SG	SAFETY GLASS
FA	FIRE ALARM	SHT	SHEET
FD	FLOOR DRAIN	SIM	SIMILAR
FE	FIRE EXTINGUISHER	SS	STAINLESS STEEL
FEC	FIRE EXTINGUISHER CABINET	SSM	SOLID SURFACE MATERIAL
FF	FACTORY FINISH	SPKLR	SPRINKLER
		SPKR	SPEAKER
FIN	FINISH	ST	STAINED
FIXT	FIXTURE	SV	SHEET VINYL
FLR	FLOOR	STD	STANDARD
FLRG	FLOORING	STL	STEEL
FO	FACE OF	SUSP	SUSPENDED
FOIC	FURNISHED BY OWNER, INSTALLED BY CONTRACTOR	TBD	TO BE DETERMINED
FR	FIRE RATED	THK	THICKNESS
FTIC	FURNISHED BY TENANT, INSTALLED BY CONTRACTOR	TO	TOP OF
FURR	FURRING	TOS	TOP OF SLAB
FUT	FUTURE	T&M	TIME AND MATERIAL
GA	GAUGE	TU	TILT-UP
GC	GENERAL CONTRACTOR	TYP	TYPICAL
GL	GLASS	UN	UNLESS OTHERWISE NOTED
GYP	GYPSUM WALLBOARD	UNF	UNFINISHED
HB	HOSE BIB	UPS	UNINTERRUPTED POWER SUPPLY
HC	HANDICAPPED	UR	URINAL
HDW	HARDWARE	VCT	VINYL COMPOSITION TILE
HM	HOLLOW METAL (STEEL FRAME)	VFY	VERIFY
HT	HEIGHT	VIF	VERIFY IN FIELD
INCL	INCLUDED OR INCLUDING	WC	WATER CLOSET
INSUL	INSULATION	WD	WOOD
JAN	JANITOR	WH	WALL HUNG
KD	KNOCK DOWN FRAME	WH	WATER HEATER
Q	QUARTZ	W/O	WITHOUT

DEFERRED SUBMITTALS

1. ELECTRICAL
2. MECHANICAL
3. PLUMBING
4. FIRE SPRINKLER
5. FIRE ALARM
6. ROOF TRUSSES
7. STOREFRONT

NOTE: PER OSSC 107.3.4.2 DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL IN REASONABLE CHARGE WHO SHALL REVIEW THEM AND RETURN TO THE CONTRACTOR TO BE SUBMITTED TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN GENERAL CONFORMANCE TO THE DESIGN OF THE BUILDING. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

PROJECT TEAM

Owner

MILLERSBURG LAND DEVELOPMENT
PO BOX 2375
CLACKAMAS, OREGON 97015

Architect

MILDREN DESIGN GROUP, P.C.
7650 SW BEVELAND STREET, SUITE 120
TIGARD, OREGON 97223
VOICE: 503-244-0552 FAX: 503-244-0417
CONTACT PERSON: Curt Trolan
EMAIL: curt@mdgpc.com

Structural Engineer

TM RIPPEY CONSULTING ENGINEERS
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TIGARD, OREGON 97223
VOICE: 503-443-3900
CONTACT PERSON: Geoff Gore
EMAIL: ggore@tmrippy.com

Civil Engineer

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4875 S.W. GRIFFITH DRIVE, SUITE 300
BEAVERTON, OREGON 97005
VOICE: 503-352-7678
CONTACT PERSON: Craig Harris
EMAIL: craigh@aaieng.com

Landscape Architect

AAI ENGINEERING, INC
4875 S.W. GRIFFITH DRIVE, SUITE 300
BEAVERTON, OREGON 97005
VOICE: 503-352-7678
CONTACT PERSON: Teresa Long
EMAIL: Teresa@aaieng.com

LEGAL DESCRIPTION

T2S R2E SECTION 10D TAX LOT 2200 AND 2300, CLACKAMAS COUNTY, OREGON

ZONE ANALYSIS

ZONE: LI - LIGHT INDUSTRIAL
ALLOWABLE USE TYPE: GENERAL COMMERCIAL
MISC. INDUSTRIAL USES
MANUFACTURING
OFFICE/WAREHOUSE

SITE DATA

AREA:	AREA:	% COVERAGE:
SITE	108,578 S.F. (2.49 AC)	
IMPERVIOUS AREA:		
BUILDING 1 (FOOTPRINT):	26,390 SF	24.30%
BUILDING 2 (FOOTPRINT):	22,710 SF	20.92%
PAVING AREA:	42,871 SF	39.48%
TOTAL IMPERVIOUS AREA:	91,971 SF	84.70%
LANDSCAPE AREA:		
LANDSCAPING:	16,607 SF	15.30%
PARKING:	# SPACES PROVIDED:	# SPACES REQUIRED:
STANDARD:	34	WAREHOUSE/DIST .3/1000 SF = 15
ACCESSIBLE:	2	
TOTAL SPACES PROVIDED:	36	
BICYCLE PARKING:	4	4

VICINITY MAP



Vicinity Plan

N.T.S.

Building Site

DRAWING INDEX-ARCHITECTURAL

A0.1	COVER SHEET
A1.1	SITE PLAN
C0.1	GENERAL NOTES
C0.2	EXISTING CONDITIONS PLAN
C0.3	DEMOLITION PLAN
C1.0	HARDSCAPE PLAN
C2.0	GRADING AND EROSION CONTROL PLAN
C3.0	UTILITY PLAN
C4.0	DETAILS
C4.1	DETAILS
C4.2	DETAILS
L1.0	LANDSCAPE PLAN
L2.0	LANDSCAPE DETAILS
L2.1	IRRIGATION DETAILS
L3.0	LANDSCAPE AND IR SPECS
1 OF 1	SITE LIGHTING PLAN AND PHOTOMETRICS
1A2.1	BUILDING 1 FLOOR PLAN
1A2.2	BUILDING 1 ROOF PLAN
1A3.1	BUILDING 1 ELEVATIONS
2A2.1	BUILDING 1 FLOOR PLAN
2A2.2	BUILDING 1 ROOF PLAN
2A3.2	BUILDING 2 ELEVATIONS

Owner:

Millersburg
Land
Development

PO Box 2375
Clackamas, Oregon 97015

Project:

SE120th Ave &
SE Capps Road

SE 122nd Ave
Clackamas, Oregon

Sheet Title:

Cover Sheet

Revisions:

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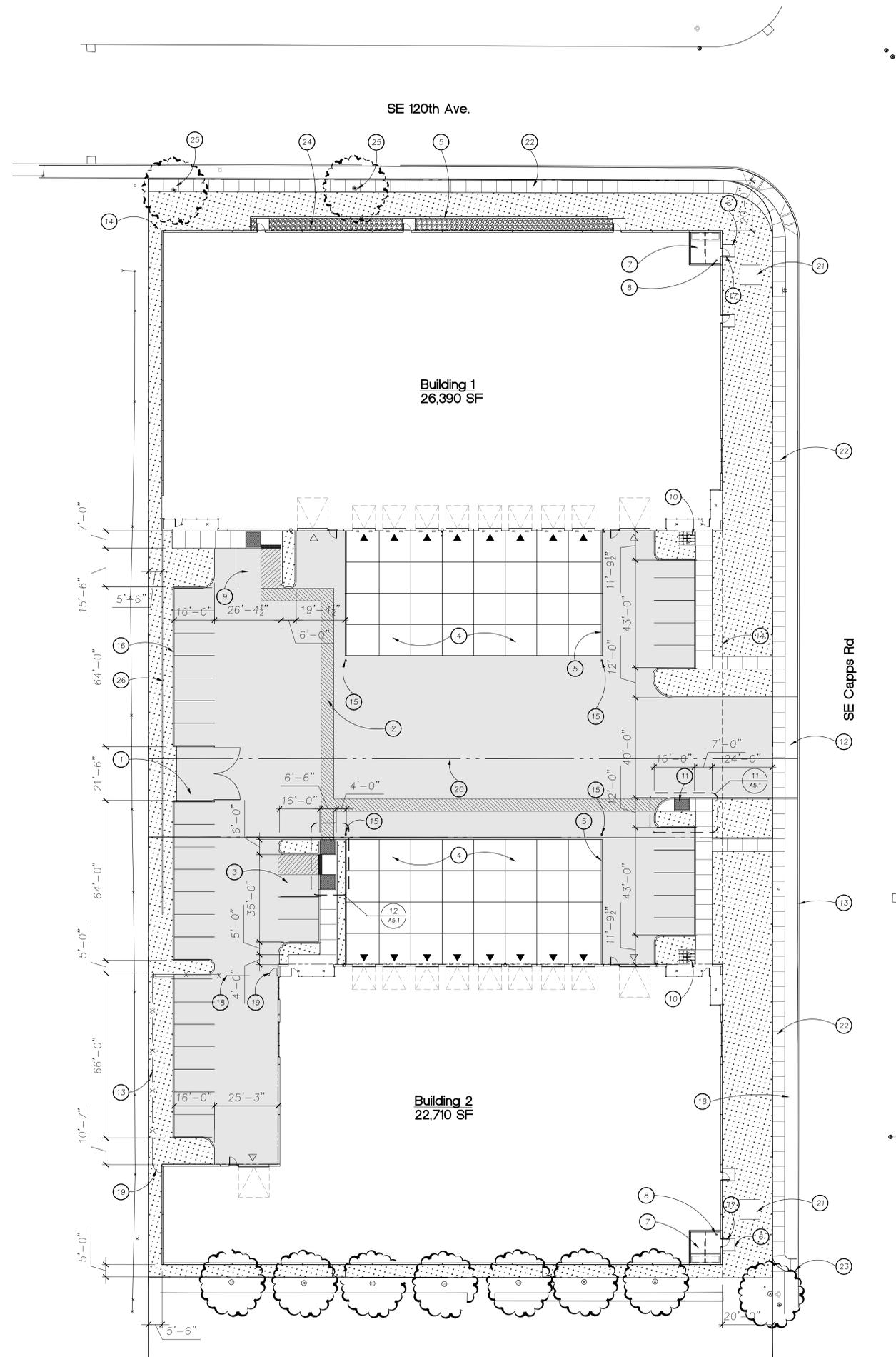
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Date: 4 March 2020

Drawn by: BK Checked by: CLT

Job Number: 119161

Sheet



Proposed Site Plan
 0 10 20 40

Keynotes

1. CONCRETE TRASH/RECYCLING ENCLOSURE, PAINTED - SEE DETAIL 5/A5.1
2. PEDESTRIAN ACCESS STRIPING
3. VAN ACCESSIBLE PARKING SPACE, RAMP, SIGNAGE AND ACCESSIBLE AISLE - SEE DETAIL 1/A5.1
4. CONCRETE TRUCK APRON
5. CONCRETE RETAINING WALL
6. 5'-0" x 5'-0" x 4" CONCRETE PAD
7. ELECTRICAL ROOM
8. SPRINKLER RISER
9. ACCESSIBLE PARKING SPACE, RAMP, SIGNAGE AND ACCESSIBLE AISLE
10. BICYCLE PARKING FOR (2) BICYCLES - SEE DETAIL 6/A5.1
11. ACCESSIBLE RAMP
12. CONSTRUCT 40 FT. WIDE COMMERCIAL DRIVEWAY PER CLACKAMAS COUNTY STANDARD D650; SEPARATE PERMIT REQUIRED - SEE PUBLIC IMPROVEMENT PLANS
13. 7'-0" TALL CHAIN LINK FENCE
14. 20' BUILDING SETBACK
15. 6" CONCRETE GROUT FILLED PROTECTION BOLLARD - SEE DETAIL 13/A5.1
16. CONCRETE CURB
17. KNOX BOX, COORDINATE LOCATION WITH OWNER
18. 20'-0" SLIDING GATE WITH KNOX PADLOCK
19. 3'-0" WIDE GATE WITH KNOX PADLOCK
20. EXISTING PROPERTY LINE TO BE RELOCATED
21. TRANSFORMER PAD
22. CONSTRUCT 5 FT. PUBLIC SIDEWALK PER CLACKAMAS COUNTY STANDARD DRAWING 5 630; SEPARATE PERMIT REQUIRED, SEE PUBLIC IMPROVEMENT PLANS
23. ALIGN NEW SIDEWALK WITH EXISTING
24. GRAVEL PATH
25. REMOVE EXISTING TREE
26. RETAINING WALL

Legend

- △ DRIVE-IN DOOR
- ▲ DOCK-HIGH DOOR

NOTE:
 A UTILITY PLACEMENT PERMIT IS REQUIRED FROM CLACKAMAS COUNTY, DTD, ENGINEERING



Owner:
Millersburg Land Development

PO Box 2375
 Clackamas, Oregon 97015

Project:
SE120th Ave & SE Capps Road

SE 122nd Ave.
 Clackamas, Oregon

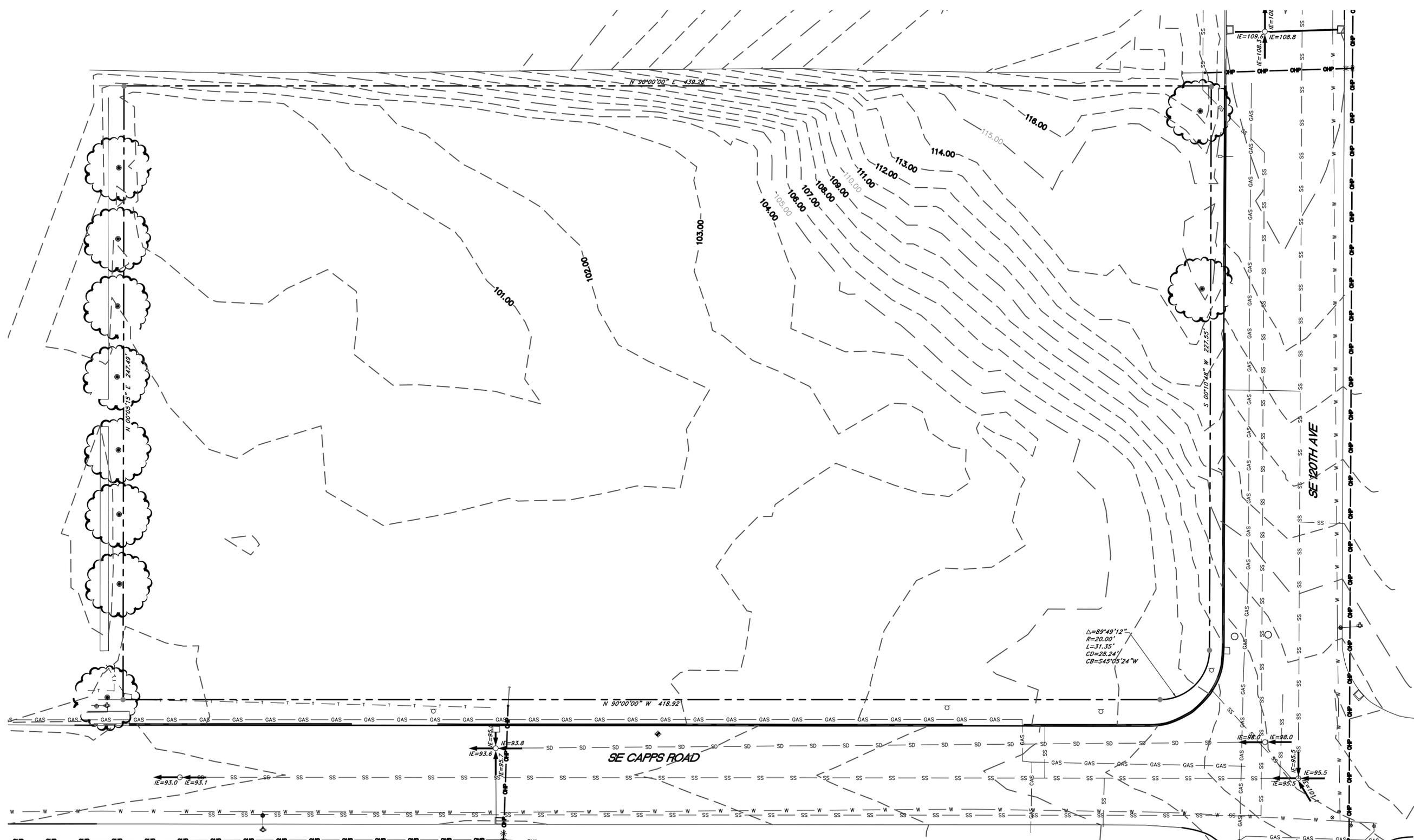
Sheet Title:
Site Plan

Revisions:

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 Checked by: CLT
 Job Number: 119161
 Sheet

F:\2020\A20027.10 - SE Capps Rd & SE 120th Ave\Civil\Cad\Sheets\Onsite\A20027.002.Existing Conditions.dwg : Mar. 23, 20 - 4:49 PM dross



NOTES:

- BENCHMARK: ELEVATIONS BASED ON NORTH RIM OF MANHOLE. ELEVATION = 100.00
- CONTOURS ARE AT ONE-FOOT INTERVALS AND ARE COMPUTER GENERATED.
- UNDERGROUND UTILITIES ARE SUBJECT TO ACTUAL FIELD LOCATION.
- ALL UTILITIES MAY NOT BE SHOWN.
- TREE SPREADS ARE NOT TO SCALE.

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 16, 1982
ERRIC D. JONES
1996
EXPIRES: 6-30-15

LEGEND

- AP = AS PAINTED
- CB = CATCH BASIN
- FH = FIRE HYDRANT
- GA = GUY ANCHOR
- PP = POWER POLE
- SS = STREET SIGN
- WM = WATER METER
- WV = WATER VALVE

TOPOGRAPHY SURVEY
OF
PROPOSED PARCEL 1 & 2
OF PROPOSED RAYSON PARTITION
SITUATED IN THE
N.E. 1/4 OF SECTION 15, T. 2 S., R. 2 E., W.M.
COUNTY OF CLACKAMAS, STATE OF OREGON
UPDATED 10-01-14; ADDED TOPO ON PARCEL 1

R.S. GREENLEAF
(1885-1915)
MARSHALL BROTHERS
(1915-1957)
BOOTH & WRIGHT
(1957-1977)
SETON, JOHNSON & ODELL
(1977-1983)
CHASE, JONES & ASSOCIATES, INC.
(1983-)

CHASE, JONES & ASSOCIATES INC.		
716 S. E. 11TH AVE. PORTLAND, OREGON 97214 PHONE (503) 228-9844		
PROJECT NO. 13351	1/4 SECTION ---	DATE FEBRUARY 8, 2013
DRAWN BY JJ	CHECKED BY E.J.	SCALE 1" = 20'

AAI alghan associates, inc.
ENGINEERING
4875 SW Griffith Drive | Suite 300 | Beaverton, OR | 97005
503.620.3030 tel | 503.620.5539 fax | www.aaieng.com

SE CAPPS RD & SE 120TH AVE
CLACKAMAS COUNTY, OR

SHEET TITLE

EXISTING CONDITIONS

DATE: 3/04/20

DRAWN: DAR

CHECKED: NWS

REVISIONS:

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SHEET NUMBER

C0.2

JOB NUMBER: A20027.10



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 503.620.3030 tel | 503.620.5539 fax | www.aaleng.com

SE CAPPS RD & SE 120TH AVE
 CLACKAMAS COUNTY, OR

SHEET TITLE
DEMOLITION PLAN

DATE: 3/04/20
 DRAWN: DAR
 CHECKED: NWS
 REVISIONS:

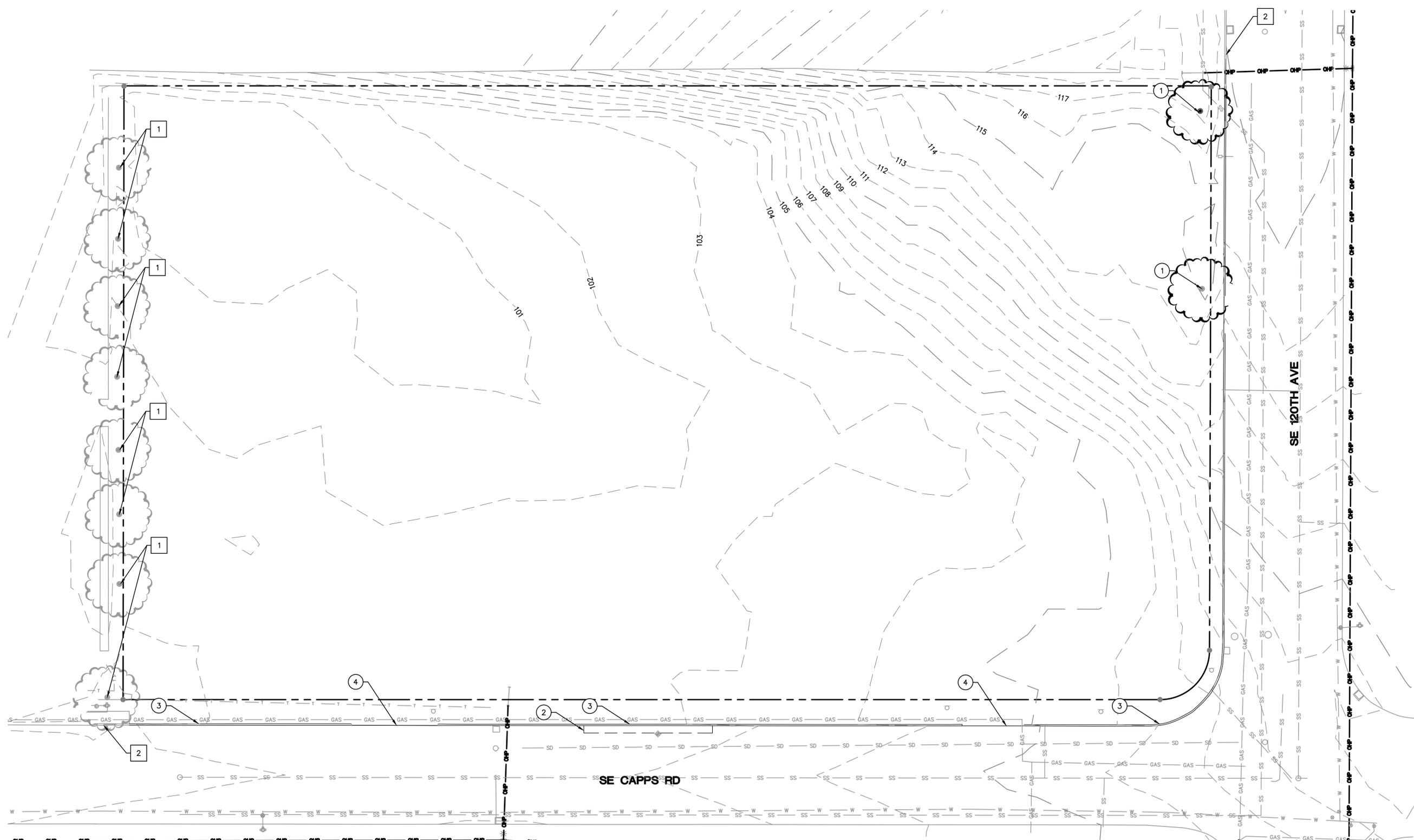
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SHEET NUMBER

C0.3

JOB NUMBER: A20027.10



SHEET NOTES

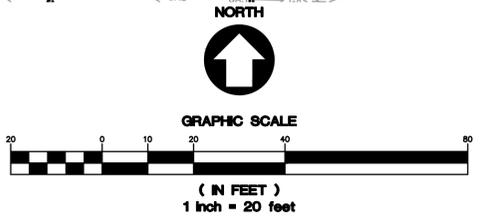
1. SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
2. CONTRACTOR MAY STAGE WITHIN LIMITS OF DEMOLITION.
3. REMOVE ALL SITE COMPONENTS AND RECYCLE COMPONENTS AS REQUIRED IN THE SPECIFICATIONS.
4. ALL TRADE LICENSES AND PERMITS NECESSARY FOR THE PROCUREMENT AND COMPLETION OF THE WORK SHALL BE SECURED BY THE CONTRACTOR PRIOR TO COMMENCING DEMOLITION.
5. THE CONTRACTOR SHALL PRESERVE AND PROTECT FROM DAMAGE ALL EXISTING RIGHT-OF-WAY SURVEY MONUMENTATION DURING DEMOLITION. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PAYING FOR THE REPLACEMENT BY A LICENSED SURVEYOR OF ANY DAMAGED OR REMOVED MONUMENTS.
6. PROTECT ALL ITEMS ON ADJACENT PROPERTIES AND IN THE RIGHT OF WAY INCLUDING BUT NOT LIMITED TO SIGNAL EQUIPMENT, PARKING METERS, SIDEWALKS, STREET TREES, STREET LIGHTS, CURBS, PAVEMENT AND SIGNS. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY DAMAGED ITEMS TO ORIGINAL CONDITION.
7. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, AND OTHER FACILITIES IMMEDIATELY ADJACENT TO EXCAVATIONS FROM DAMAGES CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT AND OTHER HAZARDS.
8. SAWCUT STRAIGHT LINES IN SIDEWALK, AS NECESSARY.
9. CONTRACTOR IS RESPONSIBLE TO CONTROL DUST AND MUD DURING THE DEMOLITION PERIOD, AND DURING TRANSPORTATION OF DEMOLITION DEBRIS. ALL STREET SURFACES OUTSIDE THE CONSTRUCTION ZONE MUST BE KEPT CLEAN.
10. PROTECT ALL EXISTING UTILITY STRUCTURES AND UNDERGROUND MAINS TO REMAIN.
11. PROTECT ALL EXISTING VEGETATION TO REMAIN.

