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: 10/22/2019

Permit Number: Z0332-19

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 - Design review of a new commercial building to be used as a bank. The site design includes a drive-through ATM facility.
The building is approximately 3,500 square feet and the proposal includes along with new site access, parking, landscaping and other site improvements.

This project has been preliminary scheduled to be presented to the Design Review Committee on Tuesday, November 19th at 8:30 am. The meeting will be held in the Room 115 of Clackamas County's Development Services Building, located at 150 Beavercreek Road in Oregon City.

Property Owner: WAMPLER ROGER A

Applicant: BEHR, JOSH

Address: NO SITUS

Location: On the west side of SE 82nd Avenue near the intersection with SE Lindy Street.

Legal Description: 12E29AA06100 **Acres:** .14

Zone: CC CORRIDOR COMMERCIAL

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: Z0332-19

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 Beavercreek 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.

SOUTHGATE CPO

OR

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

510, 1000 series, 1102, 1037.

The Ordinance criteria for evaluating this application can be obtained from this office or viewed at www.clackamas.us/planning/zdo.html. You may view the submitted application at the following link, https://accela.clackamas.us/citizenaccess/ within five days of the date of this notice, or at our office during weekday lobby hours, 8:00 am to 4:00 pm, Monday through Thursday and 8:00 am to 3:00 pm Friday.

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 ? | Cần Biên dịch hoặc Phiên dịch? | 번역 또는 통역?

Planning & Zoning
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E-mail: zoninginfo@co.clackamas.or.us
Web: http://www.clackamas.us/transportation/planning/

CLACKAMAS COUNTY

LAND USE APPLICATION

DEEMED COMPLETE

ORIGINAL DATE SUBMITTED: 07/18/2019

FILE NUMBER: Z0332-19-D

APPLICATION TYPE: DESIGN REVIEW

The Planning and Zoning Division staff deemed this application complete for the purposes of Oregon Revised Statutes (ORS) 215.427 on: 10/21/19

Signature

Senior Planner
Title

Anthony Rhederer
Print Name

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:

February 18th 2020

☐ 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:

_____

RECEIVED

OCT 18 2019

Clackamas County
Planning & Zoning Division

CLACKAMAS COUNTY

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

Application for Design Review

May 2018

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

Date Received: _____ File No.: _____

Staff Member: _____ Design Review Fee: $_____

Zone: _____ .384% of Construction Cost: $_____

Comp. Plan: _____ ($650.00 Minimum / $36,835.00 Maximum Fee)

Development No.: _____ Project No.: _____

Name of Applicant: ANKROM MOISAN ARCHITECTS, INC.

Mailing Address: 38 NW DAVIS STREET, PORTLAND, OR 97209

Phone: (503) 952-1357 Email: JOSHB@ANKROMMOISAN.COM

What is proposed?:
NEW CONSTRUCTION FREE STANDING RETAIL WITH DETACHED DRIVE THRU ATM

Proposed title: CHASE BANK Sq. ft. of each structure: 3,470 +/- SQ.FT.

Estimated completion date: 7/27/2020 Estimated cost of constr (labor & materials): $ $ 2,400,000.00

Site Address: 8869 SE 82ND AVENUE, HAPPY VALLEY, OR 97086

Total Land Area : 0.5739 Acres

Legal Description: T 1 R 2E Section: 29AA Tax Lot(s): 12E29AA06100

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.

Stephen Scalione, Manager
Property Owner's Name (Print)

MICHAEL STUEVE
Applicant's Name (Print)

10/10/19
Property Owner's Signature Date

7/16/2019
Applicant's Signature Date

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

Application for Design Review

May 2018

ZPAC0026-19

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

Date Received: 7/18/19 File No.: Z0332-19-D

Staff Member: Design Review Fee: $ $9216.00

Zone: CC .384% of Construction Cost: $ 2.4 mil

Comp. Plan: ($650.00 Minimum / $36,835.00 Maximum Fee)

Development No.: Project No.:

Name of Applicant: ANKROM MOISAN ARCHITECTS, INC. see ZPAC0026-19

Mailing Address: 38 NW DAVIS STREET, PORTLAND, OR 97209

Phone: (503) 952-1357 Email: JOSHB@ANKROMMOISAN.COM

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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.

X
Property Owner's Name (Print)

MICHAEL STUEVE
Applicant's Name (Print)

X
Property Owner's Signature Date

Applicant's Signature 7/16/2019 Date

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

PRELIMINARY STATEMENT OF FEASIBILITY

To be completed by the applicant:

Applicant's Name: Josh Behr

Property Legal Description: T 1 S, R 2E, Section 29AA, Tax Lot(s) 02601, 06100-06300, 06500

Site Address: 8869 SE 82nd Avenue, Happy Valley 97086 Project Engineer: Alex Simpson, PE (HHPR, Inc.)