X PROTECTION NOTES

- 1 PROTECT EXISTING TREE
- 2 PROTECT EXISTING CURB

X DEMOLITION NOTES

- 1 REMOVE EXISTING TREE
- 2 SAWCUT EXISTING ASPHALT
- 3 REMOVE EXISTING CURB
- 4 REMOVE EXISTING DRIVEWAY



03/23/2020 – DESIGN REVIEW SUBMITTAL



AAI alghan associates, inc.
ENGINEERING
 4875 SW Griffith Drive | Suite 300 | Beaverton, OR | 97005
 503.620.3030 tel | 503.620.5539 fax | www.aaieng.com

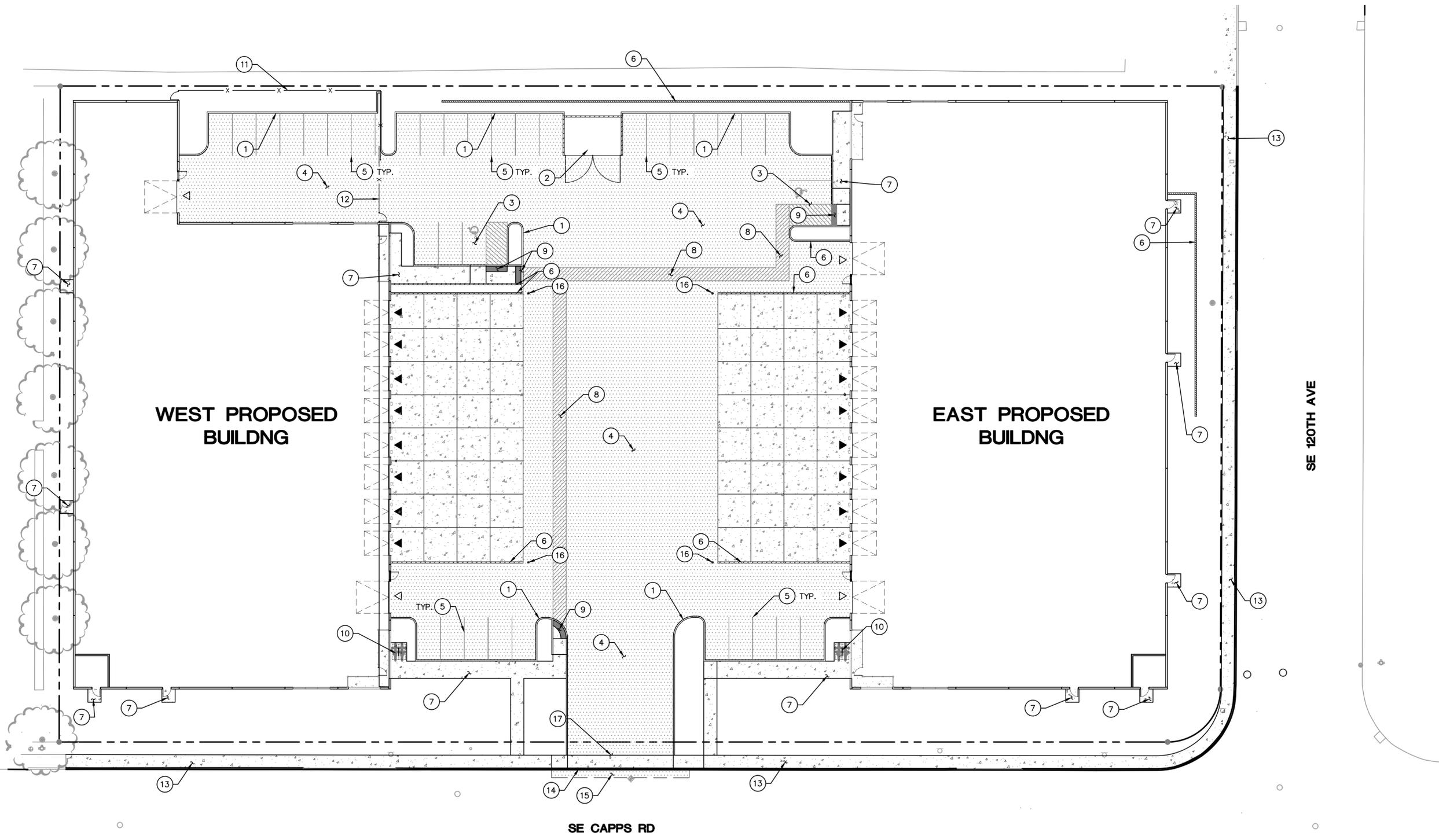
SE CAPPS RD & SE 120TH AVE
 CLACKAMAS COUNTY, OR

SHEET TITLE
HARDSCAPE PLAN
 DATE: 3/04/20
 DRAWN: DAR
 CHECKED: NWS
 REVISIONS:

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C1.0

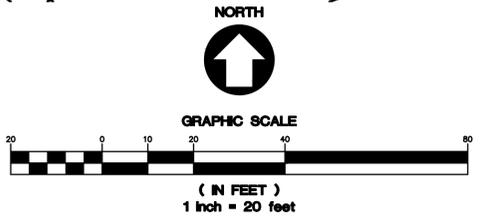
JOB NUMBER: A20027.10



- SHEET NOTES**
- SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
 - SEE ARCHITECTURAL PLANS FOR ADDITIONAL SITE INFORMATION.
 - THE CONTRACTOR SHALL HAVE A FULL SET OF THE CURRENT APPROVED CONSTRUCTION DOCUMENTS INCLUDING ADDENDA ON THE PROJECT SITE AT ALL TIMES.
 - THE CONTRACTOR SHALL KEEP THE ENGINEER AND JURISDICTION INFORMED OF CONSTRUCTION PROGRESS TO FACILITATE SITE OBSERVATIONS AT REQUIRED INTERVALS. 24-HOUR NOTICE IS REQUIRED.

- LEGEND**
- PROPERTY LINE
 - CONCRETE SIDEWALK SURFACING
 - ASPHALT SURFACING

- (X) CONSTRUCTION NOTES**
- INSTALL 6" PRIVATE CURB
 - INSTALL TRASH ENCLOSURE, SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - ADA PARKING SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL PRIVATE ASPHALT PAVEMENT
 - INSTALL STRIPING
 - INSTALL WALL, DESIGN BY OTHERS
 - INSTALL CONCRETE SIDEWALK
 - INSTALL CROSSWALK. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL ADA RAMP
 - INSTALL BIKE RACK. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL FENCE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL GATE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL PUBLIC SIDEWALK
 - INSTALL PUBLIC CURB
 - INSTALL PUBLIC ASPHALT
 - INSTALL BOLLARD. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION
 - INSTALL DRIVEWAY



03/23/2020 - DESIGN REVIEW SUBMITTAL

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EXPIRES: 6/30/2021

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4875 SW Griffith Drive | Suite 400 | Beaverton, OR | 97005
503.620.3030 tel | 503.620.5539 fax | www.aaleng.com

SE CAPPS RD & SE 120TH AVE
CLACKAMAS COUNTY, OR

SHEET TITLE
GRADING AND EROSION CONTROL PLAN

DATE: 3/04/20
DRAWN: DAR
CHECKED: NWS
REVISIONS:

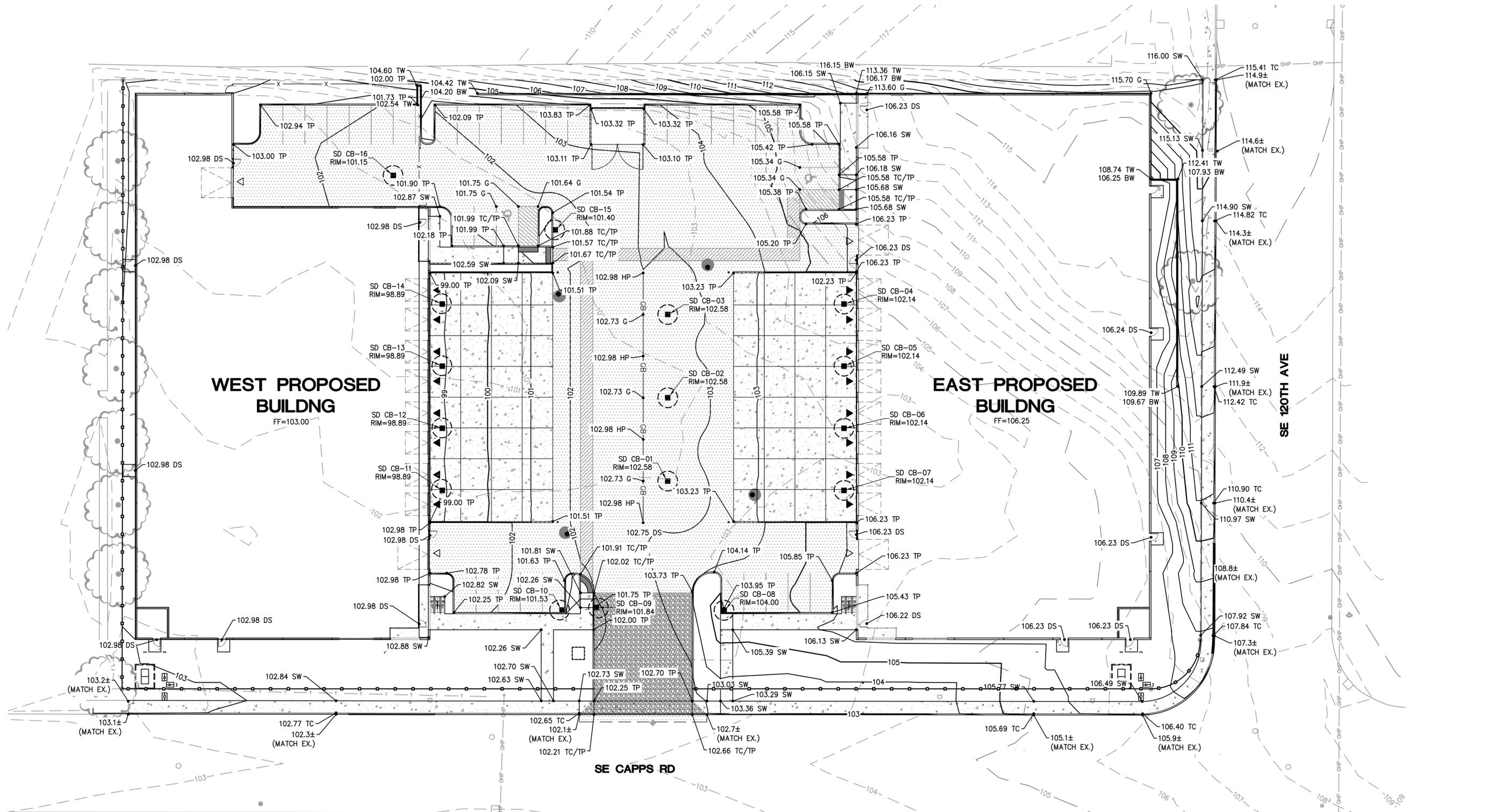
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SHEET NUMBER

C2.0

JOB NUMBER: A20027.10



- SHEET NOTES**
- SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
 - CURB HEIGHTS ARE 6" UNLESS NOTED OTHERWISE.
 - LANDINGS ON ACCESSIBLE ROUTES SHALL NOT EXCEED 2% IN ANY DIRECTION.
 - ALL ACCESSIBLE ROUTES SHALL COMPLY WITH CURRENT ADA ACCESSIBILITY GUIDELINES FOR BUILDING AND FACILITIES (ADAAG).
 - ALL WALKWAYS FROM ACCESSIBLE UNITS ARE DESIGNED TO NOT REQUIRE HANDRAILS. THEREFORE, RAMPS WITH SLOPES STEEPER THAN 5.0% AND LESS THAN 8.33% SHALL NOT EXCEED 0.5' RISE OR 6.0' LENGTH.
 - FINISH GRADES ARE TO BE BROUGHT TO WITHIN 0.08 FT IN 10 FT OF THE GRADES SHOWN AT SUBGRADE AND TO WITHIN 0.03 FT IN 10 FT AT FINISH GRADE. CONTRACTOR TO ALLOW FOR PLACEMENT OF REQUIRED TOPSOIL IN ROUGH GRADING.
 - GRADING ELEVATIONS AS SHOWN ON SITE AND LANDSCAPE PLANS ARE FINISHED GRADE WHICH INCLUDES SUBGRADE SOIL, TOPSOIL, SOIL AMENDMENTS, ROCKERY AND RUNOFF PROTECTION CONTRACTOR IS RESPONSIBLE TO COORDINATE GRADING WITH BOTH EXCAVATOR AND LANDSCAPE CONTRACTOR.

LEGEND

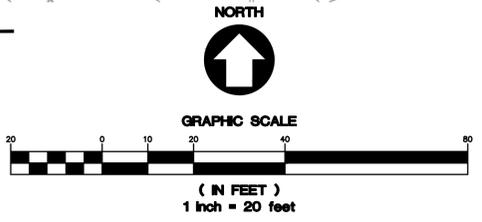
EXISTING CONTOUR MINOR	- - - - -	102
EXISTING CONTOUR MAJOR	— — — — —	100
PROPOSED CONTOUR MINOR	- - - - -	102
PROPOSED CONTOUR MAJOR	— — — — —	100
GRADE BREAK	— CB —	CB

GRADING LABEL LEGEND

SPOT ELEVATION	XX.XX XX
DESCRIPTION LISTED BELOW.	
BS	BOTTOM OF STAIRS
BW	FINISHED GRADE AT BOTTOM OF WALL
DS	DOOR SILL
EX	EXISTING GRADE
FF	FINISHED FLOOR ELEVATION
FG	FINISH GRADE
G	GROUND
SW	SIDEWALK
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TS	TOP OF STAIRS
TW	FINISHED GRADE AT TOP OF WALL

LEGEND

SEDIMENT FENCE PER DETAIL 5/C4.0	
INLET PROTECTION PER DETAIL 2/C4.0	
BIOBAGS PER DETAIL 3/C4.0	
CONSTRUCTION ENTRANCE PER DETAIL 4/C4.0	
CONCRETE WASHOUT PER DETAIL 1/C4.0	



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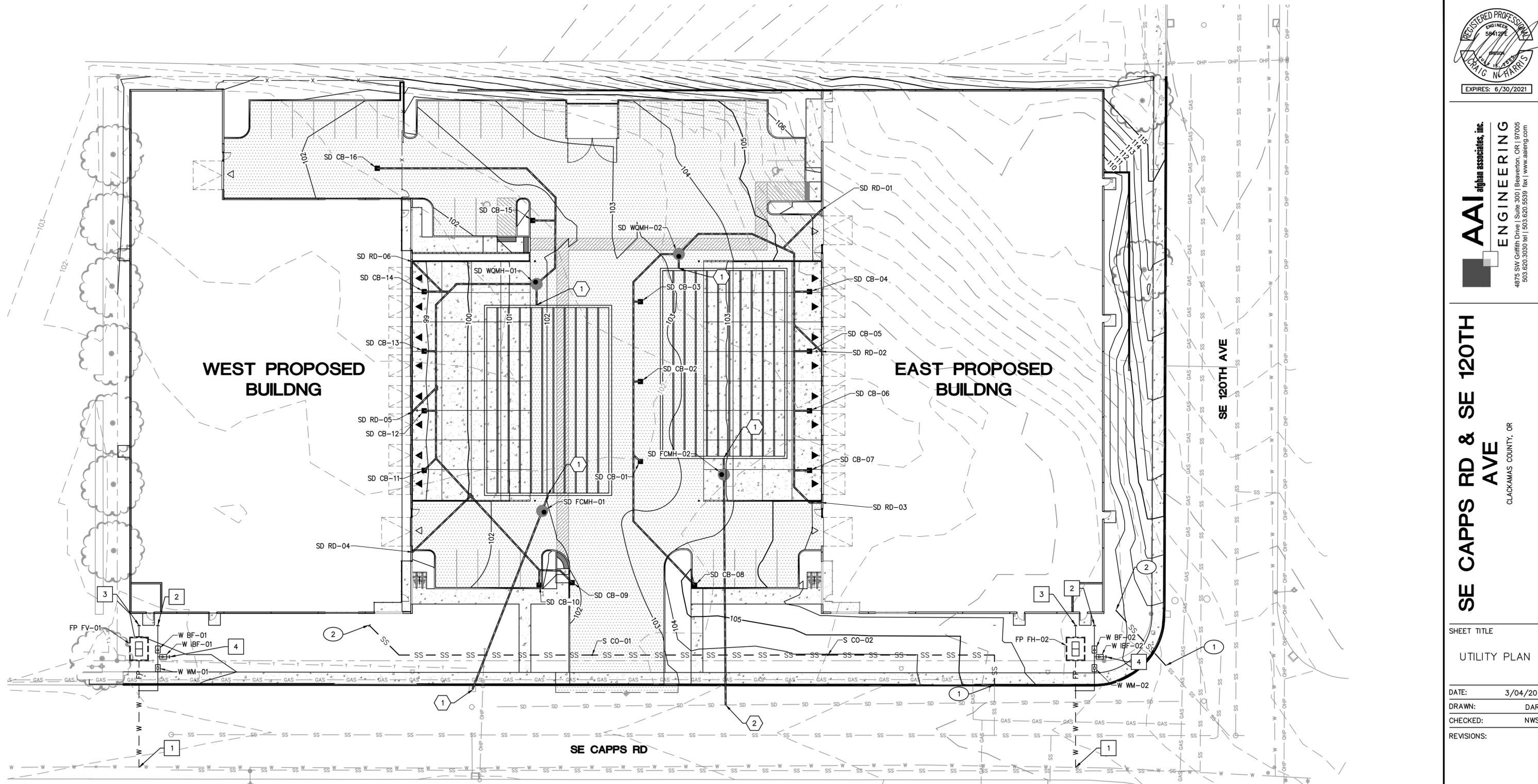
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 CLACKAMAS COUNTY, OR

SHEET TITLE
UTILITY PLAN
 DATE: 3/04/20
 DRAWN: DAR
 CHECKED: NWS
 REVISIONS:

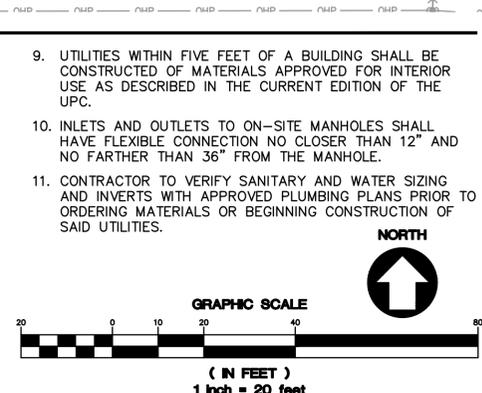
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 SHEET NUMBER

C3.0

JOB NUMBER: A20027.10



- SHEET NOTES**
- SEE SHEET C0.1 FOR GENERAL SHEET NOTES.
 - STRUCTURES HORIZONTAL LOCATIONS AND PIPE INVERTS ARE BASED ON THE CENTER OF THE STRUCTURE.
 - PIPE BEDDING AND BACKFILL UTILITIES SHALL BE DONE PER DETAIL 1/C4.2.
 - ALL SANITARY PIPING SHALL BE PVC 3034 OR APPROVED EQUAL UNLESS NOTED OTHERWISE.
 - THIS PLAN IS GENERALLY DIAGRAMMATIC. IT DOES NOT SHOW EVERY JOINT, BEND, FITTING, OR ACCESSORY REQUIRED FOR CONSTRUCTION.
 - CLEAN OUTS SHALL BE INSTALLED IN CONFORMANCE WITH UPC CHAPTER SEVEN, SECTION 707 AND SECTION 719. THIS PLAN MAY NOT SHOW ALL REQUIRED CLEAN OUTS.
 - DOMESTIC WATER AND FIRE LINES AND ACCESSORIES BETWEEN THE WATER METER AND THE BUILDING SHALL BE INSTALLED BY A LICENSED PLUMBER EMPLOYED BY A LICENSED PLUMBING CONTRACTOR.
 - UTILITIES WITHIN FIVE FEET OF A BUILDING SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR INTERIOR USE AS DESCRIBED IN THE CURRENT EDITION OF THE UPC.
 - INLETS AND OUTLETS TO ON-SITE MANHOLES SHALL HAVE FLEXIBLE CONNECTION NO CLOSER THAN 12" AND NO FARTHER THAN 36" FROM THE MANHOLE.
 - CONTRACTOR TO VERIFY SANITARY AND WATER SIZING AND INVERTS WITH APPROVED PLUMBING PLANS PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION OF SAID UTILITIES.