Project Title/Description of Proposed Development: Restaurant demolition, replace with 1-story branch bank, with remote drive-up ATM, reconfigure existing parking, landscape areas.

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

Check all that apply:

- [x] 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.
- [x] 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.

Don Kp
Signature of Authorized Representative

7/17/2019
Date

WES Permit Supervisor
Title

WES
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 develop[illegible]letion of this statement does not guarantee that land use approval for the proposed development will be granted.

RECEIVED
AUG 15 2019
Clackamas County
Planning & Zoning Division

CLACKAMAS COUNTY

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

PRELIMINARY STATEMENT OF FEASIBILITY

To be completed by the applicant:

Applicant's Name: Chris Ortiz

Property Legal Description: T 1 S, R 2E, Section 29AA, Tax Lot(s) 02601, 06100-6300 & 6500

Site Address: 8869 SE 82nd Ave, Happy Valley, 97086 Project Engineer: _____

Project Title/Description of Proposed Development: Restaurant demolition, replace with 1-story branch bank (Chase), with remote drive up ATM, rework existing parking, landscaping areas.

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Betty A Johnson
Signature of Authorized Representative

April 2, 2018
Date

Engineering Associate
Title

Clackamas River Water
Name of Service Provider or Surface Water Management Authority

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Clackamas County
Planning & Zoning Division

Clackamas River Water Attachment A

Water Rate, Connection & System Development Charges Table

Bi-Monthly Service Charges for All Direct Service Customers (Effective Dates Below Table)						
Meter Size (Inches)	Domestic Service Charge	Fire Service Charge	Connection Fee Pre-Run/Install	SDC Reimburse-ment	SDC Improve-ment	Total SDC Charges
Full 3/4	49.76	52.08	500 or TMO	2,325	2,884	5,209
1	68.46	52.08	600 or TMO	3,874	4,808	8,682
1 1/2	97.82	62.30		7,747	9,616	17,363
2	131.41	74.22		12,395	15,386	27,781
3	210.92	105.51				
4	324.47	168.15				
6	608.12	293.44	a		b	
8	1,374.47	419.03				
10	2,162.27	669.90				
12	2,612.44	826.51				
Effective:	5/1/2018	5/1/2018	7/1/2018		7/1/2018	
	ORD 01-2018		ORD 01-2018		ORD 01-2018	

a Calculated to cover time, material and overhead. Pre-run refers to service lines installed by developer during subdivision construction as opposed to CRW constructed.

b Calculated based upon anticipated water demand as compared to equivalent residential units (3/4"). The amounts shown for 1 1/2 & 2" are minimum charges.

TMO is Time, Materials, and Overhead to connect to distribution system.

Commodity Charge for Direct Service Customers Per 100 Cubic Feet
(Effective 5/1/2017 Ord 01-2016)

Bi-Month Billing

Single Family Dwelling (3/4 or 1"):

	Volume	Rate
Block 1	1 - 4	$2.12
Block 2	5 - 8	$2.36
Block 3	9 - 24	$2.81
Block 4	25 & up	$3.58
Leak Relief Rate		$1.50

Multi-family, Commercial & Industrial (all sizes & billings):

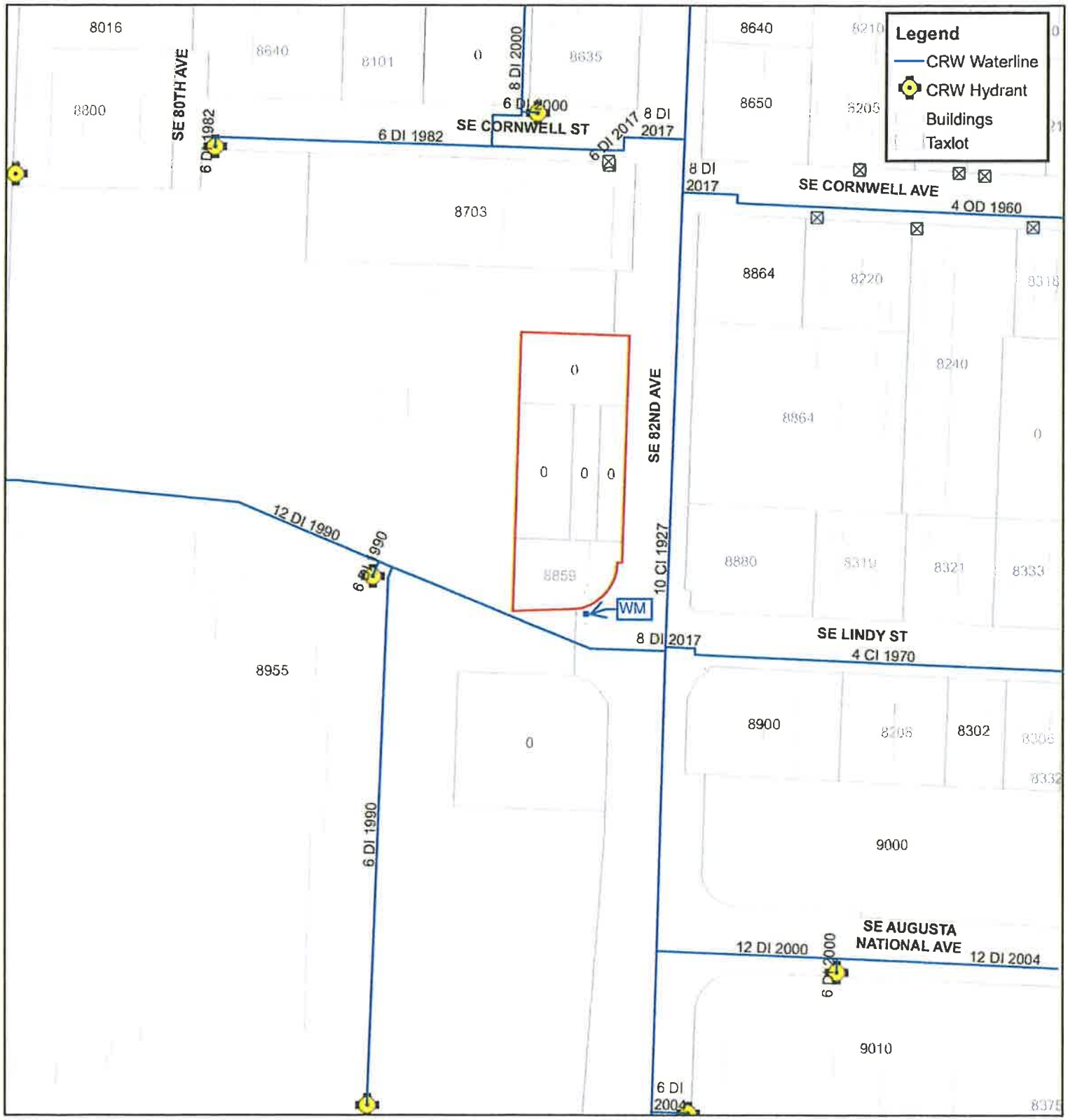
	Volume	Rate
Block 1	c	$2.61
Block 2	d	$3.25

c Volume up to 1.5 times average winter consumption.

d Volume above 1.5 times average winter consumption.

Average Winter Consumption: Total consumption (volume) recorded on a customer's December and February or January and March bills, divided by two for bi-monthly billing.

Clacka ıas River Water - 8869 SE ınd Ave



Date: April 2, 2019
Drawing Name: GIS-Development(9-25-18)
Drawing Location: I:\Documentation\Facility Data
Drawing By: B.Johnson

MAP FOR REFERENCE PURPOSES ONLY
The information on this map is derived from Clackamas River Water's digital database. However, there may be map errors or omissions. Please contact Clackamas River Water directly to verify map information. Notification of any errors is appreciated.

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Clackamas River Water

CLACKAMAS RIVER WATER
GEOGRAPHIC INFORMATION SYSTEM
16770 SE 82nd Drive - Clackamas, Oregon
503-722-9220 - www.crwater.com

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

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To be completed by the applicant:

Applicant's Name: Josh Behr

Property Legal Description: T 1 S, R 2E, Section 29AA, Tax Lot(s) 02601, 06100-06300, 06500

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Don Kp
Signature of Authorized Representative

7/17/2019
Date

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Signature of Authorized Representative

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Clackamas River Water Attachment A