LABEL LEGEND

PIPE LABELS

UTILITY LENGTH
 UTILITY SIZE
 XXLF - XX" XX ← UTILITY TYPE
 S=X.XX% ← SLOPE (WHERE APPLICABLE)

STRUCTURE LABELS

UTILITY TYPE (FP= FIRE PROTECTION, S=SANITARY, SD=STORM DRAINAGE, W=WATER)
 STRUCTURE TYPE (SEE BELOW)
 XX XX-XX ← ID NUMBER (WHERE APPLICABLE)
 RIM=XX.XX
 IE IN=XX.X
 IE OUT=XX.X

STRUCTURE TYPES

TYPE	DESCRIPTION
CB	CATCH BASIN
CO	CLEAN OUT
BF	BACK FLOW
FV	FIRE VAULT
IBF	IRRIGATION BACKFLOW (UNDER SEPARATE PERMIT)
RD	ROOF DRAIN CONNECTION
WM	WATER METER

LEGEND

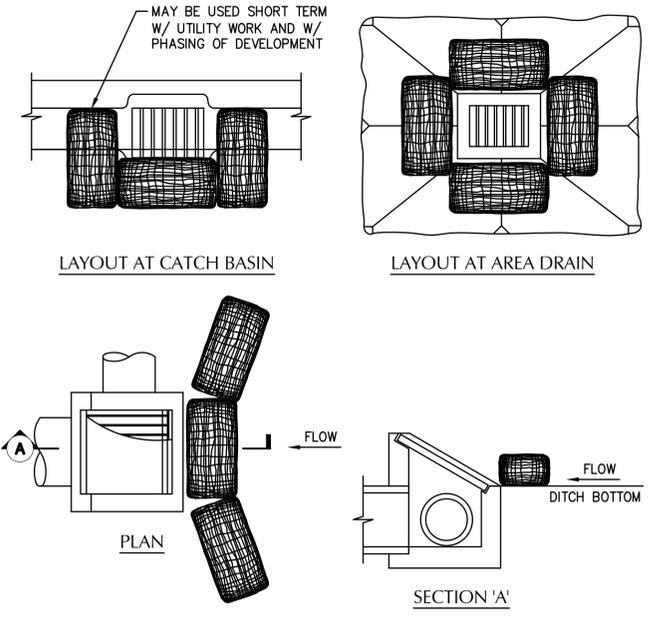
SANITARY SEWER LINE	SS
WATER LINE	W
FIRE LINE	FP
FDC LINE	FDC
STORM LINE	SD

- SANITARY NOTES**
- CONNECT TO EXISTING SANITARY SEWER LATERAL
 - PROPOSED SANITARY SEWER CONNECTION TO BUILDING. SEE PLUMBING PLANS FOR CONTINUATION.
- WATER NOTES**
- CONNECT TO EXISTING WATER MAIN
 - PROPOSED DOMESTIC WATER CONNECTION TO BUILDING. SEE PLUMBING PLANS FOR CONTINUATION.
 - PROPOSED FIRE CONNECTION TO BUILDING. SEE PLUMBING PLANS FOR CONTINUATION.
 - PROPOSED IRRIGATION BACKFLOW UNDER SEPARATE PERMIT

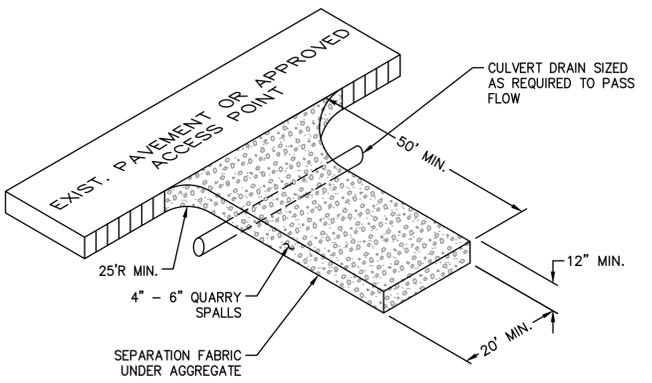
- STORM NOTES**
- CONNECT TO EXISTING DETENTION SYSTEM
 - CONNECT TO EXISTING STORM LATERAL

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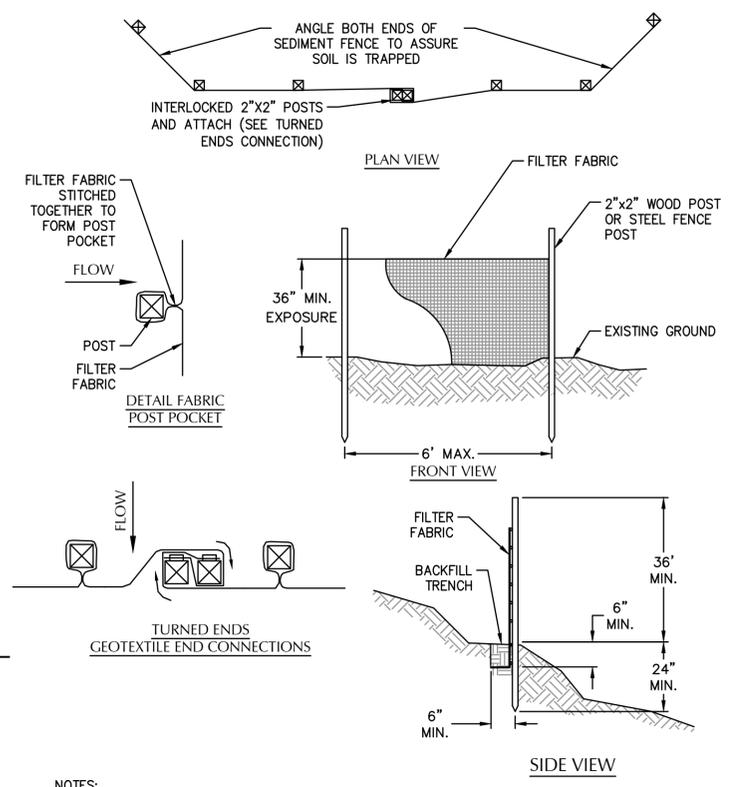


3 BIO-FILTER BAG AT INLETS
SCALE: NTS



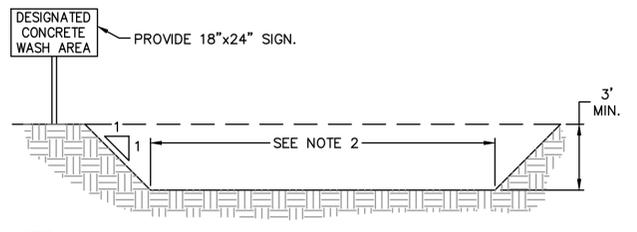
- NOTES:**
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
 4. WHERE RUNOFF CONTAINING SEDIMENT LADEN WATER IS LEAVING THE SITE VIA THE CONSTRUCTION ENTRANCE, OTHER MEASURES SHALL BE IMPLEMENTED TO DIVERT RUNOFF THROUGH AN APPROVED FILTERING SYSTEM.
 5. DIMENSIONS: 50' LONG BY 20' WIDE 3-6" CLEAN ROCK, GOVERNING AUTHORITY MAY REQUIRE GEOTEXTILE FABRIC TO PREVENT SUB-SOIL PUMPING.

4 CONSTRUCTION ENTRANCE
SCALE: NTS



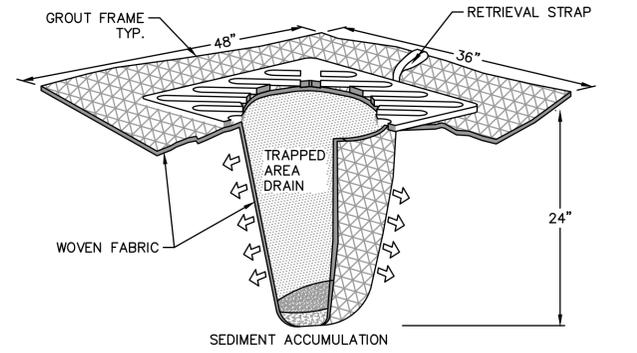
- NOTES:**
1. THE FILTER FABRIC SHALL BE (36" MIN. WIDTH) PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP, AND BOTH ENDS SECURELY FASTENED TO THE POST, OR OVERLAP 2"x2" POSTS AND ATTACH AS SHOWN ON DETAIL SHEET.
 2. THE FILTER FABRIC FENCE SHALL BE INSTALLED TO FOLLOW THE CONTOURS WHERE FEASIBLE. THE FENCE POSTS SHALL BE SPACED A MAXIMUM OF 6- FEET APART AND DRIVEN SECURELY INTO THE GROUND A MINIMUM OF 24-INCHES.
 3. THE FILTER FABRIC SHALL HAVE A MINIMUM VERTICAL BURIAL OF 6-INCHES. ALL EXCAVATED MATERIAL FROM FILTER FABRIC FENCE INSTALLATION, SHALL BE BACKFILLED AND COMPACTED, ALONG THE ENTIRE DISTURBED AREA.
 4. STANDARD OR HEAVY DUTY FILTER FABRIC SHALL HAVE MANUFACTURED STITCHED LOOPS FOR 2"x2" POST INSTALLATION. STITCHED LOOPS WITH STAKES SHALL BE INSTALLED ON THE DOWN-SLOPE SIDE OF THE SLOPED AREA.
 5. FILTER FABRIC FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UP-SLOPE AREA HAS BEEN PERMANENTLY PROTECTED AND STABILIZED.
 6. FILTER FABRIC FENCES SHALL BE INSPECTED BY CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

5 SEDIMENT FENCE
SCALE: NTS



- NOTES:**
1. INSTALL A CONCRETE WASH OUT PIT AND A VISIBLE SIGN STATING, "DESIGNATED CONCRETE WASH AREA." LOCATE THE WASH OUT IN A PLACE THAT WILL BE ACCESSIBLE TO CONCRETE TRUCKS SIZE TO THE PROJECT.
 2. PROVIDE 3' X 3' MINIMUM WASHOUT AREA. INCREASE SIZE OR PROVIDE ADDITIONAL WASHOUTS AS REQUIRED TO ACCOMMODATE PROJECT CONDITIONS.
 3. LOCATE WASHOUTS IN AREAS THAT WILL BE ACCESSIBLE TO CONCRETE TRUCKS.
 4. FOR WASHOUTS LOCATED IN AREAS DESIGNATED TO RECEIVE HARDSCAPE, SOLIDS MAY BE BURIED IN PLACE. FOR OTHER APPLICATIONS, REMOVE AND DISPOSE OF SOLIDS.

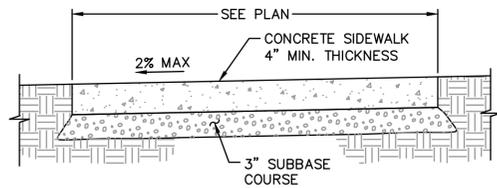
1 CONCRETE WASHOUT
SCALE: NTS



- INSTALLATION NOTES:**
1. REMOVE CATCH BASIN GRATE.
 2. CLEAN DIRT AND DEBRIS FROM GRATE LEDGE.
 3. PLACE WOVEN FABRIC INSERT FILTER SACK/FILTER FABRIC U-SHAPED BIOBAG/COMPOST SOCK OVER CATCH BASIN OPENING WITH BAG INSIDE BASIN. SEDIMENT PROTECTION MUST BE DESIGNED FOR LOW-FLOW AND CONTAIN NO OVERFLOW.
 4. REPLACE GRATE, AT THE SAME TIME PINCH INSERT FABRIC BETWEEN GRATE AND FRAME.
 5. CUT EXCESS FABRIC OFF AND LEAVE THREE TO FIVE INCHES OF FABRIC AROUND OUTSIDE SIDE OF GRATE IF INSERT IS REUSABLE.

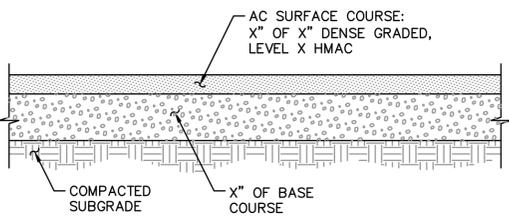
- MAINTENANCE NOTES:**
1. DETERMINE SEDIMENT ACCUMULATION BY PROBING WITH YARDSTICK TO MEASURE SEDIMENT LEVEL.
 2. RECOMMENDED: EMPTY AND REINSTALL WHEN UNIT IS APPROXIMATELY HALF FULL (UP TO 12 INCHES SEDIMENT).
 3. RECOMMENDED: REGULARLY INSPECT INSERTS/BIOBAGS/SOCKS AND LOG OBSERVATIONS AS A BEST MANAGEMENT PRACTICE.

2 INLET SEDIMENT PROTECTION
SCALE: NTS

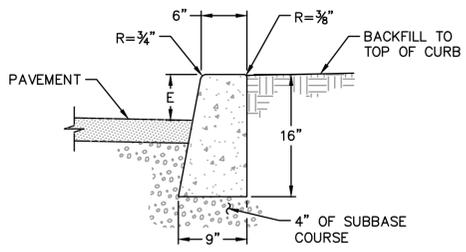


- NOTES:**
- CONSTRUCT CONTRACTION JOINTS AT 15' MAX. SPACING AND AT RAMPS. CONSTRUCT EXPANSION JOINTS AT 200' MAX SPACING, AT POINTS OF TANGENCY AND AT ENDS OF EACH DRIVEWAY, UNLESS NOTED OTHERWISE.
 - CONCRETE SHALL BE 3000 P.S.I AT 28 DAYS, 6 SACK MIX, SLUMP RANGE OF 1-1/2" TO 3".
 - PANELS SHALL BE 5 FEET LONG.
 - EXPANSION JOINTS TO BE PLACED AT SIDES OF DRIVEWAY APPROACHES, UTILITY VAULTS, WHEELCHAIR RAMPS, AND AT SPACING NOT TO EXCEED 45 FEET.
 - FOR SIDEWALKS ADJACENT TO THE CURB AND POURED AT THE SAME TIME AS THE CURB, THE JOINT BETWEEN THEM SHALL BE A TROWELED JOINT WITH A MINIMUM 1/2" RADIUS.
 - SIDEWALK SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES IF MOUNTABLE CURB IS USED OR IF SIDEWALK IS INTENDED AS PORTION OF DRIVEWAY. OTHERWISE SIDEWALK SHALL HAVE A MINIMUM THICKNESS OF 4 INCHES.
 - DRAIN BLOCKOUTS IN CURBS SHALL BE EXTENDED TO BACK OF SIDEWALK WITH 3" DIA. PVC PIPE AT 2% SLOPE. CONTRACTION JOINT TO BE PLACED OVER PIPE.

1 CONCRETE SIDEWALK
SCALE: NTS

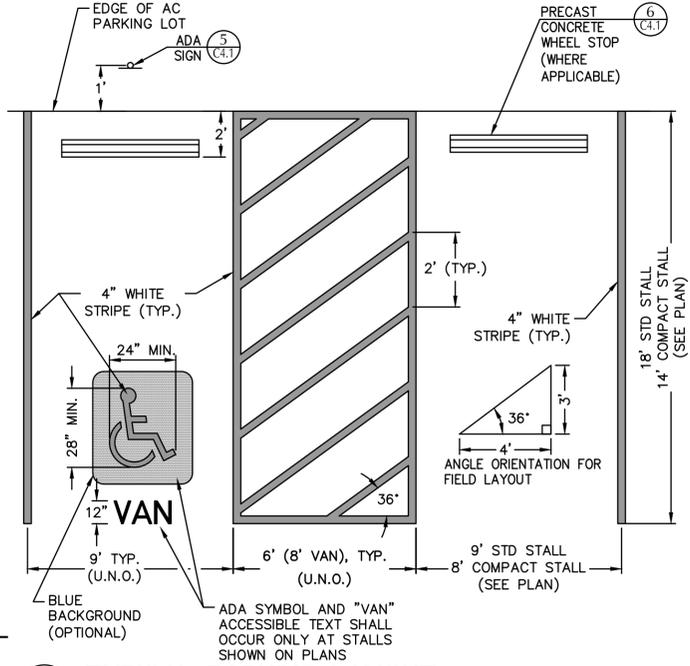


2 ASPHALT PAVEMENT SECTION
SCALE: NTS

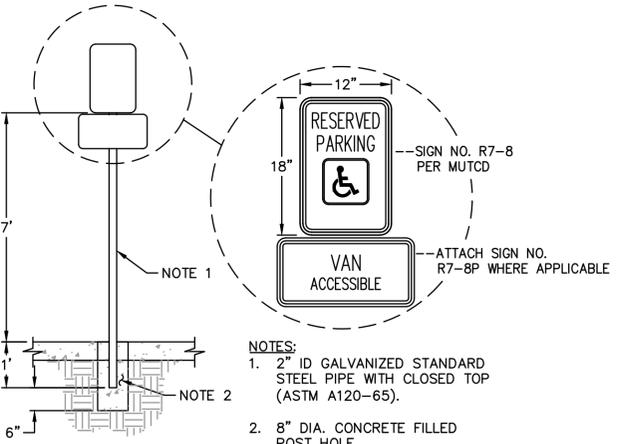


- NOTES:**
- CURB EXPOSURE 'E' = 6", TYP. VARY AS SHOWN ON PLANS OR AS DIRECTED.
 - CONSTRUCT CONTRACTION JOINTS AT 15' MAX. SPACING AND AT RAMPS. CONSTRUCT EXPANSION JOINTS AT 200' MAX SPACING AT POINTS OF TANGENCY AND AT ENDS OF EACH DRIVEWAY.
 - TOPS OF ALL CURBS SHALL SLOPE TOWARD THE ROADWAY AT 2% UNLESS OTHERWISE SHOWN OR AS DIRECTED.
 - DIMENSIONS ARE NOMINAL AND MAY VARY TO CONFORM WITH CURB MACHINE AS APPROVED BY THE ENGINEER.

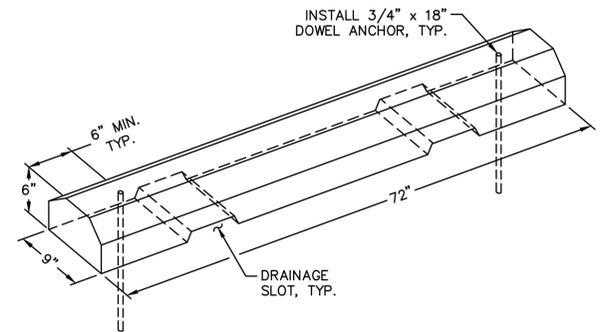
3 CONCRETE CURB - STANDARD
SCALE: NTS



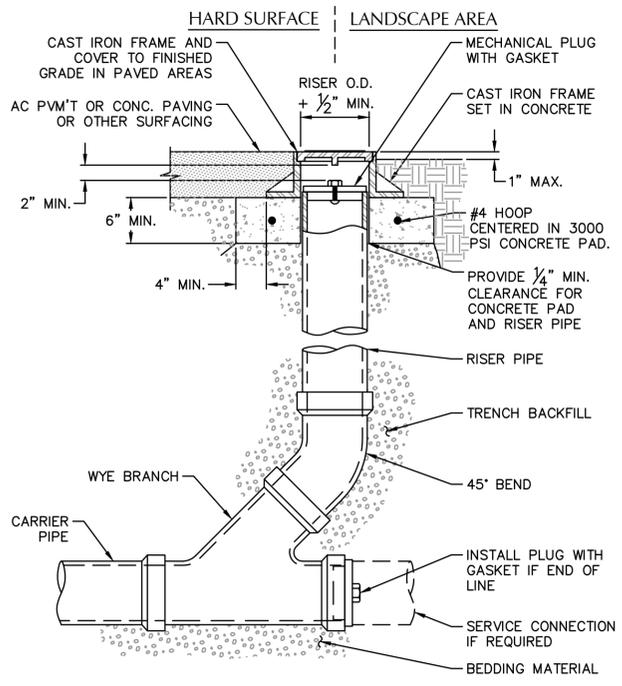
4 TYPICAL PARKING LAYOUT
SCALE: NTS



5 ADA PARKING SIGN - TYPE 1
SCALE: NTS

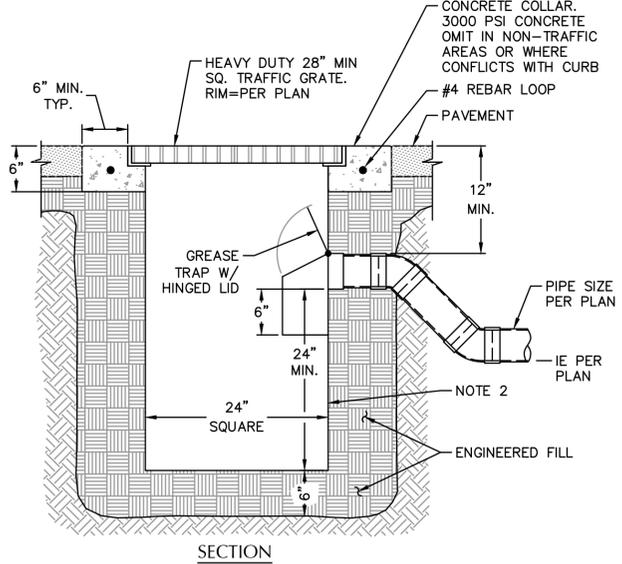


6 PRECAST CONCRETE WHEEL STOP
SCALE: NTS



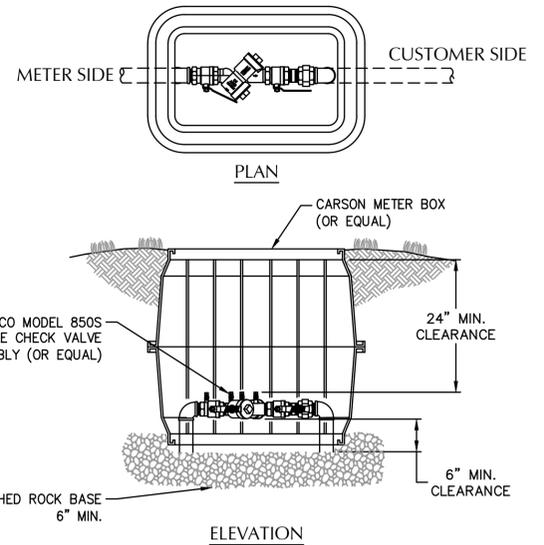
- NOTES:**
- CAST IRON FRAME AND COVER SHALL MEET H-20 LOAD REQUIREMENT.
 - FOR CARRIER PIPE SIZE 6"Ø AND LESS, PROVIDE RISER PIPE SIZE TO MATCH CARRIER PIPE.
 - FOR CARRIER PIPE SIZE 8"Ø AND LARGER, RISER PIPE SHALL BE 6"Ø.
 - RISER PIPE MATERIAL TO MATCH CARRIER PIPE MATERIAL.

7 STANDARD CLEANOUT (COTG)
SCALE: NTS



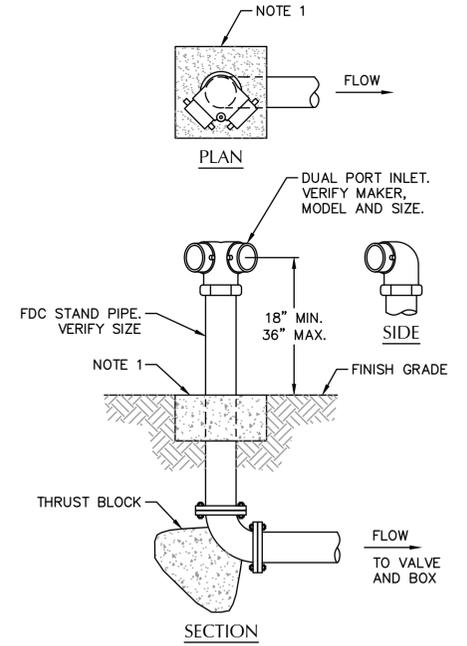
- NOTES:**
- CONTRACTOR TO WIDEN EXCAVATION AS REQUIRED TO OBTAIN COMPACTION WITH CONTRACTORS COMPACTION EQUIPMENT.
 - 1/4" STEEL PLATE, BITUMINOUS COATED. AS MANUFACTURED BY GIBSON STEEL BASINS OR APPROVED EQUAL.

8 TRAPPED CATCH BASIN
SCALE: NTS



- NOTE:** INSTALLATION SHOWN IS ONLY A SUGGESTION. THE DISTANCE FROM BOTTOM OF DEVICE TO FINISH GRADE, FREEZE PROTECTION, AND CLEARANCE FOR TESTING & REPAIR ARE THE MAJOR CONSIDERATIONS FOR INSTALLATION. PLUGS TO BE INSTALLED IN TEST COCKS OF BELOW GROUND INSTALLATIONS (NO DISSIMILAR METALS). IF FREEZE PROTECTION IS PROVIDED, THE 24" MIN CLEARANCE MAY BE REDUCED.