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2	131.41	74.22		12,395	15,386	27,781
3	210.92	105.51				
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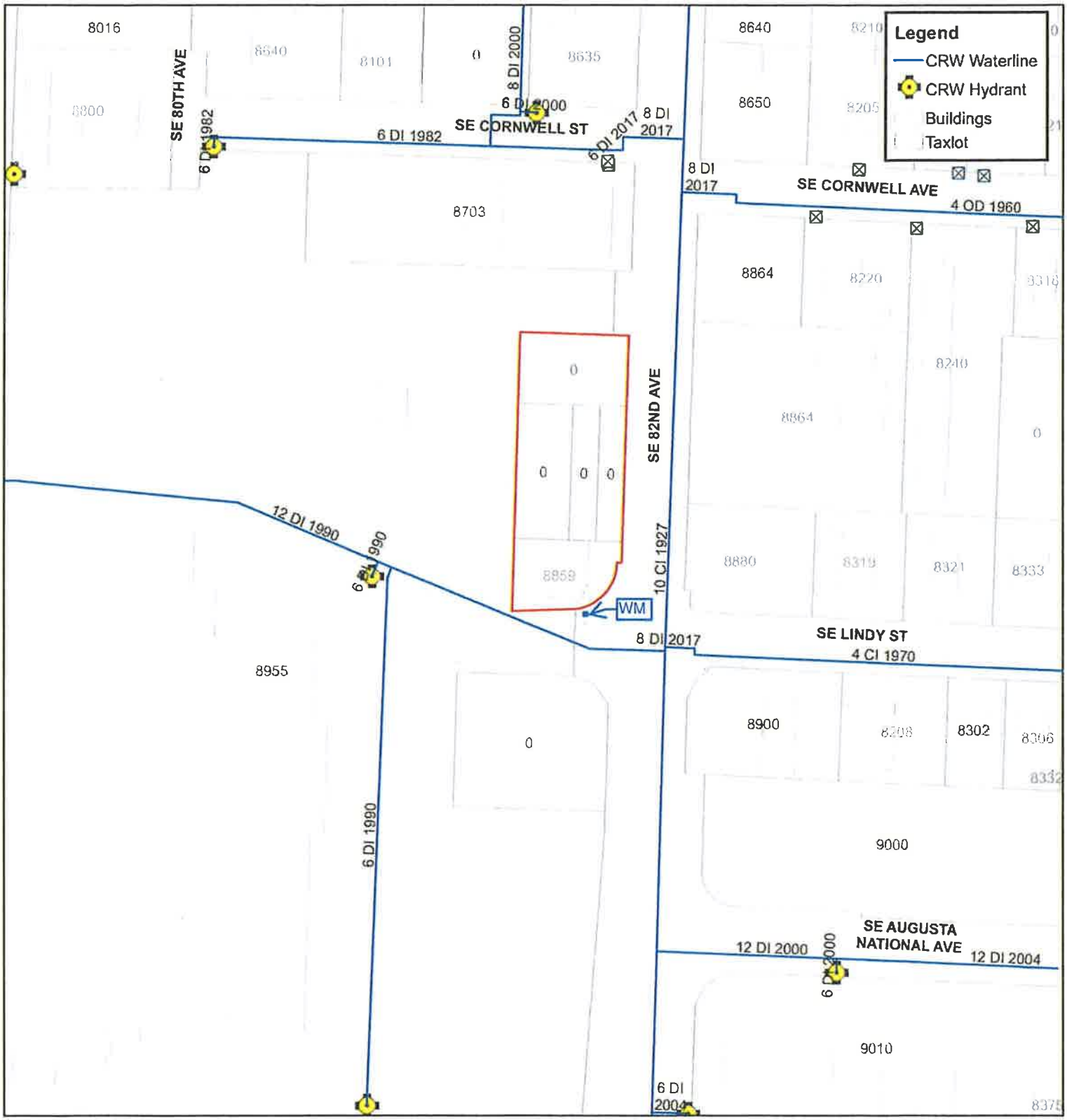
Clacka. as River Water - 8869 SE (ıd Ave



Date: April 2, 2019
Drawing Name: GIS-Development(9-25-18)
Drawing Location: I:\Documentation\Facility Data
Drawing By: B.Johnson

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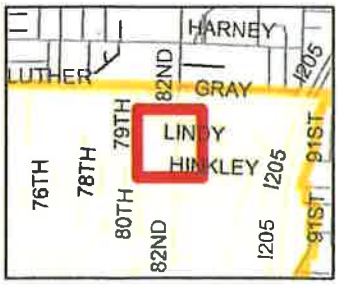

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Feet

Clackamas River Water

CLACKAMAS RIVER WATER
GEOGRAPHIC INFORMATION SYSTEM
16770 SE 82nd Drive - Clackamas, Oregon
503-722-9220 - www.crwater.com

Ankrom Moisan

August 14, 2019

RECEIVED

AUG 15 2019

Clackamas County
Planning & Zoning Division

Clackamas County Planning Division

150 Beavercreek Road
Oregon City, Oregon 97045

Attn: Melissa Ahrens

Re:

Land Use Review and Design Review Submittal for 8869 SE 82nd Avenue, Happy Valley, OR
File # Z0332-19-D

Dear Ms. Ahrens:

Project Summary:

We are proposing to replace the existing Ron's Restaurant at this location with a new Chase Bank retail banking branch. The building is approximately 3,470 square feet with site improvements including new landscaping and patios.

Our proposal includes a new building for customer services and a detached remote drive thru lane for ATM banking.

Site and Building Design

The purpose of the Building Design code is to provide "architectural relief, variety, and visual interest and shall avoid the effect of a single, long or massive wall with no relation to human size...Building facades shall have particular emphasis at entrances and along sidewalks and walkways."

A. The main building is to be cast stone base with brick mid section and stucco finish above. The same materials will be used for the drive thru. The blending of materials creates visually interesting, human scaled facades in all four directions. These materials and colors have been selected for this site to blend with the surrounding commercial buildings located at that corner. Our design is architecturally balanced and proportioned.

B. Building orientation is to the 82nd Avenue corridor with a tree shaded, furnished patio area located between the entrance and the sidewalk. There is a second entrance and patio area facing the Fred Meyer parking lot to the west. Our design is focused on an enhanced experience for pedestrian access, easy access to adjacent retail destinations, and easy access by public transportation along the 82nd Avenue business corridor. Parking is screened on all public facing sides with significant landscaping.

C. We propose to reduce the amount of existing impervious parking surface and increase the amount of landscaped area on site.

ARCHITECTURE
INTERIORS
URBAN DESIGN
BRANDING

Ankrom Moisan Architects

PORTLAND
38 NW Davis Street
Suite 300
Portland, OR 97209
503.245.7100

SEATTLE
1505 5th Avenue
Suite 300
Seattle, WA 98101
206.576.1600

SAN FRANCISCO
1014 Howard Street
San Francisco, CA 94103
415.252.7063

ankrommoisan.com

Ankrom Moisan

Adjustment Request #01

Per Clackamas County Zoning Code section 1005.04

1. 1005.04-B-1 requires an entry overhang of at least four feet deep.
2. **We are requesting an adjustment to allow us to implement an overhang that is 3'-8" deep rather than 4'-0" at both building entrances.**
3. This is our only adjustment request. All other features of the site and building design meet or exceed the zoning and code requirements.

Pedestrian and Bicycle Facilities

A. The entirety of the public sidewalk along 82nd avenue is to be replaced with new paving increasing the existing 6'-0" width to 8'-0".
B. Two bicycle racks are being provided on the west side of the building.
C. The East facing patio at the main entrance on 82nd avenue will be furnished with outdoor furniture offering an opportunity for pedestrians to rest. The patio areas will be surrounded with trees and landscaping.

Parking and Landscaping

A. Based on reduced demand due to the change of use from restaurant to retail banking, we are proposing to reduce the parking from 42 spaces to 16 spaces.
B. Much of the eliminated parking area will be converted to landscape area.
C. The code minimum area of landscaping for our site is 10%. We are proposing to provide over 10,730 sq.ft. of landscaping on our 22,835 sq.ft. site, approximately 46% of our site.
D. Much of this additional landscaping will be located along 82nd avenue providing a greatly enhanced visual experience along this main corridor.

Sincerely,
Ankrom Moisan Architects, Inc.

ARCHITECTURE
INTERIORS
URBAN DESIGN
BRANDING

Josh Behr,
Project Manager

Ankrom Moisan

August 14, 2019

RECEIVED

AUG 15 2019

Clackamas County
Planning & Zoning Division

Clackamas County Planning Division

150 Beavercreek Road
Oregon City, Oregon 97045

Attn: Melissa Ahrens

Re:

Land Use Review and Design Review Submittal for 8869 SE 82nd Avenue, Happy Valley, OR
File # Z0332-19-D

Dear Ms. Ahrens:

Project Summary:

We are proposing to replace the existing Ron's Restaurant at this location with a new Chase Bank retail banking branch. The building is approximately 3,470 square feet with site improvements including new landscaping and patios.

Our proposal includes a new building for customer services and a detached remote drive thru lane for ATM banking.

Site and Building Design

The purpose of the Building Design code is to provide "architectural relief, variety, and visual interest and shall avoid the effect of a single, long or massive wall with no relation to human size...Building facades shall have particular emphasis at entrances and along sidewalks and walkways."

A. The main building is to be cast stone base with brick mid section and stucco finish above. The same materials will be used for the drive thru. The blending of materials creates visually interesting, human scaled facades in all four directions. These materials and colors have been selected for this site to blend with the surrounding commercial buildings located at that corner. Our design is architecturally balanced and proportioned.

B. Building orientation is to the 82nd Avenue corridor with a tree shaded, furnished patio area located between the entrance and the sidewalk. There is a second entrance and patio area facing the Fred Meyer parking lot to the west. Our design is focused on an enhanced experience for pedestrian access, easy access to adjacent retail destinations, and easy access by public transportation along the 82nd Avenue business corridor. Parking is screened on all public facing sides with significant landscaping.

C. We propose to reduce the amount of existing impervious parking surface and increase the amount of landscaped area on site.

ARCHITECTURE
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Ankrom Moisan Architects

PORTLAND
38 NW Davis Street
Suite 300
Portland, OR 97209
503.245.7100

SEATTLE
1505 5th Avenue
Suite 300
Seattle, WA 98101
206.576.1600

SAN FRANCISCO
1014 Howard Street
San Francisco, CA 94103
415.252.7063

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Ankrom Moisan

Adjustment Request #01

Per Clackamas County Zoning Code section 1005.04

1. 1005.04-B-1 requires an entry overhang of at least four feet deep.
2. **We are requesting an adjustment to allow us to implement an overhang that is 3'-8" deep rather than 4'-0" at both building entrances.**
3. This is our only adjustment request. All other features of the site and building design meet or exceed the zoning and code requirements.