9 DOUBLE CHECK BACKFLOW ASSEMBLY
SCALE: NTS



- NOTES:**
- CONCRETE ANCHOR PAD TO BE 12"x12"x6" THICK, UNLESS NOTED OTHERWISE. ELIMINATE IF INSTALLED IN CONCRETE PAVED AREA.
 - USE FLANGE OR THREADED FITTINGS.
 - CONTRACTOR SHALL PROVIDE SINGLE CHECK VALVE AND BALL DRIP VALVE IN ACCESSIBLE LOCATION INSIDE DDC VAULT. COORDINATE WITH PLUMBING.

10 FIRE DEPARTMENT CONNECTION (FDC) DUAL PORT
SCALE: NTS



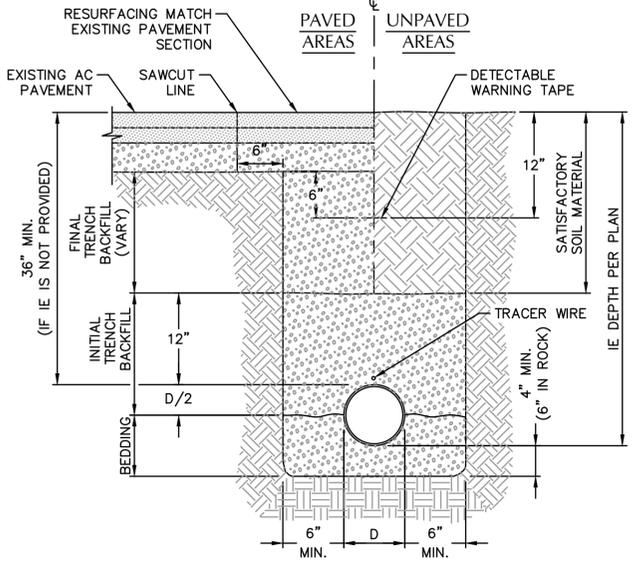
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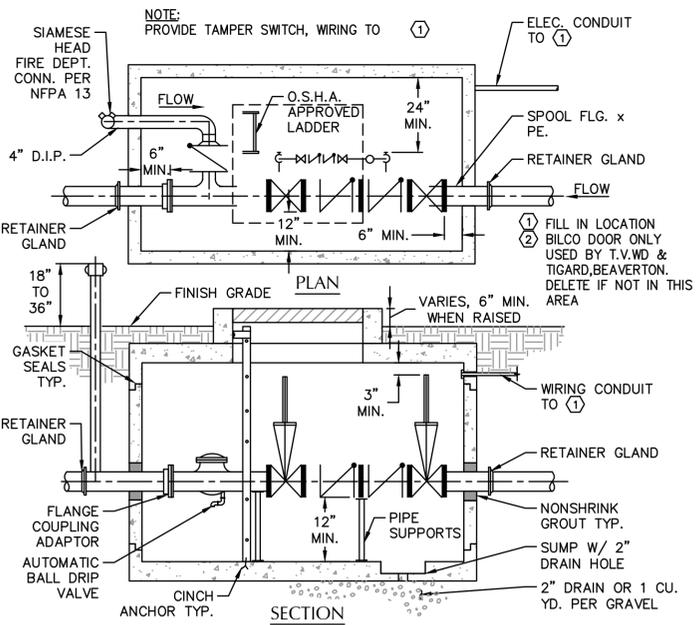
SHEET TITLE
DETAILS
DATE: 3/04/20
DRAWN: DAR
CHECKED: NWS
REVISIONS:

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SHEET NUMBER

C4.1

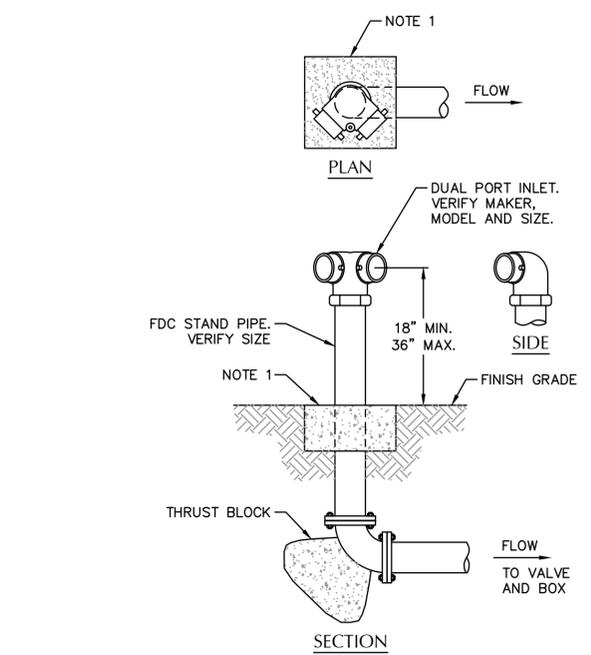


1 TYPICAL PIPE BEDDING AND BACKFILL
SCALE: NTS



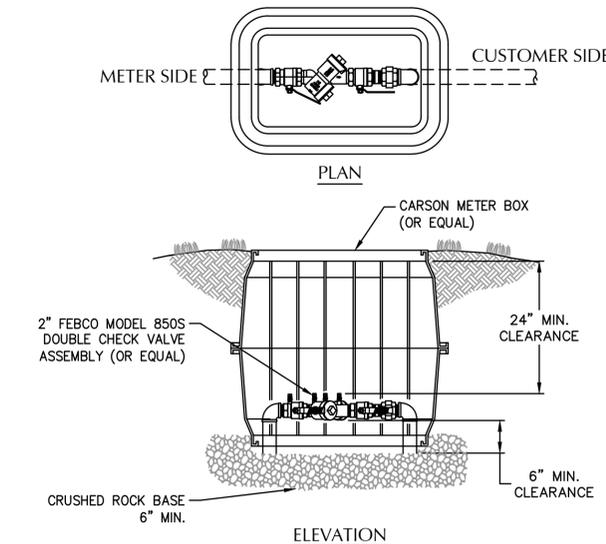
D.D.C. SIZE	UTILITY VAULT OR EQUAL WITH F.D.C.		BILCO DOOR OR EQUAL
	WITH F.D.C.	WITHOUT F.D.C.	
4"	676 - WA	577 - WA	J - 5AL
6"	687 - WA	676 - WA	J - 5AL
8"	5106 - LA	687 - WA	JD - 3AL
10"	5106 - LA	5106 - LA	JD - 3AL

2 DOUBLE DETECTOR CHECK FIRE SERVICE VAULT W/ DRAIN TO GROUND
SCALE: NTS



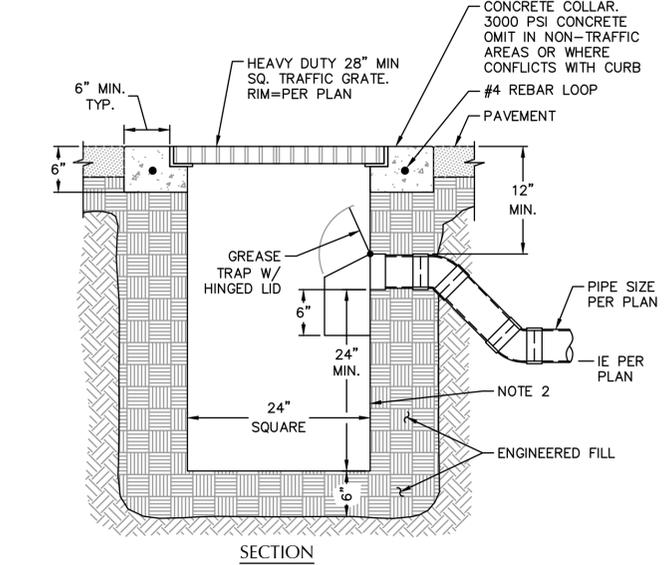
- NOTES:**
1. CONCRETE ANCHOR PAD TO BE 12"x12"x6" THICK, UNLESS NOTED OTHERWISE. ELIMINATE IF INSTALLED IN CONCRETE PAVED AREA.
 2. USE FLANGE OR THREADED FITTINGS.
 3. CONTRACTOR SHALL PROVIDE SINGLE CHECK VALVE AND BALL DRIP VALVE IN ACCESSIBLE LOCATION INSIDE DDCV VAULT. COORDINATE WITH PLUMBING.

3 FIRE DEPARTMENT CONNECTION (FDC) DUAL PORT
SCALE: NTS



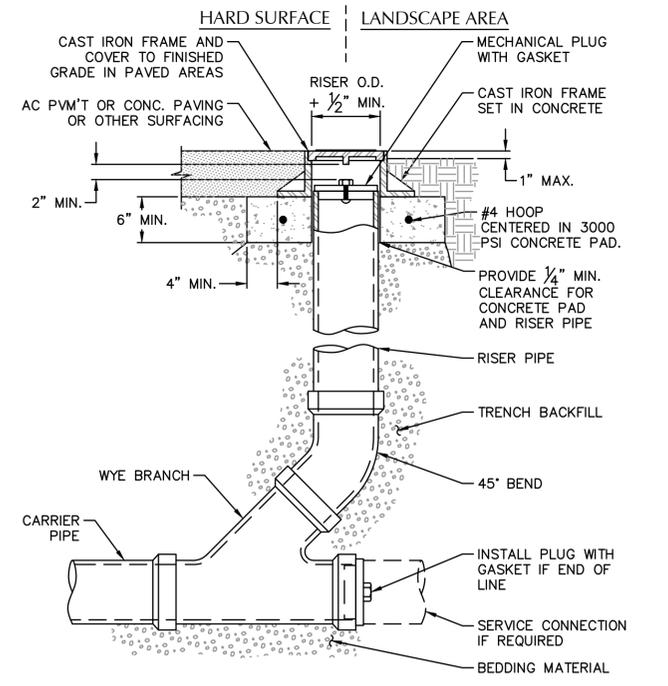
- NOTE:** INSTALLATION SHOWN IS ONLY A SUGGESTION. THE DISTANCE FROM BOTTOM OF DEVICE TO FINISH GRADE, FREEZE PROTECTION, AND CLEARANCE FOR TESTING & REPAIR ARE THE MAJOR CONSIDERATIONS FOR INSTALLATION. PLUGS TO BE INSTALLED IN TEST COCKS OF BELOW GROUND INSTALLATIONS (NO DISSIMILAR METALS). IF FREEZE PROTECTION IS PROVIDED, THE 24" MIN CLEARANCE MAY BE REDUCED.

4 DOUBLE CHECK BACKFLOW ASSEMBLY
SCALE: NTS



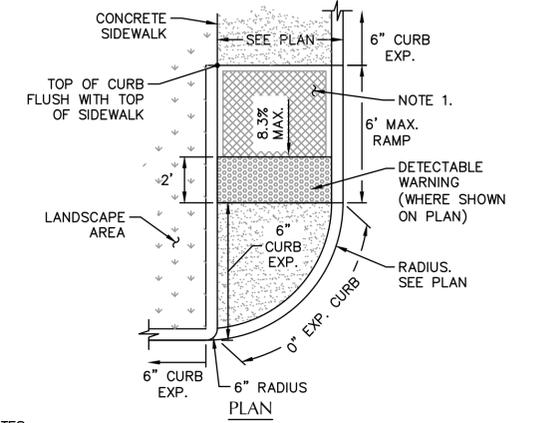
- NOTES:**
1. CONTRACTOR TO WIDEN EXCAVATION AS REQUIRED TO OBTAIN COMPACTION WITH CONTRACTORS COMPACTION EQUIPMENT.
 2. 1/4" STEEL PLATE, BITUMINOUS COATED. AS MANUFACTURED BY GIBSON STEEL BASINS OR APPROVED EQUAL.

5 TRAPPED CATCH BASIN
SCALE: NTS



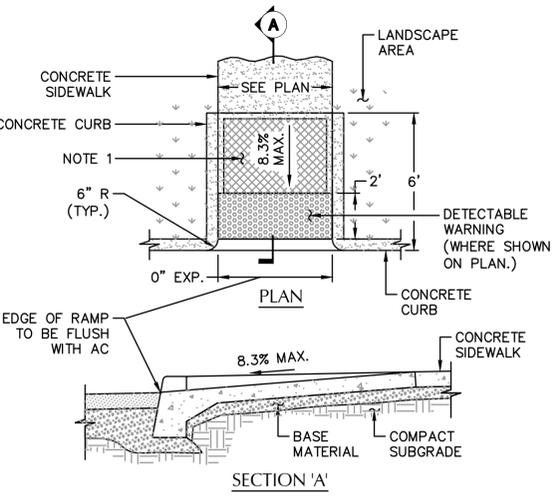
- NOTES:**
1. CAST IRON FRAME AND COVER SHALL MEET H-20 LOAD REQUIREMENT.
 2. FOR CARRIER PIPE SIZE 6"Ø AND LESS, PROVIDE RISER PIPE SIZE TO MATCH CARRIER PIPE.
 3. FOR CARRIER PIPE SIZE 8"Ø AND LARGER, RISER PIPE SHALL BE 6"Ø.
 4. RISER PIPE MATERIAL TO MATCH CARRIER PIPE MATERIAL.

6 STANDARD CLEANOUT (COTG)
SCALE: NTS



- NOTES:**
1. PROVIDE RAMP TEXTURING WITH AN EXPANDED METAL GRATE PLACED ON AND REMOVED FROM WET CONCRETE TO LEAVE A DIAMOND PATTERN. EACH DIAMOND SHALL BE 1 1/4" LONG BY 1/2" WIDE WITH THE LONG SECTION AXIS ORIENTED PERPENDICULAR TO THE CURB. THE GROOVES SHALL BE 1/8" DEEP BY 1/4" WIDE.

7 CURB RAMP - TYPE 2
SCALE: NTS



- NOTES:**
1. PROVIDE RAMP TEXTURING WITH AN EXPANDED METAL GRATE PLACED ON AND REMOVED FROM WET CONCRETE TO LEAVE A DIAMOND PATTERN. EACH DIAMOND SHALL BE 1 1/4" LONG BY 1/2" WIDE WITH THE LONG SECTION AXIS ORIENTED PERPENDICULAR TO THE CURB. THE GROOVES SHALL BE 1/8" DEEP BY 1/4" WIDE.

8 CURB RAMP - TYPE 3
SCALE: NTS

TREE PROTECTION NOTES:

- BEFORE WORK IS STARTED, INSTALL TREE PROTECTION FENCING. CONTACT THE PROJECT LANDSCAPE ARCHITECT FOR ASSISTANCE.
- REFER TO SECTION 16.42.050 TREE CUTTING AND PRESERVATION OF THE CITY OF HAPPY VALLEY CODE.
- NO ENCROACHMENT OF ANY KIND IS ALLOWED WITHIN THE TREE PROTECTION FENCE ZONE DURING CONSTRUCTION.
- INSTALL FENCE ON TREE SIDE OF EXISTING CURB FOR ALL TREES TO BE PRESERVED. ROOT PROTECTION ZONE IS AN AREA AROUND A TREE THAT IS BASED ON THE DIAMETER OF THE TREE CANOPY AND BETWEEN EXISTING CURBS AND PROPOSED SIDEWALK.
- FENCING SHALL BE 4-FOOT HIGH ORANGE CONSTRUCTION FENCE WITH METAL POSTS AND BE SECURED TO THE GROUND WITH 6-FOOT METAL POSTS. AVOID DRIVING POSTS OR STAKES INTO MAJOR ROOTS.
- FENCE SHALL BE INSTALLED PRIOR TO LAND CLEARING, FILLING OR ANY LAND ALTERATION AND SHALL REMAIN IN PLACE UNTIL AFTER CONSTRUCTION IS COMPLETE.
- NO EXCAVATION OR COMPACTION OF EARTH OR OTHER POTENTIALLY DAMAGING ACTIVITIES ALLOWED WITHIN THE PROTECTION FENCING.
- WORK WITHIN PROTECTION FENCE SHALL BE DONE MANUALLY. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE LIMITS OF THE FENCING.
- WITHIN CLEARING/GRADING LIMITS OR AT THE EDGE OF THE CLEARING/GRADING LIMITS, TREE PROTECTION MAY BE INSTALLED AROUND GROUPS OF TREES.
- DURING WORK, ANY ROOTS GREATER THAN TWO INCHES FOUND DURING EXCAVATION SHALL BE CLEANLY CUT. MULTIPLE ROOT PRUNING EVENTS FOR SINGLE TREES SHALL BE MANAGED & MONITORED BY THE PROJECT ARBORIST.
- AFTER CONSTRUCTION IS COMPLETE, PROJECT LANDSCAPE ARCHITECT SHALL VERIFY TREE PROTECTION FENCING CAN BE REMOVED.

TREE PROTECTION SIGNAGE:

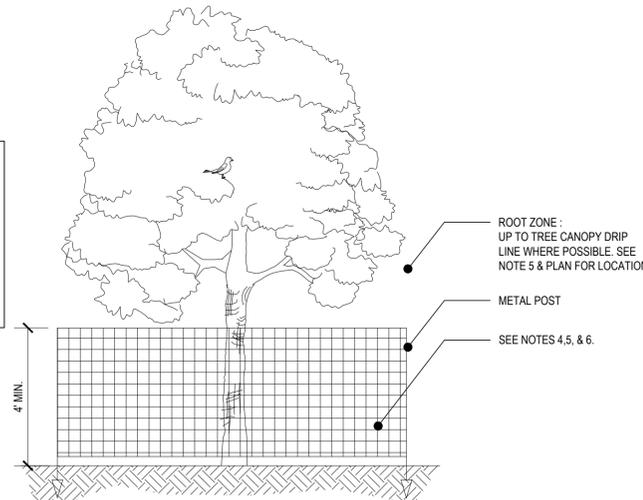
- ALL TREE PROTECTION FENCING SHALL HAVE SIGNAGE AS FOLLOWS SO THAT ALL CONTRACTORS UNDERSTAND THE PURPOSE OF THE FENCING.
- SIGNAGE SHALL BE PLACED EVERY 75 FEET OR LESS.

TREE PROTECTION ZONE

DO NOT REMOVE OR ADJUST THE LOCATION OF THIS TREE PROTECTION FENCING

UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES

PLEASE CONTACT THE PROJECT ARBORIST IF ALTERATIONS TO THE LOCATION OF THE TREE PROTECTION FENCING ARE NECESSARY.
TODD PRAGER, PROJECT ARBORIST, TERAGAN & ASSOCIATES, 971-295-4835



1 TREE PROTECTION FENCING DETAIL
L1.0 SCALE: NTS

LANDSCAPE REQUIREMENTS	
TOTAL SITE AREA	=108,578 SF
LANDSCAPE AREA REQUIRED 15% OF SITE	= 16,287 SF
LANDSCAPE ARE PROPOSED 17.3% OF SITE	= 18,778 SF
INTERIOR PKG. LOT LANDSCAPING REQ. 1 TREE PER 8 PKG. SPACES (36 SPACES)	= 4 TREES
PKG. LOT TREES PROPOSED	= 9 TREES
25 SF PER PKG. SPACE (36 SPACES)	= 900 SF
INTERIOR PKG. LOT LANDSCAPING PROPOSED	= 1,061 SF

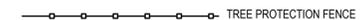
TREE SUMMARY

TREES EXISTING = 2
TREES TO BE REMOVED = 2
TREES TO REMAIN = 0
TREES PROPOSED = 25

LEGEND



TREE PROTECTION FENCE

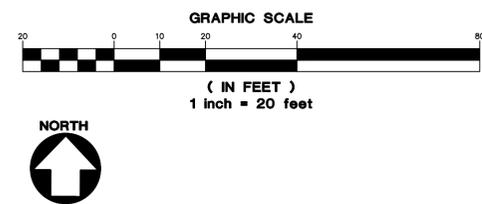
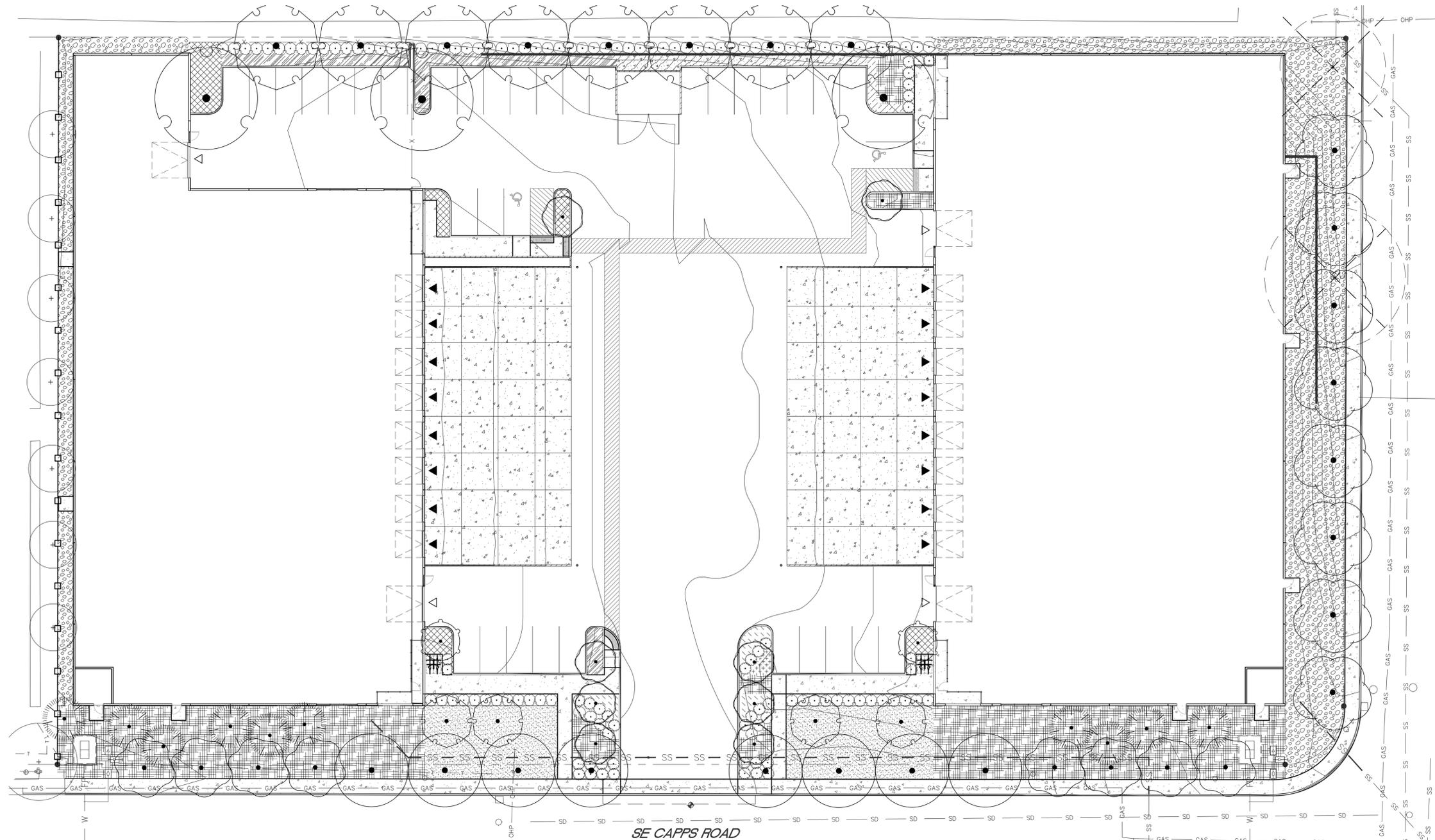


GENERAL NOTES

- CONTRACTOR SHALL CONTACT LANDSCAPE ARCHITECT AT LEAST TWO WEEKS PRIOR TO START OF LANDSCAPE WORK TO REVIEW PLANT SUBSTITUTIONS & JURISDICTIONAL REQUIREMENTS.