Pedestrian and Bicycle Facilities

A. The entirety of the public sidewalk along 82nd avenue is to be replaced with new paving increasing the existing 6'-0" width to 8'-0".
B. Two bicycle racks are being provided on the west side of the building.
C. The East facing patio at the main entrance on 82nd avenue will be furnished with outdoor furniture offering an opportunity for pedestrians to rest. The patio areas will be surrounded with trees and landscaping.

Parking and Landscaping

A. Based on reduced demand due to the change of use from restaurant to retail banking, we are proposing to reduce the parking from 42 spaces to 16 spaces.
B. Much of the eliminated parking area will be converted to landscape area.
C. The code minimum area of landscaping for our site is 10%. We are proposing to provide over 10,730 sq.ft. of landscaping on our 22,835 sq.ft. site, approximately 46% of our site.
D. Much of this additional landscaping will be located along 82nd avenue providing a greatly enhanced visual experience along this main corridor.

Sincerely,
Ankrom Moisan Architects, Inc.

ARCHITECTURE
INTERIORS
URBAN DESIGN
BRANDING

Josh Behr,
Project Manager

KITTELSON & ASSOCIATES
851 SW 6th AVENUE, SUITE 600
PORTLAND, OR 97204
P 503.228.5230 F 503.273.8169

July 17, 2019

Project #: 24131.0

REGISTERED PROFESSIONAL ENGINEER
60027PE
OREGON
July 13, 1999
BRIAN JOSEPH DUNN
EXPIRES: 12-31-19

Josh Behr, Senior Technical Designer/Architect
Ankrom Moisan Architects, Inc.
38 NW Davis, Suite 300
Portland, OR 97209

RE: Traffic and Safety Analysis for Chase Bank Development on SE 82nd Avenue (Clackamas County Casefile ZPAC0026-19)

Dear Mr. Behr:

This traffic and safety analysis letter was prepared to address Oregon Department of Transportation (ODOT) access management policies of Oregon Administrative Rules 734-051 (Division 51) as they apply to the new Chase Bank development proposal located at 8869 SE 82nd Avenue in Clackamas County, OR. Specifically, this letter addresses several key criteria specified in OAR 734-051-3020 for assessing whether a "change of use" is triggered at the existing north site driveway connection to OR Highway 213 (SE 82nd Avenue).

Based on our analysis herein, we believe the proposed development may not trigger a "change of use" at the north site driveway to SE 82nd Avenue, and that ODOT's suggested mitigation measures to restrict or limit turn movements may not be necessary or warranted from a safety standpoint. This is supported by our own independent finding that intersection and stopping sight distances at the north site access are adequate. It is also supported by our formal trip generation assessment for the development site, the results of which indicate the proposed Chase Bank building will generate only a small increase in traffic over the prior restaurant use, and that this projected increase does not exceed volume-based criteria established by ODOT for identifying a "change of use".

Lastly, we are attempting to address other ODOT Division 51 criteria pertaining to highway safety. Kittelson is still collecting and performing a review of reported crash history along OR Highway 213 (SE 82nd Avenue), which has been identified by ODOT as a high-crash location in the State. That analysis is still forthcoming and will be addressed in a subsequent memo.

Description of Proposed Development

The proposed Chase Bank development is located on the northwest corner of the SE 82nd Avenue/SE Lindy Street intersection in Clackamas County. As shown in the site plan exhibits provided in Attachment "A" of this letter, the proposed development includes removal of a 2,111 SF restaurant building ("Ron's Restaurant") and the construction of a new 3,470 SF Chase Bank building with a single drive-thru lane.

While the proposed development site lies on its own 24,997 SF tax lot, it is located within the Johnson Creek Fred Meyer Shopping Center. This means all site trips must use the internal parking and driveway connections on Fred Meyer's property to access SE 82nd Avenue. Primary access to the adjacent highway exists via a signalized driveway directly south of the site and directly across from SE Lindy Street. There is also a secondary stop-controlled driveway to the highway just north of the site and south of SE Cornwell Street. This northern site access, which is the primary focus of this letter, is vital to the operation of the Fred Meyer Shopping Center as it provides access to the northern primary parking lot and unrestricted two-way access to the highway. The presence of a center left-turn lane along the highway median also allows drivers to turn left into the site from an exclusive lane, and for drivers to turn left out of the site access and onto the highway in two-stages.

Clackamas County TIS Requirements

Section 295 of the Clackamas County Roadway Standards (April 2018) establish the Transportation Impact Study (TIS) requirements for new developments in the County. Although Clackamas County policy typically requires traffic studies for land use applications involving developments that generate 20 or more vehicles trips in any peak hour, our discussions with County staff on July 16, 2019 indicate a TIS will not be formally required. This is because the proposed development site is immediately adjacent to a state highway and does not directly access or influence a County roadway. In this instance, Clackamas County has deferred to ODOT on enforcing transportation policy.

Division 51 Access Permitting Standards

OAR 734-051 (Division 51) establishes procedures, standards, and approval criteria used by ODOT to govern highway approach permitting and access management along state highways in Oregon. In the context of this development application, ODOT has regulatory authority over the permitting and operation of the two existing site accesses along OR Highway 213, and to ensure that the proposed land use is compatible with the safe and efficient operation of the highway.

The following defines ODOT's criteria for identifying when a "change of use" occurs at an existing highway approach, per OAR 734-051-3020:

> *(a) The number of peak hour trips increases by fifty (50) trips or more from that of the property's prior use and the increase represents a twenty (20) percent or greater increase in the number of peak hour trips from that of the property's prior use; or*
>
> *(b) The average daily trips increases by five hundred (500) trips or more from that of the property's prior use and the increase represents a twenty (20) percent or greater increase in the average daily trips from that of the property's prior use; or*
>
> *(c) The daily use of a connection increases by ten (10) or more vehicles with a gross vehicle weight rating of twenty-six thousand (26,000) pounds or greater; or*

(d) ODOT demonstrates that safety or operational concerns related to the connection are occurring as identified in OAR 734-051-4020(3); or

(e) The connection does not meet the stopping sight distance standards, as measured in feet, of ten (10) times the speed limit established in ORS 811.111 or the designated speed posted under 810.180 for the highway as measured in miles per hour, or ten (10) times the 85th percentile speed of the highway where the 85th percentile speed is higher or lower than the speed limit established in 811.111 or the designated speed posted under 810.180. The applicant may perform a study to determine if the 85th percentile speed is higher or lower than the speed limit established in 811.111 or the designated speed posted under 810.180. The sight distance measurement, as described in OAR 734-051-4020(2)(c)(A)–(B), and the study to determine the 85th percentile speed shall be performed according to published department procedures by or under the supervision of a professional engineer as defined in 734-051-1070. The measurement shall be taken under existing and proposed site conditions.

ODOT Access Concerns

On April 16, 2019, ODOT issued a response letter to Clackamas County indicating staff had determined that the proposed Chase Bank development is considered to be a "change of use". Reasons cited include limited sight distance at the northern driveway to SE 82nd Avenue (*related to Criteria "E" above*) and a preliminary review of the crash history for this section of OR Highway 213, which is a top 10% SPIS (Safety Priority Index System) corridor in the State (*related to Criteria "D" above*). The agency also indicated there is a history of reported crashes associated with left-turn movements at the northern site access, and recommended that the access be restricted to a right-in only. All of these concerns were expressed again by ODOT staff at a July 16, 2019 pre-application meeting with the development team.

The following sections represents Kittelson's attempt to address all of ODOT's specific concerns as well as Division 51 "change of use" criteria.

Sight Distance Analysis

To address ODOT's concerns regarding sight distance, Kittelson performed a formal sight distance analysis at the northern site access to SE 82nd Avenue. For the analysis, both intersection sight distance (ISD) and stopping sight distance (SSD) were measured in the field and then compared with design parameters specified in *A Policy on Geometric Design of Highways and Streets (*AASHTO, Reference 4). All field measurements and comparisons to AASHTO design guidelines were done in accordance with ODOT Division 51 standards and the Highway Design Manual.

One of the primary variables in determining safe sight distance metrics according to AASHTO guidelines is the design speed of the respective roadway. While SE 82nd Avenue has a standard posted speed limit of 35 mph, a speed study was conducted to measure the actual speeds of traffic. This study was conducted by Quality Counts, a professional traffic counting service provider. The results of the study are provided in Attachment "B" o this letter. As shown, the 85th percentile speed

of prevailing traffic on SE 82nd Avenue is 34 mph. This value was used as the basis for assessing the minimum safe sight distances according to AASHTO parameters.

Intersection Sight Distance Summary

To assess intersection sight distance, two registered professional engineers from Kittelson collected field measurements consistent with AASHTO guidelines. This included taking all measurements from a viewpoint 15 feet behind the edge of the traveled way and from a height of 3.5 feet above the ground, looking toward an object that is 3.5 feet above the ground. Detailed pictures documenting our field measurements are provided in Attachment "C" of this letter. Once measurements were taken, minimum AASHTO design values were then calculated for the most critical maneuver (Case B1 – Left Turn from the Minor Road). The results of the ISD analysis are presented in Table 2.

Table 1: Intersection Sight Distance Analysis Results

Intersection	Direction of View	Field Measurement (feet)	85th Percentile Speed (mph)	AASHTO Minimum Design Guideline (feet)*	Adequate ISD Available?
North Site Driveway at SE 82nd Avenue	North	523	34	425	Yes
	South	>600	34	425	Yes

* The AASHTO minimum design distances shown consider the effects of multiple highway lanes on SE 82nd Avenue.