PLANTING NOTES

- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT CLACKAMAS COUNTY STANDARDS AND THE OREGON STRUCTURAL SPECIALTY CODE.
- VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION OF PROPERTY LINES, PRIOR TO BEGINNING ANY WORK. REPORT ANY DISCREPANCIES TO THE OWNER'S REPRESENTATIVE IMMEDIATELY.
- DO NOT WILLFULLY PROCEED WITH CONSTRUCTION WHEN UNKNOWN OBSTRUCTIONS AND/OR DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING DESIGN. IMMEDIATELY NOTIFY OWNER'S REPRESENTATIVE OF UNKNOWN OBSTRUCTIONS AND/OR DIFFERENCES. PRIOR TO REMOVING ANY EXISTING FEATURES, REVIEW AND CONFIRM EXTENT OF DEMOLITION WITH OWNER'S REPRESENTATIVE.
- PROTECT EXISTING ITEMS TO REMAIN DURING CONSTRUCTION. ANY DAMAGE TO EXISTING ITEMS DESIGNATED TO REMAIN I.E. CURBS, WALKS, PLANT MATERIAL, LAWN OR FENCES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES, LINES, PIPES, VAULTS, OR BOXES PRIOR TO EXCAVATION. MARK AND PROTECT ALL UTILITIES, SITE FEATURES AND VEGETATION TO REMAIN IN PLACE. ANY DAMAGE TO ANY KNOWN EXISTING UTILITY ELEMENTS SHALL BE REPAIRED PROPERLY AND IMMEDIATELY.
- REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND EXCAVATED MATERIAL NOT REQUIRED FOR FILL. NO RUBBISH OR DEBRIS SHALL BE BURIED ON THE SITE.
- MAINTAIN ALL ROADWAYS AND PAVED PATHWAYS CLEAN AND FREE OF CONSTRUCTION MATERIALS AND DEBRIS, PROVIDING NECESSARY DUST CONTROL WHERE REQUIRED.
- COORDINATE AND SCHEDULE ALL WORK WITH THE OWNER'S REPRESENTATIVE.
- INSTALL EROSION CONTROL SYSTEMS IN ACCORDANCE WITH CLACKAMAS COUNTY STANDARDS PRIOR TO SITE WORK AND LANDSCAPE INSTALLATION.
- CONTRACTOR SHALL PROVIDE TOPSOIL, SOIL AMENDMENTS, AND EROSION CONTROL.
- CONTRACTOR SHALL SUBMIT CERTIFIED TOPSOIL ANALYSIS REPORT FOR OWNER'S APPROVAL PRIOR TO PLANT INSTALLATION. SEE SPECS.
- CONTRACTOR IS RESPONSIBLE FOR ANY AMENDMENTS TO SOIL PH FERTILITY AND/OR DRAINAGE CONDITIONS NECESSARY TO ENSURE PROPER GROWING CONDITIONS FOR PROPOSED PLANTINGS. SEE SPECS.
- CONTRACTOR SHALL FOLLOW PROVIDER'S INSTRUCTIONS AND RECOMMENDATIONS FOR SEEDING.
- ALL PLANTS SHALL BE INSTALLED ACCORDING TO AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1) AS WELL AS DETAIL DRAWINGS AND SPECIFICATIONS.
- ALL PLANTS SHALL BE IRRIGATED BY A FULLY AUTOMATED, PERMANENT IRRIGATION SYSTEM UNLESS OTHERWISE NOTED. SEE SPECS.
- CONTRACTOR SHALL INSTALL RAIN SENSORS AS PER MANUFACTURE'S INSTRUCTIONS AND RECOMMENDATIONS. VERIFY THE LOCATION WITH THE OWNER PRIOR TO INSTALLATION.
- CONTRACTOR SHALL DESIGN THE IRRIGATION SYSTEM AND PROVIDE OWNER WITH SHOP DRAWINGS FOR APPROVAL. SEE SPECS.
- PRIOR TO FINAL ACCEPTANCE, CONTRACTOR SHALL PROVIDE OWNER WITH AS-BUILT PLANS OF THE INSTALLATION, COPIES OF ALL OPERATION MANUALS AND WARRANTY DOCUMENTS.
- ALL NEW PLANTS IN LANDSCAPE AREAS SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.



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**SE CAPPS RD & SE
120TH AVE**
CLACKAMAS COUNTY, OR

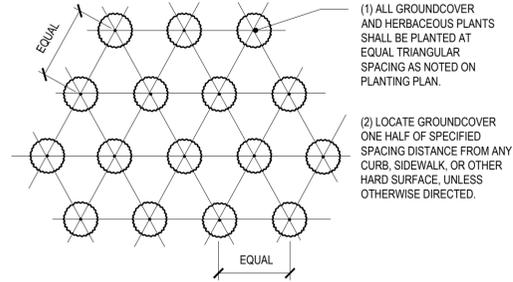
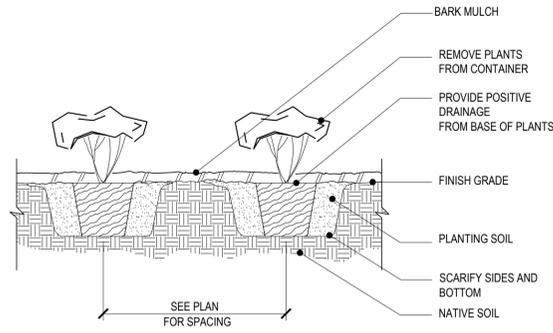
SHEET TITLE
**LANDSCAPE
PLAN**

DATE: 3/04/20
DRAWN: DAR
CHECKED: NWS
REVISIONS:

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SHEET NUMBER

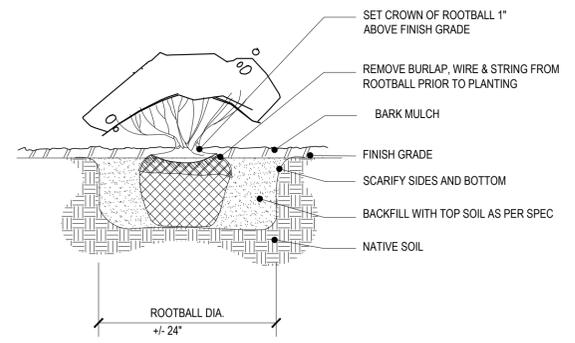
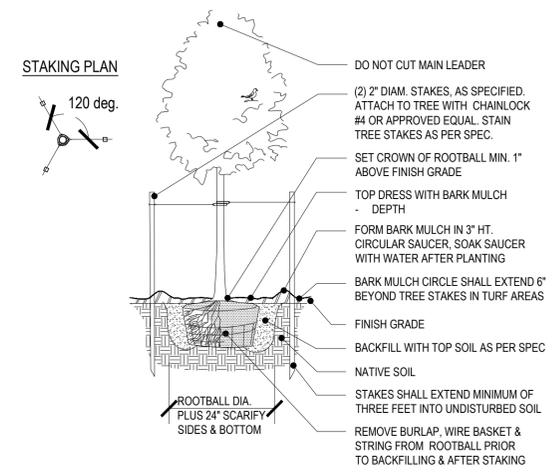
L1.0

JOB NUMBER: A20027.10



1 GROUNDCOVER & HERBACEOUS PLANT PLANTING DETAIL
L2.0 SCALE: NTS

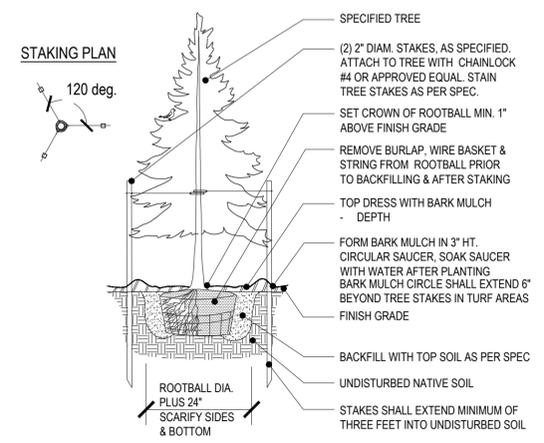
2 GROUNDCOVER & HERBACEOUS PLANT PLANTING PLAN
L2.0 SCALE: NTS



3 DECIDUOUS TREE PLANTING DETAIL
L2.0 SCALE: NTS

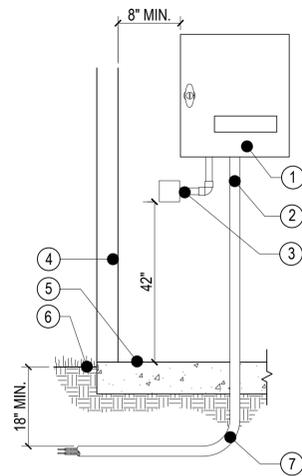
4 SHRUB PLANTING
L2.0 SCALE: NTS

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	
	AR	8	ACER RUBRUM 'FRANKSRED' TM	RED SUNSET MAPLE	2" CAL.	
	FP	3	FRAXINUS PENNSYLVANICA 'URBANITE'	URBANITE ASH	2" CAL.	
	PP	2	PARROTIA PERSICA 'JL COLUMNAR' P.A.F.	PERSIAN SPIRE PARROTIA	2" CAL.	
	PS	8	PRUNUS SUBHIRTILLA 'AUTUMNALIS'	AUTUMN FLOWERING CHERRY	2" CAL.	
PARKING LOT TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	
	ZG	4	ZELKOVA SERRATA 'GREEN VASE' LARGE	GREEN VASE SAWLEAF ZELKOVA	2" CAL.	
STREET TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	
	AS	8	ACER RUBRUM 'RED SUNSET'	RED SUNSET MAPLE	2" CAL.	
	GA	8	GINKGO BILOBA 'AUTUMN GOLD' TM	AUTUMN GOLD MAIDENHAIR TREE	2" CAL.	
	PB	9	PRUNUS SERRULATA 'ROYAL BURGUNDY'	ROYAL BURGUNDY CHERRY	2" CAL.	
EVERGREEN TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	
	TH	10	THUJA PLICATA 'HOGAN'	HOGAN CEDAR	8" HT.	
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	
	AE	45	ABELIA X GRANDIFLORA 'EDWARD GOUCHER'	GLOSSY ABELIA	1 GAL.	
	CB	38	CISTUS X CYPRIUS	BICOLOR ROCK ROSE	1 GAL.	
	VS	49	VIBURNUM TINUS 'SPRING BOUQUET'	SPRING BOUQUET LAURESTINUS	1 GAL.	
GROUND COVERS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
	AB	45	AJUGA REPTANS 'BRONZE BEAUTY'	BRONZE BEAUTY CARPET BUGLE	4" POT	12" o.c.
	FC	267	FRAGARIA CHILOENSIS	BEACH STRAWBERRY	4" POT	18" o.c.
	IL	47	ITEA VIRGINICA 'LITTLE HENRY' TM	VIRGINIA SWEETSPIRE	1 GAL.	24" o.c.
	LP	73	LONICERA PILEATA	PRIVET HONEYSUCKLE	1 GAL.	36" o.c.
	PT	157	PACHYSANDRA TERMINALIS	JAPANESE SPURGE	4" POT	18" o.c.
	RE2	182	RUBUS CALYCINOIDES 'EMERALD CARPET'	EMERALD CARPET CREEPING RASPBERRY	4" POT	24" o.c.
	TS	63	TEUCRIUM CHAMAEDRY'S 'SUMMER SUNSHINE'	GERMANDER	4" POT	14" o.c.
		2,384 SF	PT 757 FLEUR DE LAWN BLANCH			
		5,913 SF	PT665 POLLINATOR GARDEN & URBAN RECLAMATION MIX			
		6,859 SF	PT 662 PARTIAL SHADE WILDFLOWER MIX			



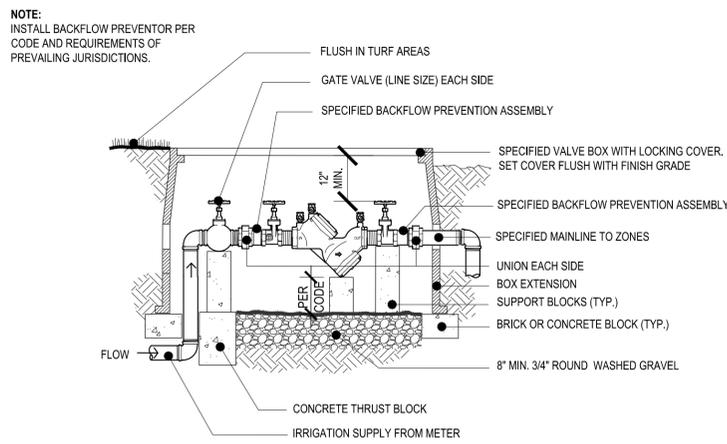
CONCEPT PLANT SCHEDULE		
	PT 757 FLEUR DE LAWN BLANCH	2,384 SF
	PT665 POLLINATOR GARDEN & URBAN RECLAMATION MIX	5,913 SF
	PT 662 PARTIAL SHADE WILDFLOWER MIX	6,859 SF

5 CONIFER TREE PLANTING DETAIL
L2.0 SCALE: NTS

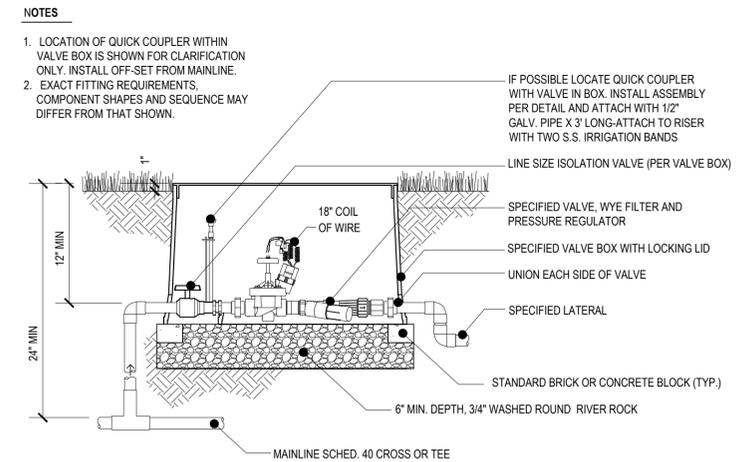


- LEGEND**
- ① AUTOMATIC CONTROLLER WITH LOCKING ACCESS DOOR.
 - ② 2" DIA. P.V.C. CONDUIT FOR COMMON AND CONTROL WIRES TO 5' BEYOND EDGE OF BUILDING.
 - ③ CONDUIT FOR 120 VOLT ELECTRICAL SERVICE WITH JUNCTION BOX.
 - ④ BUILDING WALL.
 - ⑤ BUILDING FLOOR.
 - ⑥ FINISH GRADE.
 - ⑦ SWEEP EL ON ALL ELECTRICAL CONDUIT.
- NOTES**
- 1 ALL WIRES TO BE INSTALLED AS PER LOCAL CODE.
 - 2 VERIFY LOCATION PRIOR TO INSTALLATION.
 - 3 INSTALL CONTROLLER PER MANUFACTURER'S INSTRUCTIONS.

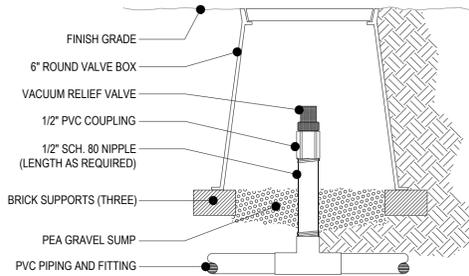
1 WALL MOUNTED CONTROLLER
SCALE: NTS



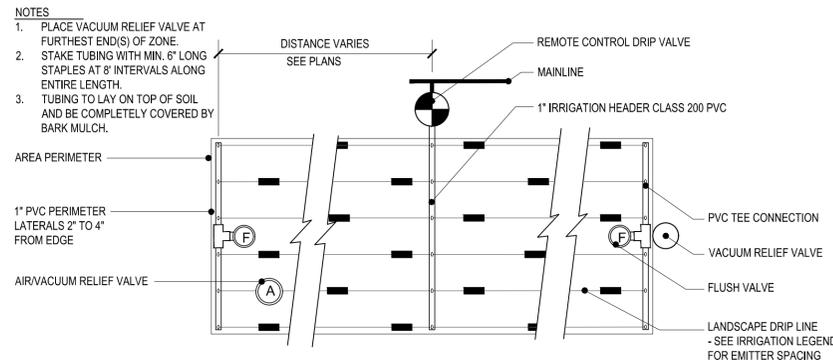
2 BACKFLOW PREVENTION DEVICE ASSEMBLY
SCALE: NTS



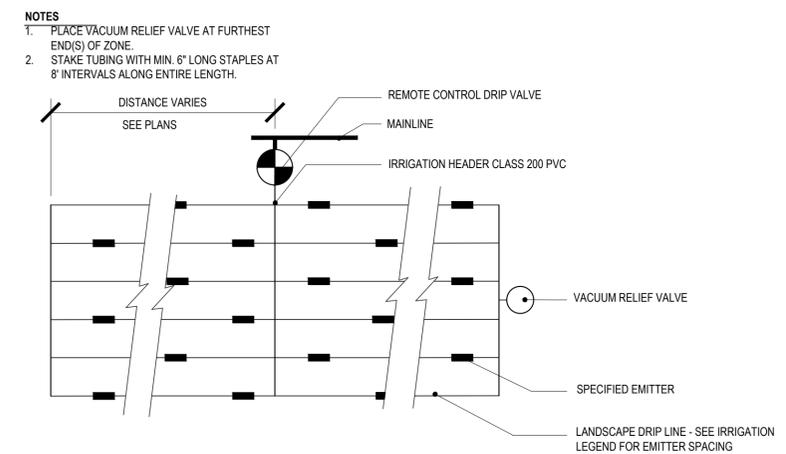
3 DRIP IR CONTROL VALVE ASSEMBLY
SCALE: NTS



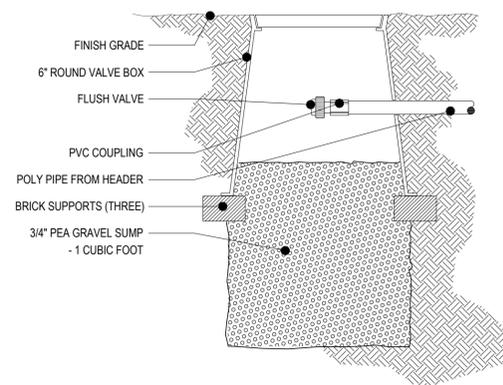
4 VACUUM RELIEF VALVE
SCALE: NTS



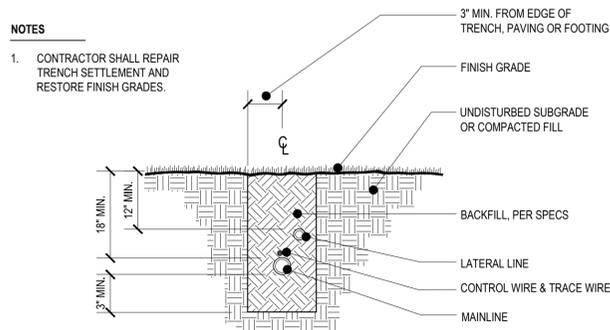
5 DRIPLINE LAYOUT DIAGRAM
SCALE: NTS



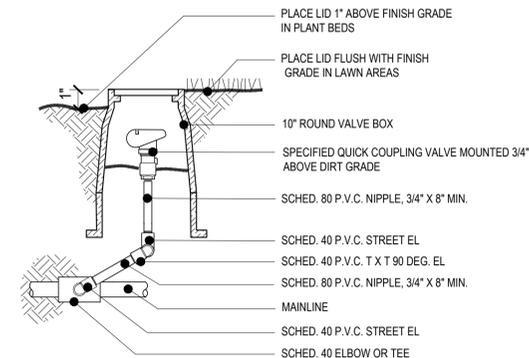
6 INLINE EMITTER TUBING INSTALLATION
SCALE: NTS



7 FLUSH VALVE
SCALE: NTS



8 IR TRENCHING DETAIL
SCALE: NTS



9 QUICK COUPLER VALVE DETAIL
SCALE: NTS

Landscape Construction Specifications

General

1. Municipal, County, State and Federal laws, regarding uses and regulations governing or relating to any portion of the work depicted on these plans are hereby incorporated into and made part of these specifications, and their provisions shall be carried out by the contractor.
2. The Contractor shall verify the locations of all existing utilities, structures, and services before commencing work. The location of utilities, structures, services shown on these plans are approximate only. Any discrepancies between these plans and the actual field conditions shall be reported to the Owner's representative.
3. The Contractor shall locate and protect all existing utilities, features and plants on and adjacent to the project site during construction. Contractor shall repair, at his own expense, all damage resulting from his operations or negligence.
4. The Contractor shall obtain all necessary valid licenses, permits, and insurance required to perform the work indicated herein before commencing work, and shall be responsible for coordinating work with all parties involved, including jurisdictional agencies.
5. The Contractor shall use all means necessary to protect the public at all times during the construction process.
6. In the event of conflict between pertinent codes, regulations, structural notes, and/or requirements, or the referenced standards of these Specifications, the provisions of the more stringent shall govern.
7. Weather Limitations: Soil work shall be performed only when the weather conditions do not detrimentally affect the quality of work.

Mandatory Site Inspection Schedule

1. Schedule for Mandatory site inspection procedures. The mandatory site inspections include but are not limited to the following:

Pre-Construction Site Meeting

Contractor shall be notified a minimum of 48 hours prior to meeting to review site conditions, proposed construction and construction schedule, and review construction specifications prior to commencement of construction operations.

Rough Grading Inspection

Contractor shall notify Owner's Representative a minimum 48 hours prior to request for inspection of rough soil grades. All rough grading operations shall be completed per specifications and prepared for inspection. No topsoil placement or backfilling in areas to be landscaped should occur until written approval by Owner's Representative has been issued.

Open Trench Irrigation Inspection

Contractor shall notify Owner's Representative 24 hours prior to inspection for written approval of irrigation trench depths, piping conditions, and pressure testing. (Refer to Irrigation Specification for inspection procedures)

Plant Material Inspection

Plant material quality and layout inspection and written approval shall occur with 24 hours notice to Owner's Representative prior to installation of any plant material. (Refer to Planting Specification for inspection procedures)

Final Landscape Areas and Irrigation Performance Inspection

Contractor shall notify Owner's Representative 48 hours prior to inspection for approval of landscape and irrigation work. Irrigation operations and coverage shall be inspected. Plant quality and layout shall be inspected. Written approval shall be issued upon inspection approval of specified construction. (Refer to relative specification sections)

Erosion Control

1. Provide and maintain positive drainage patterns throughout the construction process, and as directed by the Owner's Representative if weather or construction activity creates drainage conflicts detrimental to construction process or environmental conditions. Comply with jurisdictional requirements.
2. Maintain erosion measures throughout the landscaping process. Restore erosion control measures disturbed by landscaping operations. Remove only upon approval of Owner's Representative.

Invasive Weed Control Prior to Construction

1. Verify and identify conditions requiring eradication of invasive weeds and grasses prior to existing soil surface disturbance as directed by Owner's Representative. Stockpiled topsoil shall be treated to eradicate weeds prior to soil ripping and stockpiling. Weed eradication shall include herbicide and non-herbicide methods only administered by a currently licensed applicator. Eradication shall include and is not limited to elimination of the following invasive species from areas to be landscaped:

Cirsium arvense (Canadian Thistle) Lotus corniculatus (Bird's foot Trefoil)
Convolvulus spp. (Morning Glory) Lythrium salicaria (Purple Loosestrife)
Cytisus scoparius (Scotch Broom) Melilotus spp. (Sweet Clover)
Dipsacus sylvestris (Common Teasel) Myriophyllum spicatum (Eurasian Milfoil)
Equisetum spp. (Horsetail) Phalaris arundinaceae (Reed Canary Grass)
Festuca arundinaceae (Tall Fescue) Rubus discolor (Himalayan Blackberry)
Hedera helix (English Ivy) Solanum spp. (Nightshade)
Holcus canatus (Velvet Grass) Trifolium spp. (Clovers)
Lolium spp. (Rye Grasses)

Rough Grade Inspection

1. Conditions and quality of rough grade shall be inspected and approved by Owner's Representative prior to the commencement of specified work in areas to be landscaped. The contractor shall then be responsible for completion of activities specified herein, and defined on the plan.
2. In all plant bed areas the sub-grade shall be free of unsuitable material such as stumps, roots, rocks, concrete, asphalt, or metals, for a minimum depth of 24 inches, and in all lawn or seeded areas the sub-grade shall be free of unsuitable material for a minimum depth of 12 inches
3. The Owner's Representative, at their discretion, shall direct further rough grading or soil preparation if specified activities have not created a surface satisfactory for further work to commence. Compensation for additional surface work created by conditions unknown at the outset and as directed in writing by the Owner's Representative shall be negotiated at the time of the directive, and prior to the commencement of particular construction activities.

Finish Grading

1. Verify that rough grade in landscape areas is sufficiently below proposed final grade for planting beds and lawn areas to allow for placement of topsoil mix. Refer to grading plans for finish grade references. Verify that grades provide positive drainage at all landscape areas, and slope away from structures at a minimum of 2% slope. Final grades in all landscape areas shall be crowned at center to facilitate proposed drainage.

Installation Of Irrigation Sleeving

1. Sleeving conduit shall be installed at existing and proposed paved areas as per specifications, as directed by the Owner's Representative, or as irrigation installation requirements, prior to preparation for paving construction. Set piping to provide minimum covers of:

18-inch for sleeving beneath walkways;
24-inch for sleeving beneath vehicular traffic or structures.

Mark each end of sleeving with a 2 x 4 stake with 24" exposed, clearly marked 'SLEEVE LOCATION'. Contractor shall maintain staking identification and location throughout construction process. Protect all existing paving when installing sleeving. Restore all paving damaged by sleeve installation.

2. Size of sleeving conduit pipe shall be a minimum of two times the diameter of the bell end of the pipe that is to be fed into the sleeve.
3. Set sleeving in a compacted bed of material that will not damage the pipe during compaction of surface backfill material.

Design / Build Irrigation Specification

1.1 DESIGN BUILD SUBMITTALS AND REQUIREMENTS

- A. Design Criteria: Submitted plan shall meet the following criteria and shall be approved for construction only upon verification that all required criteria have been met.

1. Drawings submitted for design approval:

- a. Must clearly illustrate irrigation heads, dripline, valve, controller and point of connection locations. Individual valves and controllers shall be numbered sequentially. The size and maximum flow through each valve and capacity of each controller shall be clearly noted.
- b. Must clearly illustrate pipe sizes from all laterals and mainline pipe.
- c. Drawings must be to a standard measurable engineering scale that is at a minimum of 1"=30'-0".
- d. Drawings must be CAD generated.
- e. Drawings must include a legend that describes all symbols and materials represented on the plan.
- f. Drawings must clearly illustrate that the proposed irrigation system meets all performance criteria described by these specifications.
- g. Must utilize graphics that clearly distinguish between lateral and mainline pipe and sleeves under pavement; dripline; manual or automatic control valves, isolation valves and drain valves; irrigation controllers and all other equipment located on the plan.

- B. Irrigation system as designed and installed shall perform within the tolerances and specification of the specified manufacturers.

- C. The system shall be fully adjustable to fine-tune the system performance for specific zones. Indicate water pressure and gallonage parameters at available water source on the required submittal.

- D. Irrigation system shall be designed so that planting beds, sloped banks and lawn zones are on separate control valves to facilitate the different water requirements of each area.

- E. System shall be designed to supply manufacturer's specified minimum operating pressure to furthest emitter from water meter. Water flow through piping shall not exceed a velocity of 5 feet per second.

- F. System shall furnish components to allow operation within manufacturer's specified tolerances for optimum performance. Undersized components shall not be approved for installation.

5. Upon completion of the irrigation system installation and as a condition of its acceptance, deliver to the Owner's representative the following "As- built" drawings; Three prints and one reproducible sepia of all changes to the irrigation system including a Controller Zone Reference chart. Instruct owner of system components operation, system winterization, and controller adjustment processes. Instruct owner of precipitation requirements and schedule of anticipated controller adjustments as landscape matures.

6. Protect existing buildings, walls, pavements, reference points, monuments, and markers on this site. Verify location of and protect all utilities. Protect adjacent property. Protect work and materials of other trades. Protect irrigation system materials before, during, and after installation. In the event of damage, repair or replace items as necessary to the approval of the Owner's representative and at no additional cost to the Owner. Use all means necessary to protect the public from injury at all times.

7. Provide warranty for all installed materials and work for one year beyond the date of final acceptance of the irrigation system installation.

8. Verify gallonage, pressure, size, and location of service water line. The Contractor shall guarantee an irrigation system that functions to manufacturer's specifications with the source volume and pressure afforded to site. Make arrangements for water shut-off during construction if necessary, notify owner 24 hours prior to suspension of water service.

9. Irrigation trenches shall be a depth to provide a minimum cover of 18 inches for sleeving beneath walkways; 18 inches for all pressurized main lines; 36 inches for sleeving beneath asphalt paving, and 12 inches for all lateral lines. Backfill with clean fill void of material injurious to system components. All sleeving under vehicular traffic to be Class 200 PVC, all other sleeving shall be class 200 PVC. Locate top of zone valves a minimum of 6" below finish grade.

10. Combine wire and piping where possible.

11. Contractor shall follow manufacturer's instructions for solvent welding of PVC pipe and fittings to achieve tight and inseparable joints. Utilize single wrap Teflon tape at all threaded joints.

12. Install all valves with fittings that facilitate maintenance removal and place valve boxes at location that are easily serviced but not in conspicuous locations. Locate in planting beds wherever possible, away from mower, edger, or de-thatcher operations.

13. Contractor shall install one manual drain valve at discharge side of each remote control valve and at all low points in mainline pipe so as to allow for complete drainage of all main lines. Mark with a painted sleeve cover and indicate locations on As-Built drawings.

14. Contractor shall provide backflow prevention as required per local and state codes, installed as per manufacturer's specifications.

15. Contractor shall install irrigation controller in accordance with manufacturer's specifications. Verify a 120 V.A.C. electrical source and a min. 1 1/2" conduit from controller location open to all electrical zone valves in field. Weatherproof any exterior wall penetrations.

16. Automatic Controller: Rainbird or Hunter capable of meeting Water Sense EPA Criteria or approved equal. Controller shall have ability for all zones to fully operate and meet both normal and specified low volume system requirements as specified herein, and as required by site conditions. Coordinate location in field with owner's representative.

17. Install all wire in accordance with manufacturer's specifications with a minimum of 18 inch looped inside valve box at each remote control valve and at the controller. All splices shall occur within valve boxes with water-proof connectors.

18. Contractor shall install all sprinkler heads with flexible risers, using flexible polyethylene pipe not to exceed 18 inches in length or PVC swing joints. Tee fittings shall extend horizontally from pipe.

19. Contractor shall thoroughly flush irrigation system after piping, risers, and valves are installed but prior to installing sprinkler heads. Thoroughly clean, adjust and balance the installed irrigation system. Adjust spray pattern of nozzles to minimize throw of water onto buildings, walls, roads and parking lots. Adjust controller for optimum performance and precipitation rates utilizing proper water conservation measures.

Topsoil Placement and Soil Preparation

1. Contractor shall submit certified topsoil analysis report for owner's approval prior to plant installation.

2. Contractor is responsible for any amendments to soil PH, fertility and/or drainage conditions necessary to ensure proper growing conditions for proposed planting.

3. Topsoil shall be friable soil from existing stockpiled material or imported, with added soil amendments as specified. It shall not be delivered while in a frozen or muddy condition. Protect from erosion at all times. Utilize existing stockpiled topsoil only under the direction of the Owner's Representative. Do not place topsoil in areas that have not been cleared of weeds listed herein. Topsoil shall meet the following requirements:

- a. Free of roots and rocks larger than 1/2 inch,
- b. Free of subsoil, debris, large weeds, foreign matter and any other material deleterious to plant material health.
- c. Acidity range (pH) of 5.5 to 7.5.
- d. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter with decaying matter of 25 percent content by volume or less.
- e. Textural gradations shall be sand: 45-75%; silt: 15-35%; clay: 05-20%.

4. Commercial fertilizer shall be an organic base, complete fertilizer containing in available form by within a minimum of 10N 10P 5K - with 50 percent of the available nitrogen in slow-release formula, Webfoot Organic Delux, or approved equal.

5. Compost shall be yard debris compost meeting industry and jurisdictional standards.

6. Contractor shall remove all debris, rocks one inch in diameter or larger, sticks, mortar, concrete, asphalt, paper, contaminated soil and any material harmful to plant life, in all planting areas.

7. Contractor shall rototill subgrade six (6) inches deep before placing topsoil. Specified imported topsoil shall be placed at a minimum depth of 12" in all planting areas. Do not place material during wet conditions. Do not work saturated soils in any manner. floated to a level, sloped or mounded grade between any existing or constructed point on the site, such as curbs, walls, walks, paving and the like. Final soil grades in planting beds shall be 2" below adjacent paving and curbs for mulch application.

8. Distribute following soil amendments to all landscape areas in even layers and power rototill or spade to a minimum depth of six (6) inches into topsoil, as follows;

Planting Beds:

- a. Compost: Apply nine cubic yards per 1000 sq. ft.
- b. Commercial Fertilizer: Apply 50 pounds per 1000 sq. ft.

9. Preparation of backfill planting soil mix shall be as follows:

Thoroughly blend and mix the following proportion of materials while in a moist condition:

- Three cubic yards topsoil
- 1 1/2 cubic yards compost
- 1 1/2 cubic yards medium bark,
- 10 pounds commercial fertilizer
- Five pounds bonemeal

10. Keep project free from accumulation of debris, topsoil and other material. At completion of each area of work, remove debris, equipment and surplus materials. Any paved area or surfaces stained or soiled from landscaping materials shall be cleaned with a power sweeper using water under pressure. Building surfaces shall be washed with proper equipment and materials as approved by the Owner's representative.

Seed Installation

1. Seeding operations shall occur only between March 15 and October 15.

2. Seeding is not permitted during cold weather (less than 32 degrees F), hot weather (greater than 80 degrees F), when soil temperature is less than 55 degrees F, when ground is saturated, or when wind velocity is greater than 10 mph.

3. Contractor shall float rough graded seedbed. Do not disturb natural drainage patterns. Remove rocks, clumps, or debris at surface. Lightly scarify surface.

4. Contractor shall apply 10 pounds commercial fertilizer per 1,000 square feet of surface area before spreading seed.

5. Lawn Seed: Contractor shall manually broadcast or hydro-seed eight pounds of Sunmark "Northwest Supreme Lawn Mix" grass seed per 1,000 square feet.

6. Fieldgrass Seed: Contractor shall manually broadcast or hydro-seed eight pounds of Sunmark "Diamond Green" grass seed per 1,000 square feet.

7. The Contractor shall protect and maintain the seeded area by fencing, watering, feeding, reseeding, mowing and repairing as necessary to establish a thick, uniform stand of grass acceptable to the Owner's representative. Contractor to maintain lawn for a minimum of 3 mowings.

Trees, Shrubs, & Groundcover Installation

1. Contractor shall guarantee materials and workmanship in general landscape areas for one year from date of conditional acceptance. Plant material shall be in accordance with American Standard for Nursery Stock (ANSI Z60.1), shall comply with State and Federal laws with respect to inspection for insect infestation and plant diseases and shall be free of insect pests and plant diseases.

2. Plant materials shall have a minimum of 6 inches of prepared soil under the root ball, and a minimum of 6 inches on each side of the root ball. Tree roots or root ball shall have a minimum of 12 inches of plant soil under the root ball and a minimum of 12 inches on each side of the root ball, or roots. Final grade should maintain root ball slightly above surrounding grade (not to exceed one inch) for bark mulch installation.

3. Root control barrier shall be installed in trenches, alongside hardscape structures and utility lines such as sidewalks, curbs, pavement, walls, and concrete located within 5 feet of new trees measured from the trunk. Root barrier is to be 40 - 60 mil HDPE, minimum 18" deep and extend 10' in either direction measured from the center of the trunk.

4. Mulch all planting beds after planting, final raking, grading and leveling of the planting beds with a layer of Hem/Fir medium screened bark mulch as specified on the plans.

5. Balled and burlapped trees, boxed trees or bare root trees shall be either guyed or staked as detailed on the plans.

6. Remove all dead or dying branches and criss-crossing branches from trees. Do not cut leader.

7. Keep project free from accumulation of debris, topsoil and other material. At completion of each area of work, remove debris, equipment and surplus material. All paved areas or surfaces stained or soiled from landscape material shall be cleaned with a water-pressure power sweeper. Building surfaces shall be washed with proper equipment and materials as approved by the Owner.

8. River Rock Mulch: River rock mulch shall be minimum 3/4" to maximum 1-1/2" diameter washed round river rock, uniform in size. All fines shall be screened from the aggregate within a one-quarter inch (1/4") tolerance. Color shall be white to light brown. Contractor shall provide the owner with samples of river rocks for approval prior to installation.

Maintenance

1. Contractor shall maintain general landscape areas for one year after accepted completion of project.

2. Maintenance shall include; all grade resettlement, weeding, policing and removal of plant material debris during maintenance period. Remove and replace dead plant material as needed at no cost to owner for maintenance period. Seasonal leaf fall removal is outside the scope of this maintenance specification.

3. Any unsatisfactory condition arising during this maintenance period shall be brought to the attention of the Owner's Representative immediately.

REGISTERED
552

Teresa Katherine Long
OREGON
5-14-04

LANDSCAPE ARCHITECT

AAI
aai@aaiconsultants.com
ENGINEERING
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SE CAPPS RD & SE
120TH AVE
CLACKAMAS COUNTY, OR

SHEET TITLE

DATE: 3/04/20

DRAWN: DAR

CHECKED: NWS

REVISIONS:

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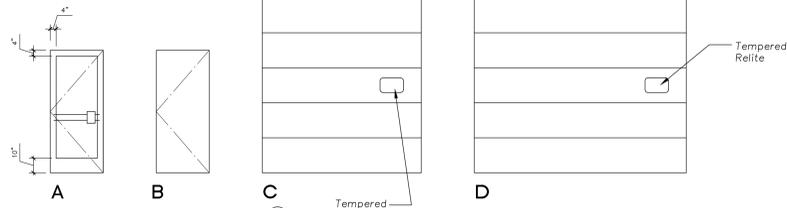
SHEET NUMBER

LANDSCAPE &
IR SPECS
L3.0

JOB NUMBER: A20027.10

03/23/2020 - DESIGN REVIEW SUBMITTAL

Door Types



Door Schedule

MARK	NOMINAL SIZE			Type	DOOR		FRAME		GLAZING	HRDW.	REMARKS
	WIDTH	HEIGHT	THICK		MAT'L	FINISH	MAT'L	FINISH			
101	3'-0"	7'-0"	1 3/4"	A	AL	CLR	AL	CLR	T	1	---
102	12'-0"	14'-0"	1 3/4"	D	STL	P	---	---	T	---	---
103	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	2	---
104	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
105	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
106	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
107	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
108	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
109	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
110	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
111	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
112	3'-0"	7'-0"	1 3/4"	B	HM	P	---	---	T	---	---
113	12'-0"	14'-0"	1 3/4"	D	STL	P	---	---	T	---	---
114	3'-0"	7'-0"	1 3/4"	A	AL	CLR	AL	CLR	T	1	---
115	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	3	---
116	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	3	---
117	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	3	---
118	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	4	---
119	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	3	---

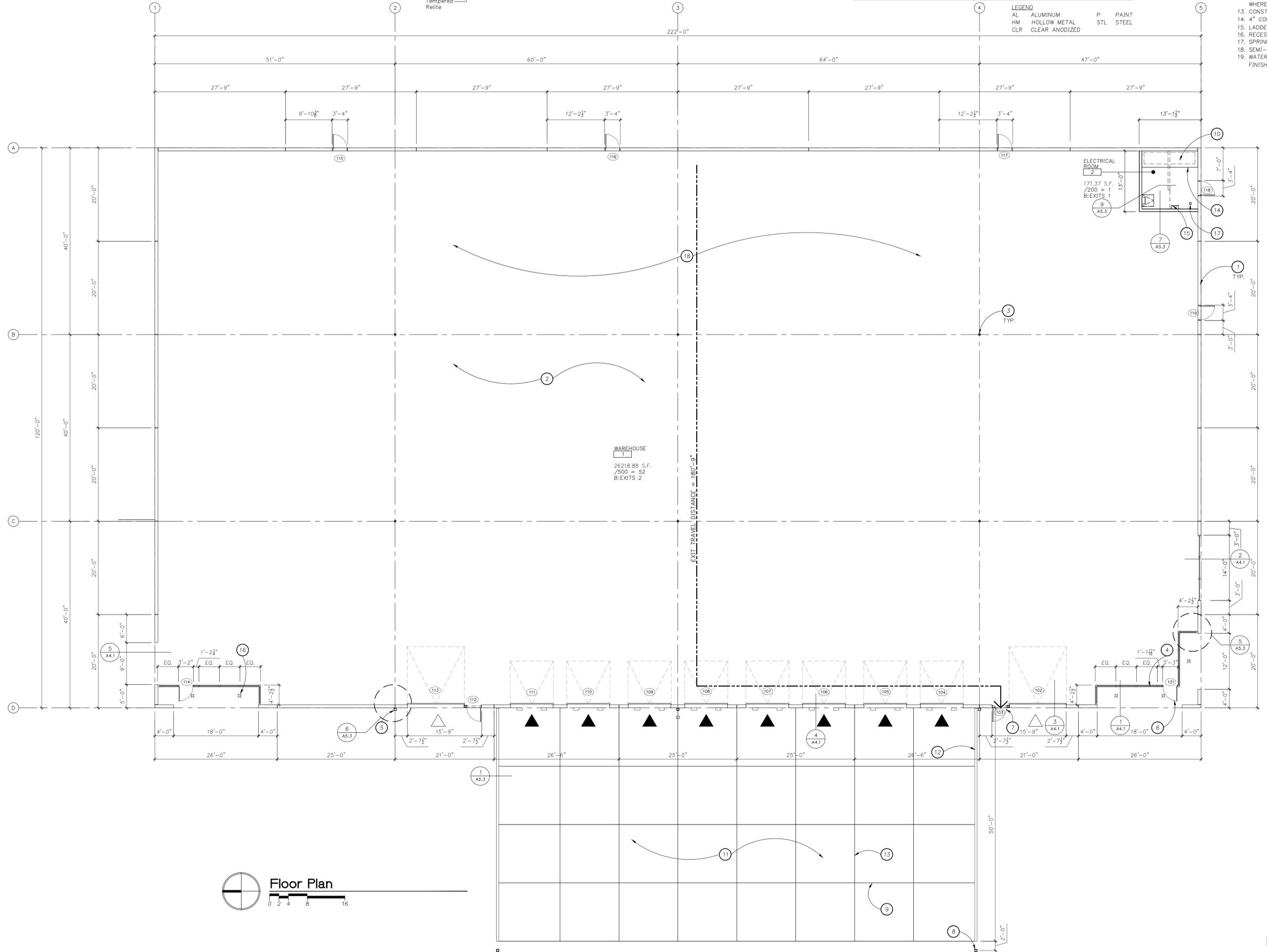
LEGEND
 AL ALUMINUM P PAINT
 HM HOLLOW METAL STL STEEL
 CLR CLEAR ANODIZED

Keynotes

1. CONCRETE TILT-UP WALL
2. SLAB ON GRADE
3. TS COLUMN - SEE STRUCTURAL
4. ALUMINUM STOREFRONT SYSTEM WITH 1" INSULATED GLAZING
5. 6"x6" DOWNSPOUT TYPICAL
6. STOREFRONT DOOR
7. HOLLOW METAL PERSONNEL DOOR WITH TRANSOM ABOVE WITH HOLLOW METAL FRAME
8. 6"Ø CONCRETE-FILLED PIPE BOLLARD, TYPICAL AT END OF DOCK WALLS - SEE DETAIL 13/A5.1
9. SAW CUT CONTROL JOINT
10. 800 AMP SERVICE ELECTRICAL ROOM WITH PLATFORM ABOVE AND ROOF ACCESS LADDER - SEE DETAILS ON SHEET A5.3
11. CONCRETE TRUCK APRON - SEE STRUCTURAL
12. CONCRETE RETAINING WALL WITH 3'-6" CONCRETE GUARDRAIL WHERE CHANGE IN GRADE IS OVER 30"
13. CONSTRUCTION JOINT
14. 4" CONCRETE HOUSEKEEPING PAD
15. LADDER TO PLATFORM - SEE DETAIL 8/A5.3
16. RECESSED LIGHT TYPICAL
17. SPRINKLER RISER
18. SEMI-CONDITIONED SPACE (FREEZE PROTECTION)
19. WATER PROOFING WHERE EXTERIOR GRADE IS HIGHER THAN FINISHED FLOOR - SEE DETAILS 12/A5.3, 13/A5.3, 14/A5.3

MILDREN DESIGN GROUP
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 503.534.4552

REGISTERED ARCHITECT
 ARI-12079
 STATE OF OREGON



Owner:
Millersburg Land Development

PO Box 2375
 Clackamas, Oregon 97015

Project:
SE120th Ave & SE Capps Road

SE 122nd Ave.
 Clackamas, Oregon

Sheet Title:
Building 1 Floor Plan

Revisions:

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 Date: 4 March 2020
 Drawn by: BK Checked by: CLT
 Job Number: 119161
 Sheet

Keynotes

1. SKYLIGHT TYPICAL - SEE DETAIL 7/A5.2
2. ROOF HATCH - SEE DETAIL 10/A5.3
3. PARAPET TYPICAL
4. RIDGE
5. SCUPPER AND 6"x6" DOWNSPOUT
6. BUILT-UP ROOFING - SEE DETAIL 5/A5.2 FOR PENETRATIONS
7. VALLEY



Owner:
**Millersburg
Land
Development**

PO Box 2375
Clackamas, Oregon 97015

Project:
**SE120th Ave &
SE Capps Road**

SE 122nd Ave.
Clackamas, Oregon

Sheet Title:
**Building 1
Roof Plan**

Revisions:

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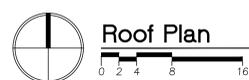
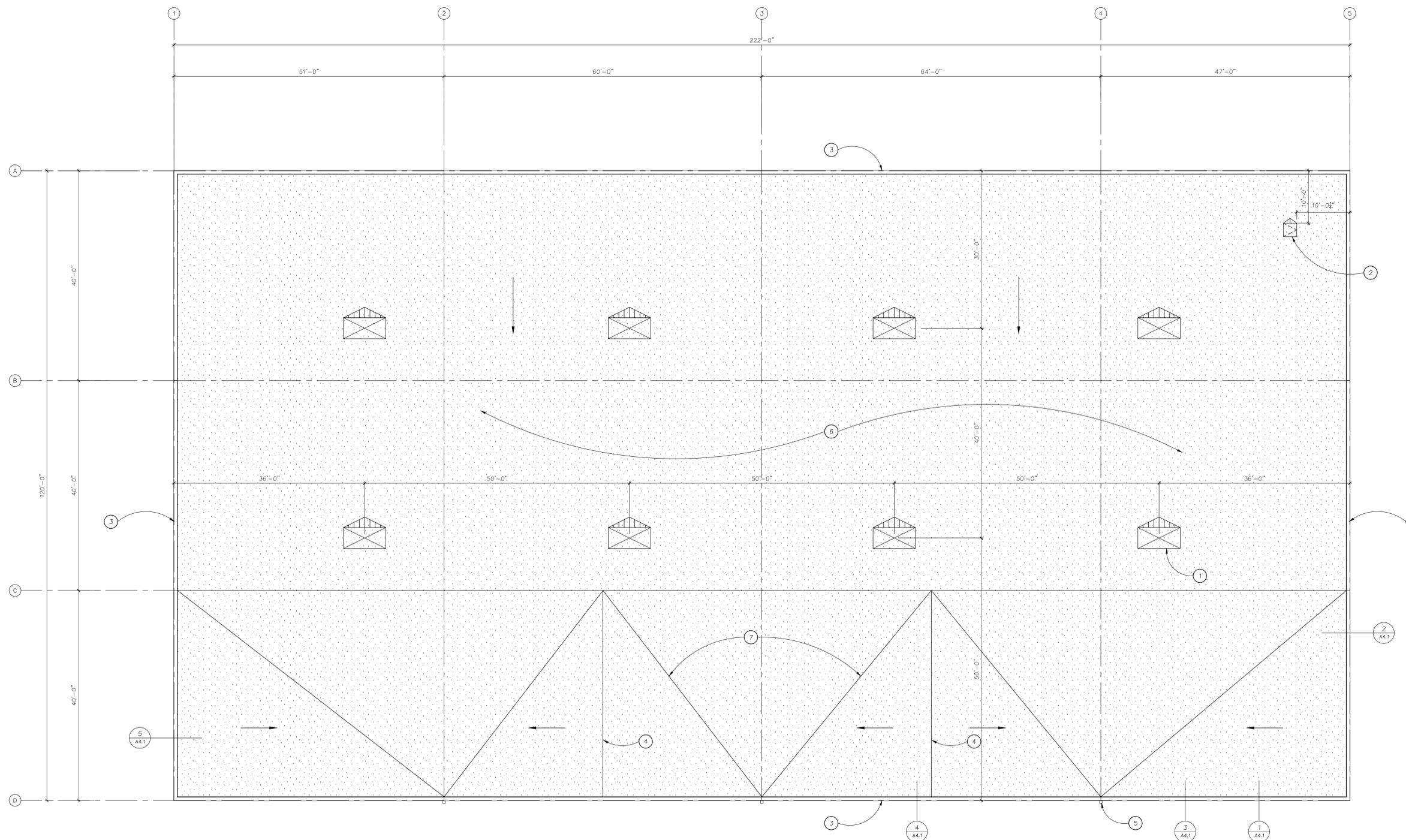
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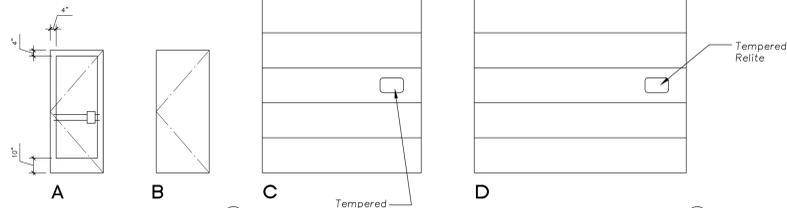
Job Number: 119161

Sheet



Roof Plan

Door Types



Door Schedule

MARK	NOMINAL SIZE			Type	DOOR		FRAME		GLAZING	HRDW.	REMARKS
	WIDTH	HEIGHT	THICK		MAT'L	FINISH	MAT'L	FINISH			
201	3'-0"	7'-0"	1 3/4"	A	AL	CLR	AL	CLR	T	1	---
202	12'-0"	14'-0"	1 3/4"	D	STL	P	---	---	T	---	---
203	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	2	---
204	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
205	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
206	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
207	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
208	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
209	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
210	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
211	9'-0"	10'-0"	1 3/4"	C	STL	P	---	---	T	---	---
212	3'-0"	7'-0"	1 3/4"	A	AL	CLR	AL	CLR	T	1	---
213	12'-0"	14'-0"	1 3/4"	D	STL	P	---	---	T	---	---
214	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	2	---
215	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	4	---
216	3'-0"	7'-0"	1 3/4"	B	HM	P	HM	P	---	3	---

Keynotes

1. CONCRETE TILT-UP WALL
2. SLAB ON GRADE
3. TS COLUMN - SEE STRUCTURAL
4. ALUMINUM STOREFRONT SYSTEM WITH 1" INSULATED GLAZING
5. 6"x6" DOWNSPOUT TYPICAL
6. STOREFRONT DOOR
7. HOLLOW METAL PERSONNEL DOOR WITH TRANSOM ABOVE WITH HOLLOW METAL FRAME
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16. RECESSED LIGHT TYPICAL
17. SPRINKLER RISER
18. SEMI-CONDITIONED SPACE (FREEZE PROTECTION)

Owner:
Millersburg
Land
Development

PO Box 2375
Clackamas, Oregon 97015

Project:
SE120th Ave &
SE Capps Road

SE 122nd Ave.
Clackamas, Oregon

Sheet Title:
Building 2
Floor Plan

Revisions:

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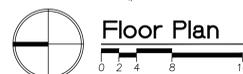
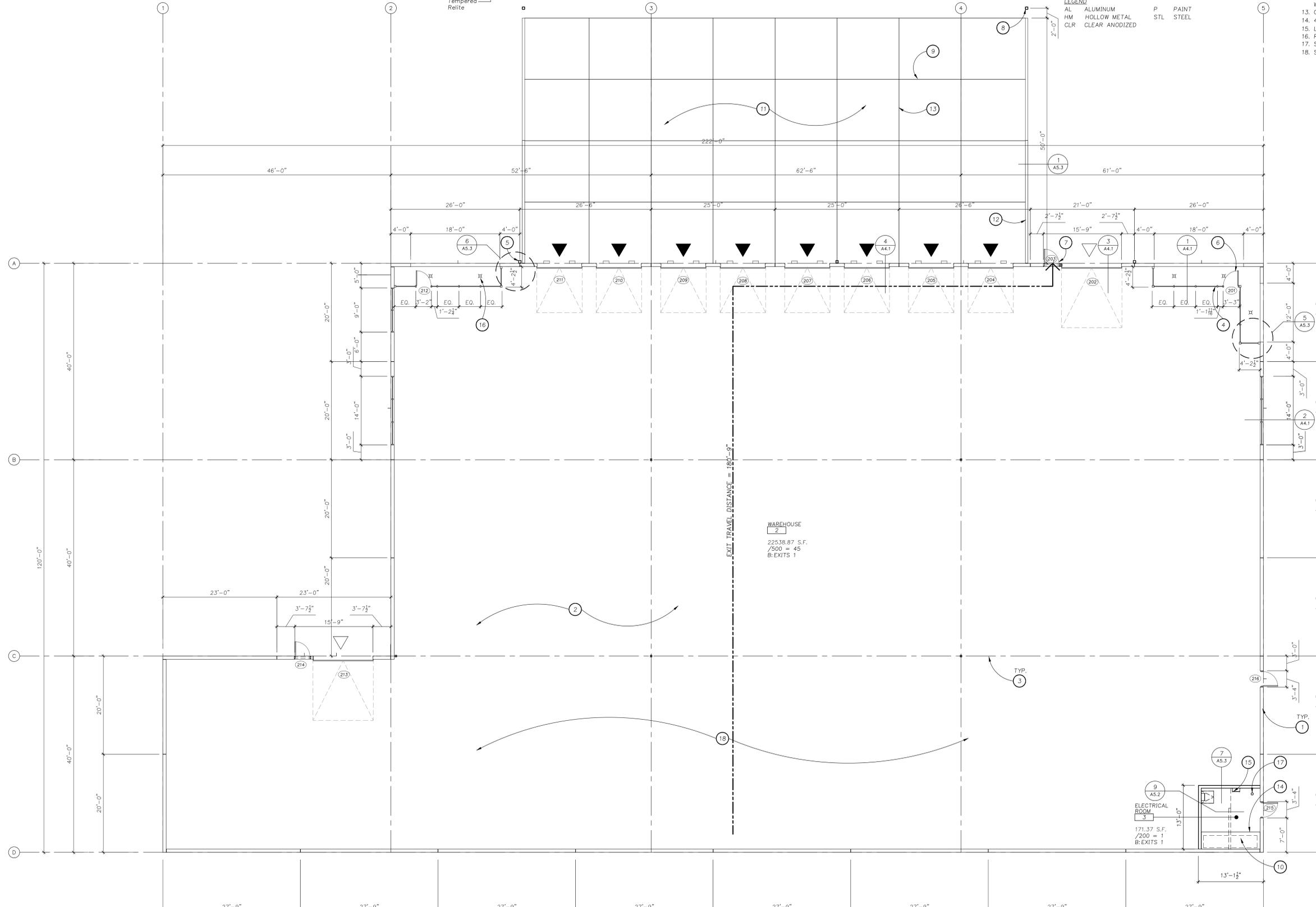
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Date: 4 March 2020

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Job Number: 119161

Sheet



Keynotes

1. SKYLIGHT TYPICAL - SEE DETAIL 7/A5.2
2. ROOF HATCH - SEE DETAIL 10/A5.3
3. PARAPET TYPICAL
4. RIDGE
5. SCUPPER AND 6"x6" DOWNSPOUT
6. BUILT-UP ROOFING - SEE DETAIL 5/A5.2 FOR PENETRATIONS
7. VALLEY
8. FIRE PARAPET - SEE DETAIL 2/A5.2



Owner:
**Millersburg
Land
Development**

PO Box 2375
Clackamas, Oregon 97015

Project:
**SE120th Ave &
SE Capps Road**

SE 122nd Ave.
Clackamas, Oregon

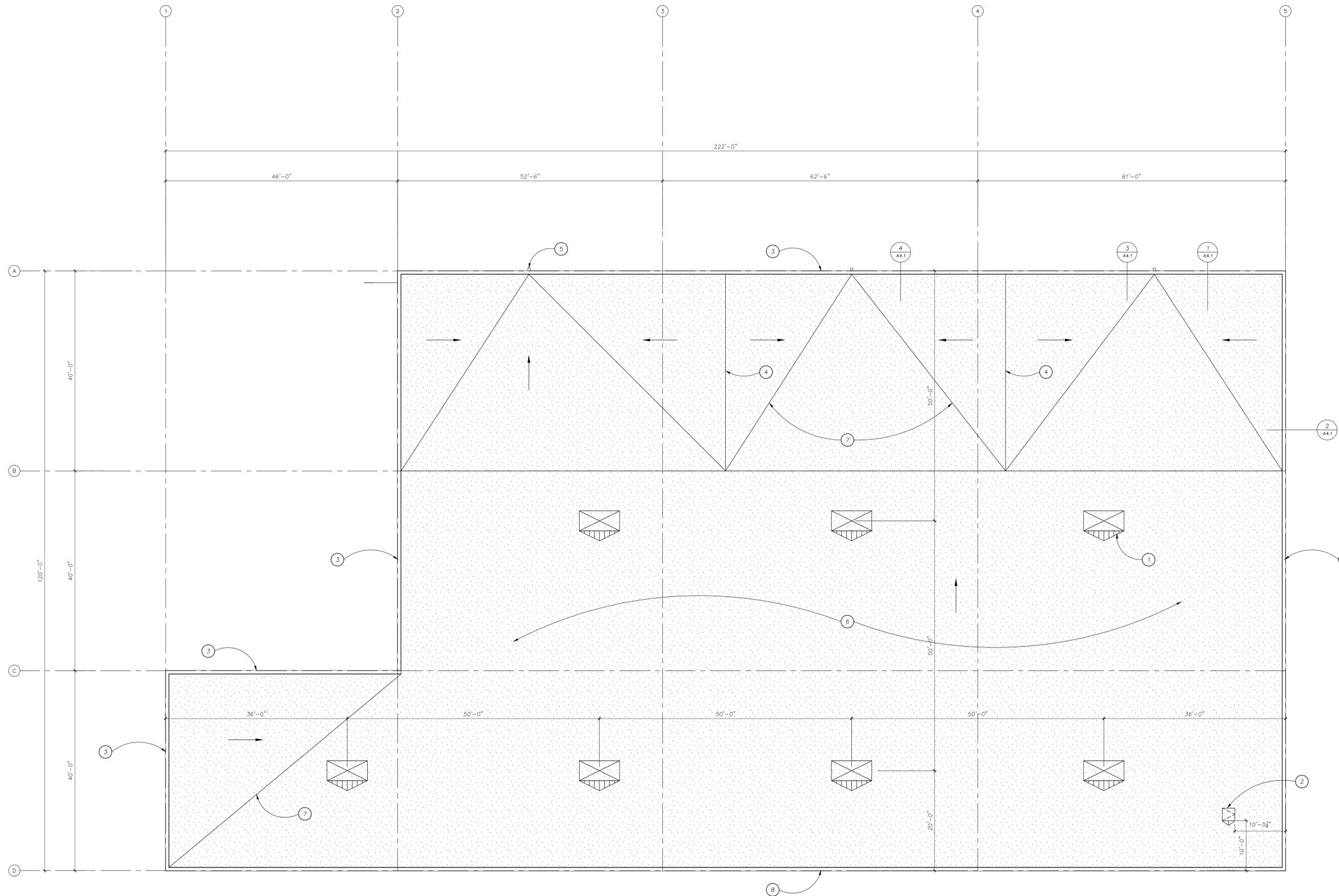
Sheet Title:
**Building 2
Roof Plan**

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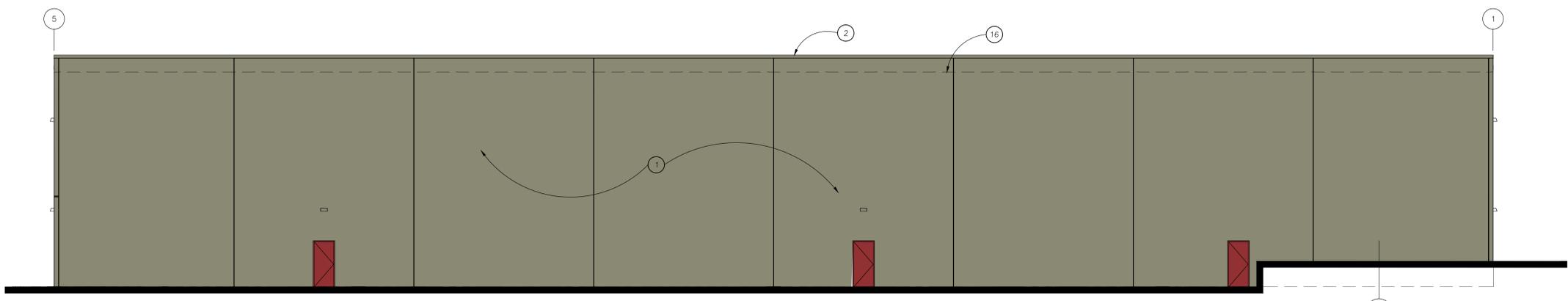


Keynotes

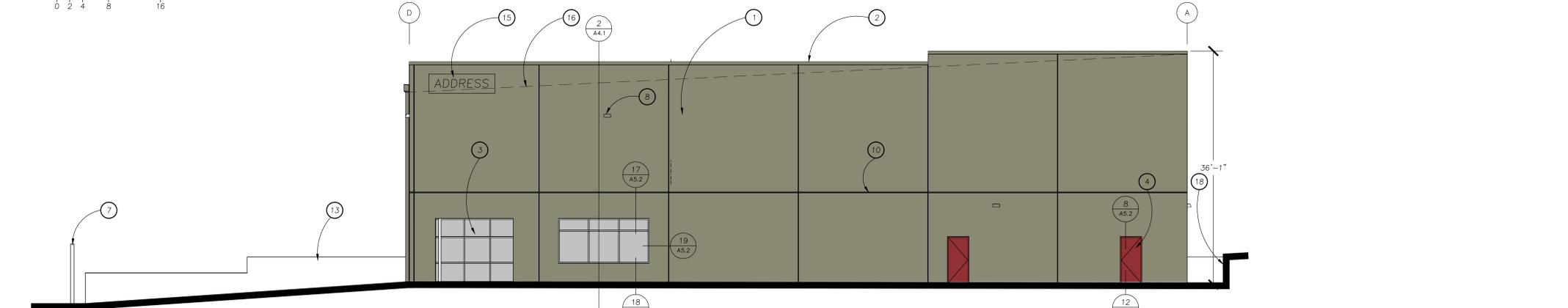
1. CONCRETE WALL PANEL, PAINTED P1
2. PARAPET CAP FLASHING, PAINTED P1
3. ANODIZED ALUMINUM STOREFRONT SYSTEM WITH INSULATED GLAZING
4. HOLLOW METAL PERSONNEL DOOR, PAINTED P2
5. OVERHEAD DOOR, PAINTED P2
6. HOLLOW METAL PERSONNEL DOOR WITH TRANSOM ABOVE, PAINTED P2
7. BOLLARD, PAINTED HAZARD YELLOW
8. LIGHT FIXTURE AT 25'-0" WITH PAINTED HOUSING TO MATCH ADJACENT WALL COLOR
9. DOOR ARMOR, PAINTED
10. 3/4"x1 1/2" "V" GROOVE REVEAL - SEE DETAIL 3/A5.3
11. SCUPPER AND DOWNSPOUT, PAINTED TO MATCH ADJACENT WALL COLOR
12. DOCK BUMPERS
13. CONCRETE RETAINING WALL, PAINTED P3
14. PARAPET BEYOND
15. BUILDING ADDRESS IN 12" HIGH CONTRASTING NUMBERS
16. ROOF LINE BEYOND
17. CONCRETE WALL PANEL, PAINTED P3
18. CONCRETE RETAINING WALL
19. SHROUD - SEE DETAIL 16/A5.3

Paint

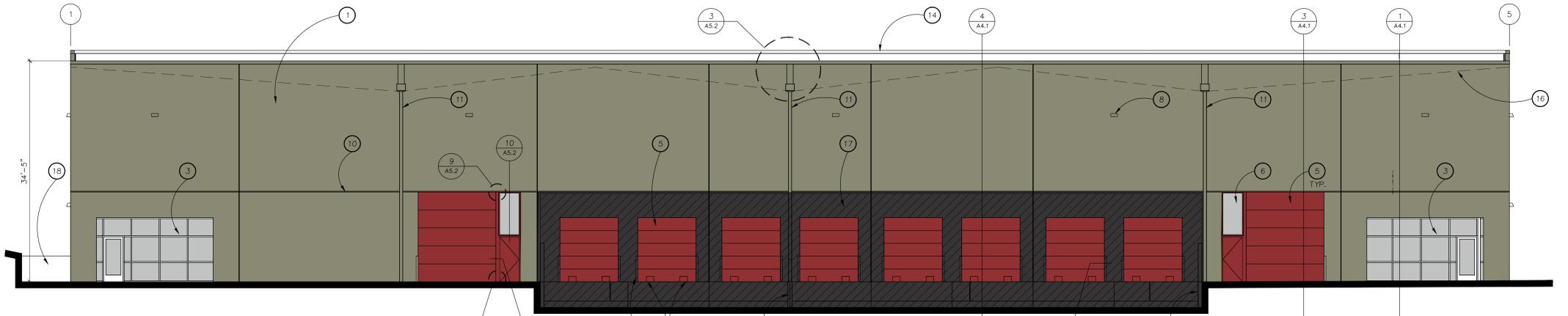
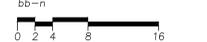
- P1 SHERWIN WILLIAMS SW6158 "SAWDUST"
P2 BENJAMIN MOORE #1323 "CURRANT RED"
P3 SHERWIN WILLIAMS #SW6006 "BLACK BEAN"



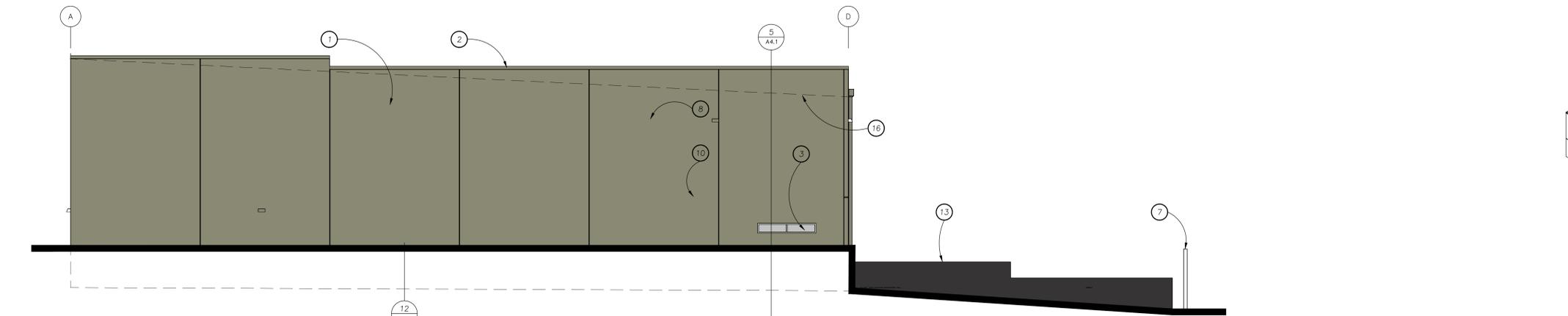
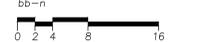
East Elevation



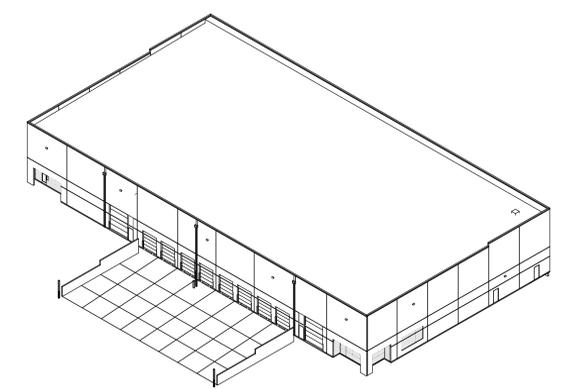
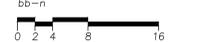
South Elevation



West Elevation



North Elevation



Southeast Perspective

Owner:
**Millersburg
Land
Development**

PO Box 2375
Clackamas, Oregon 97015

Project:
**SE120th Ave &
SE Capps Road**

SE 122nd Ave.
Clackamas, Oregon

Sheet Title:
**Building 1
Elevations**

Revisions:

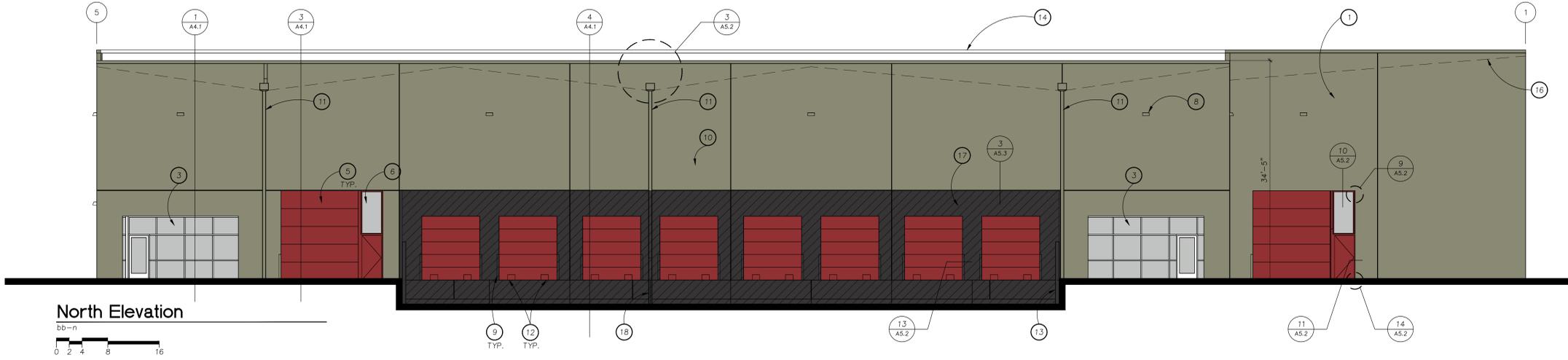
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Date: 4 March 2020
Drawn by: BK Checked by: CLT
Job Number: 119161
Sheet

Keynotes

1. CONCRETE WALL PANEL, PAINTED P1
2. PARAPET CAP FLASHING, PAINTED P1
3. ANODIZED ALUMINUM STOREFRONT SYSTEM WITH INSULATED GLAZING
4. HOLLOW METAL PERSONNEL DOOR, PAINTED P2
5. OVERHEAD DOOR, PAINTED P2
6. HOLLOW METAL PERSONNEL DOOR WITH TRANSOM ABOVE, PAINTED P2
7. BOLLARD, PAINTED HAZARD YELLOW
8. LIGHT FIXTURE AT 25'-0" WITH PAINTED HOUSING TO MATCH ADJACENT WALL COLOR
9. DOOR ARMOR, PAINTED
10. 3/4"x1/2" "V" GROOVE REVEAL - SEE DETAIL 3/A5.3
11. SCUPPER AND DOWNSPOUT, PAINTED TO MATCH ADJACENT WALL COLOR
12. DOCK BUMPERS
13. CONCRETE RETAINING WALL, PAINTED P3
14. PARAPET BEYOND
15. BUILDING ADDRESS IN 12" HIGH CONTRASTING NUMBERS
16. ROOF LINE BEYOND
17. CONCRETE WALL PANEL, PAINTED P3
18. SHROUD - SEE DETAIL 16/A5.3

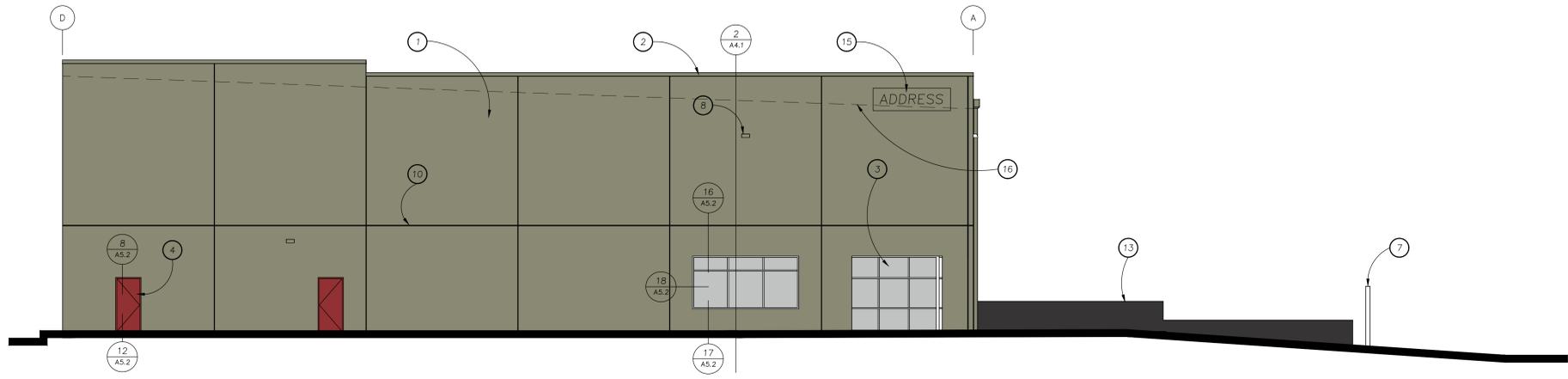
Paint

- P1 SHERWIN WILLIAMS SW6158 "SAWDUST"
P2 BENJAMIN MOORE #1323 "CURRANT RED"
P3 SHERWIN WILLIAMS #SW6006 "BLACK BEAN"



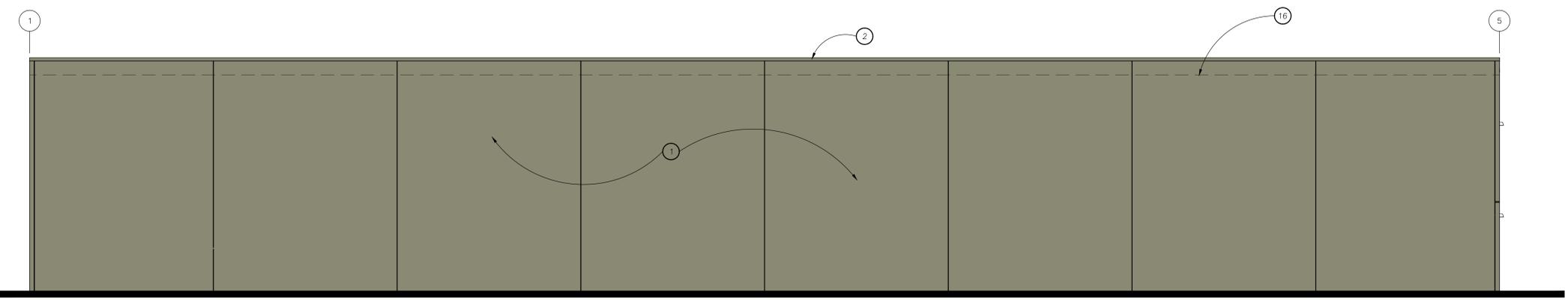
North Elevation

bb-n
0 2 4 8 16



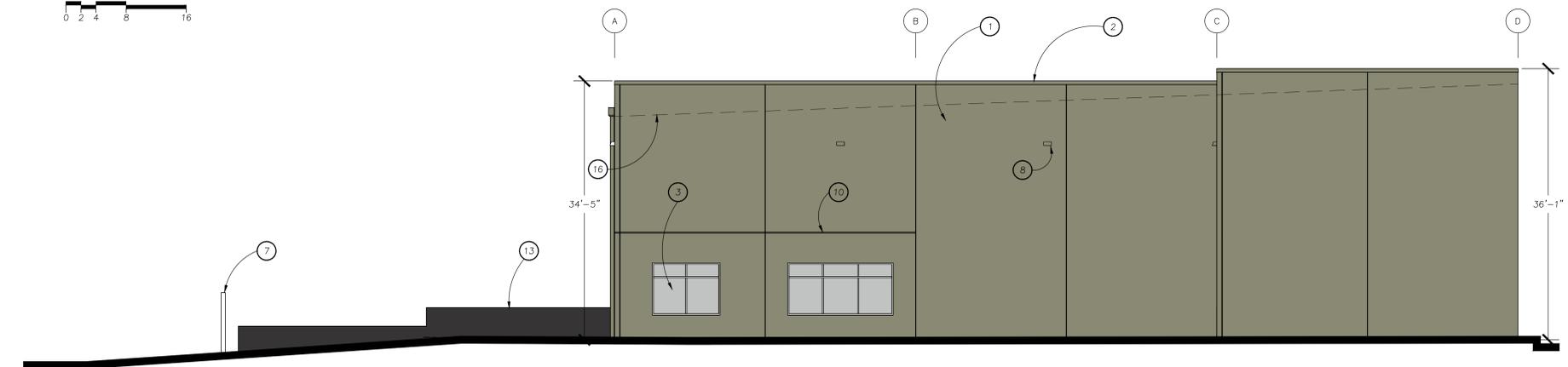
East Elevation

bb-n
0 2 4 8 16



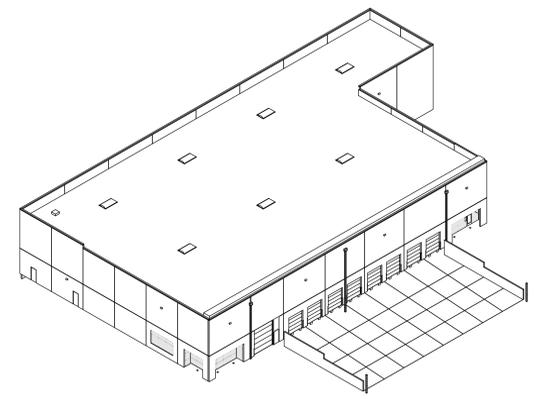
South Elevation

bb-n
0 2 4 8 16



West Elevation

bb-n
0 2 4 8 16



Southeast Perspective

bb-n

Owner:
**Millersburg
Land
Development**

PO Box 2375
Clackamas, Oregon 97015

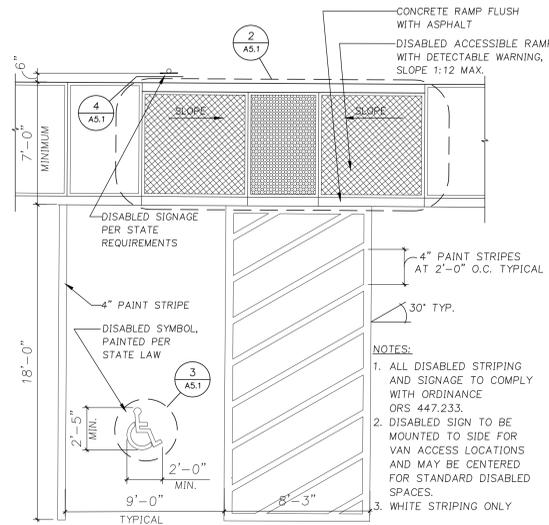
Project:
**SE120th Ave &
SE Capps Road**

SE 122nd Ave.
Clackamas, Oregon

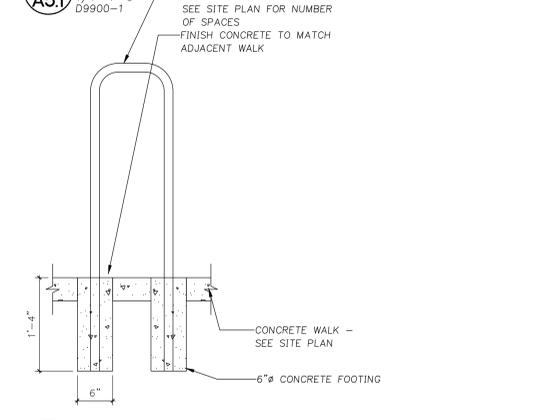
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**Building 1
Elevations**

Revisions:

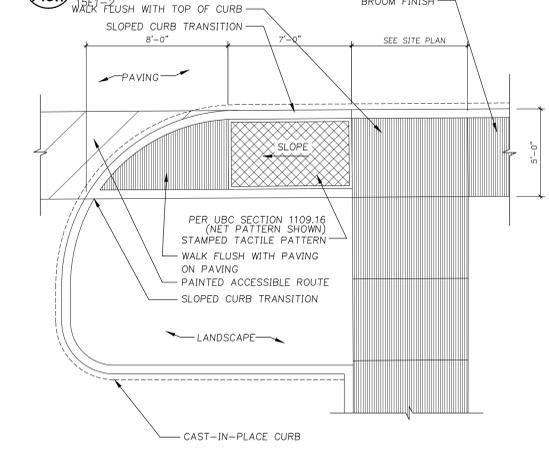
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1 Van Accessible Parking Stall
A5.1 1/4"=1'-0"
D9900-1



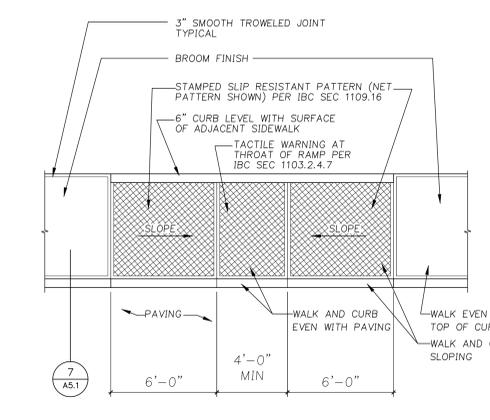
2 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a6-r1



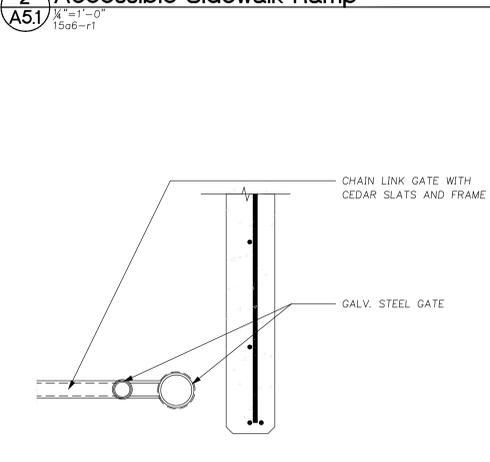
3 International Accessible Symbol
A5.1 1"=1'-0"
International Accessible Symbol



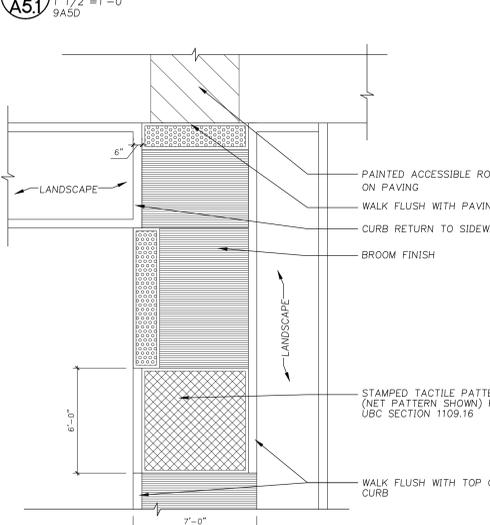
4 Accessible Parking Signage
A5.1 1"=1'-0"
15b.3



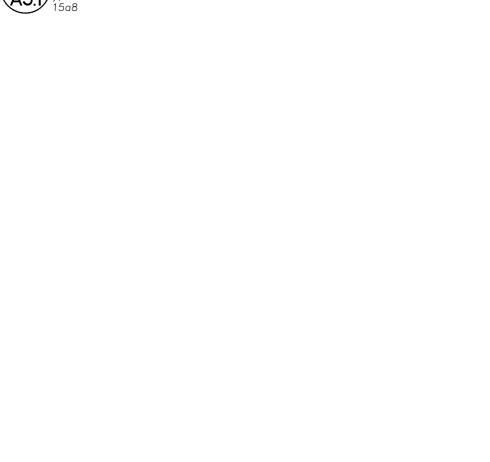
5 Trash Enclosure Plan
A5.1 1/4"=1'-0"
9A5B



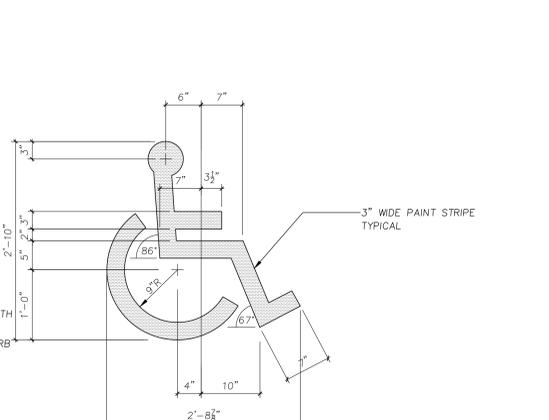
6 Bicycle Rack
A5.1 1/4"=1'-0"
9A5D



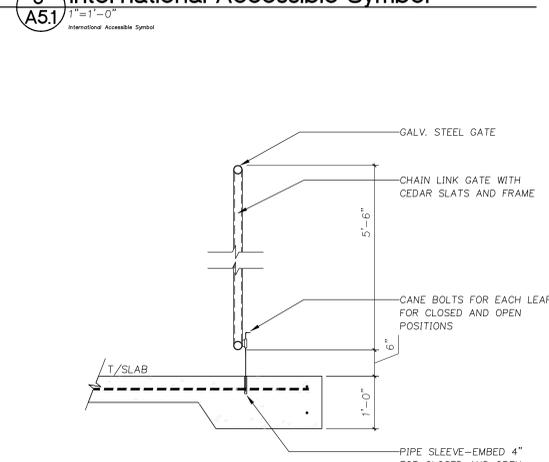
7 Trash Enclosure Gate to Wall Panel
A5.1 1/2"=1'-0"
9A5D



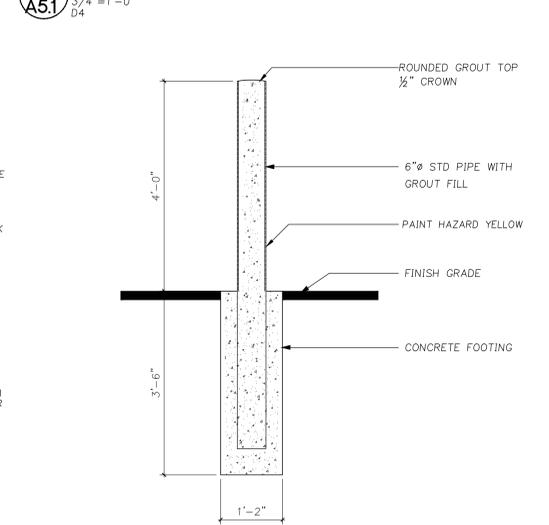
8 Gate at Trash Enclosure
A5.1 3/4"=1'-0"
D4



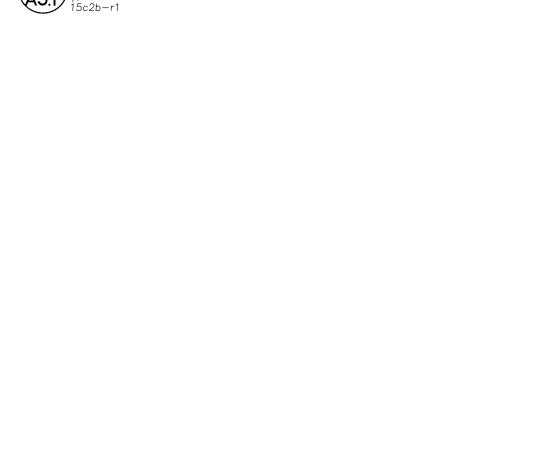
9 Tiltup at Trash Enclosure
A5.1 3/4"=1'-0"
9A5A



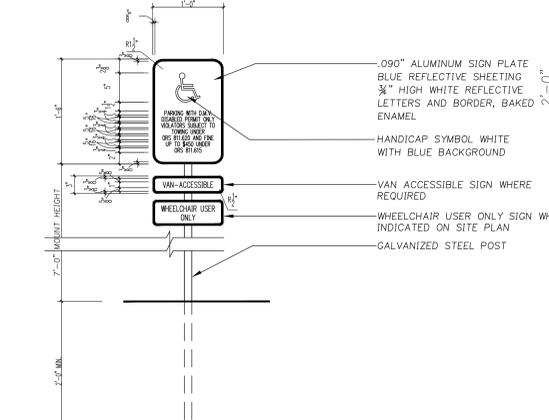
10 Gate at Trash Enclosure
A5.1 3/4"=1'-0"
9A5C



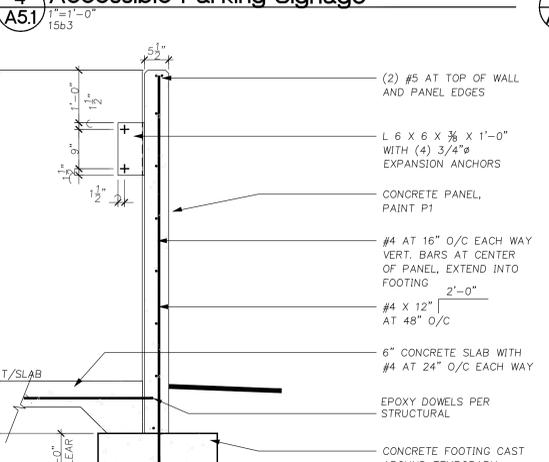
11 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a7-r1



12 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a8



13 6" Bollard
A5.1 3/4"=1'-0"
15c2b-r1



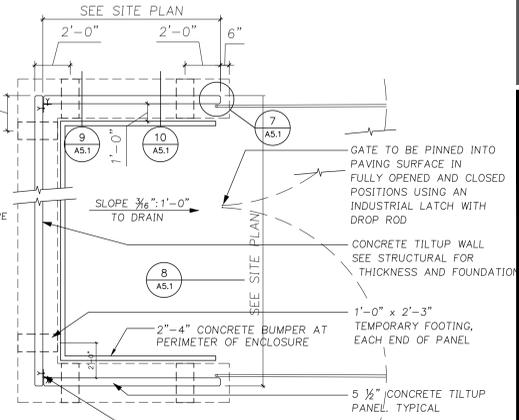
14 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a6-r1



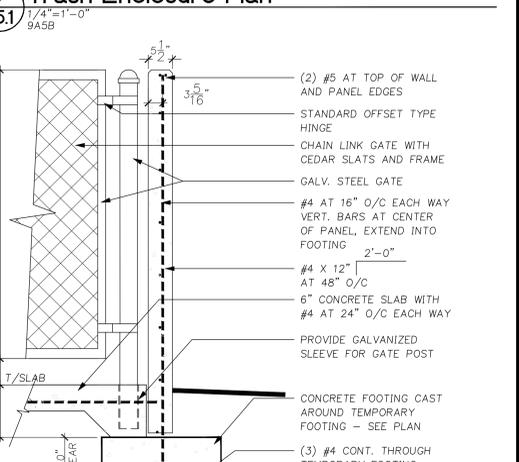
15 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a7-r1



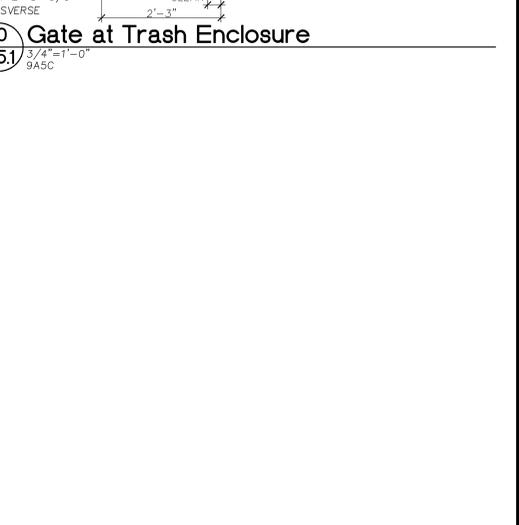
16 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a8



17 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a6-r1



18 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a7-r1



19 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a8



20 Accessible Sidewalk Ramp
A5.1 1/4"=1'-0"
15a9

Owner:
**Millersburg
Land
Development**

PO Box 2375
Clackamas, Oregon 97015

Project:
**SE120th Ave &
SE Capps Road**

SE 122nd Ave.
Clackamas, Oregon

Sheet Title:
Site Details

Revisions:

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