As shown in the previous table, ISD is shown to be sufficient in both directions from the north site access to SE 82nd Avenue. However, this result is contrary to what ODOT staff indicated. More specifically, ODOT expressed concern that sight distance was inadequate looking in the northbound direction due to the close proximity of a retail building to the edge of the highway. Kittelson staff noted the presence of this building (Bubba's Corner Store) just north of SE Cornwell Street. However, based on our field measurements, drivers at the north site driveway can see southbound vehicles traveling within the outside travel lane of the highway well beyond this building. In fact, as detailed in the pictures provided in Attachment "C" of this letter, and as reported in Table 2 above, drivers can see up to 523 feet. This distance is much further than the minimum distance of 425 feet recommended by AASHTO.

It should be emphasized here that even if there were an ISD deficiency at the north site driveways, this would not necessarily indicate a hazardous condition exists. This is because ISD is defined by AASHTO to be the distance sufficient enough *"for the minor-road vehicle to accelerate from a stop and complete a left turn without unduly interfering with major-road traffic operations."* The AASHTO guidelines further state that minimum ISD values reflect conditions where *"most major-road drivers should not need to reduce their speed to less than 70% of their initial speed."* These statements infer that ISD is not necessarily a metric to driver safety but one of convenience. In fact, the AASHTO guidelines further state that *"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions."* This statement clearly suggests that stopping sight distance (SSD) is the true metric of assessing driver safety. This is further supported by ODOT's

"change of use" criteria, which specifically references stopping sight distance not intersection sight distance as the applicable criteria (*See criteria "E" above*).

Stopping Sight Distance Summary

For good measure, Kittelson also performed a SSD analysis for the north site driveway to SE 82nd Avenue. For the analysis, SSD measurements were obtained in the field from a viewpoint 3.5 feet above the ground looking toward an object that is 2.0 feet above the ground, consistent with AASHTO methodologies. The field results of the SSD analysis indicate there is over 800 feet of SSD in each direction along SE 82nd Avenue. Such a long distance is due to the straight alignment and level terrain along the highway. Per ODOT standards, a minimum SSD of 340 feet is needed (10 times the 85th percentile speed of 34 mph). These results indicate drivers traveling along SE 82nd Avenue have sufficient sight distance to see an obstruction at the north site driveway and react to avoid collision.

Based on our ISD and SSD analysis findings, there is no existing sight distance deficiency at the north site access to SE 82nd Avenue. Therefore, the sight distance "change of use" criteria in OAR 734-051-3020(e) are not satisfied.

Site Trip Generation Estimates

Kittelson performed a site trip generation assessment using the standard industry reference, Institute of Transportation Engineers' *Trip Generation Manual*, 10th Edition (ITE, Reference 1). For the assessment, trips were estimated for the proposed Chase Bank building using ITE Category 912 (Drive-In Bank) and for the existing restaurant use that will be removed (Ron's Restaurant) using ITE Category 932 (High-Turnover Sit-Down Restaurant).

Table 1 displays the results of the trip generation assessment, expressed in terms of the average daily trips, and weekday AM and PM peak hour trips. Also shown, a limited number of trips were extracted from the total trip estimates to account for internalization of vehicle traffic between the subject site and the adjacent Fred Meyer Shopping Center use. In addition, pass-by trip patterns were also taken into consideration to reflect the unique aspects of bank and restaurant uses, per guidance provided in the *Trip Generation Handbook*, 3th Edition (Reference 2).

As shown in Table 1, relative to the existing restaurant use, the proposed bank will result in 82 additional net new trips over an average weekday, with 10 net new trips (5 in, 5 out) being added during the weekday AM peak hour, and 29 net new trips being added during the weekday PM peak hour.

Table 2. Site Trip Generation Estimates

Land Use	ITE Code	Size (ft^2)	Daily Trips	Weekday AM Peak Hour			Weekday PM Peak Hour		
				Total	In	Out	Total	In	Out
Drive-in Bank (Proposed Use)	912	3,470	347	33	19	14	70	35	35
Internal Trips (10% All)			*-35*	*-3*	*-2*	*-1*	*-8*	*-4*	*-4*
Less Pass-by Trips (35% Daily,29% AM, 35% PM, Sat 38%)			*-109*	*-9*	*-5*	*-4*	*-22*	*-11*	*-11*
High-Turnover Sit-Down Restaurant (Existing Use)	932	2,111	237	21	12	9	21	13	8
Internal Trips (10% All)			*-24*	*-2*	*-1*	*-1*	*-2*	*-1*	*-1*
Less Pass-by Trips (43% All)			*-92*	*-8*	*-4*	*-4*	*-8*	*-5*	*-3*
Difference (proposed – existing)									
Gross Trips			110	12	7	5	49	22	27
Less Internal Trips			*-11*	*-1*	*-1*	*0*	*-6*	*-3*	*-3*
Less Pass-by Trips			*-17*	*-1*	*-1*	*0*	*-14*	*-6*	*-8*
Net New Primary Trips			**82**	**10**	**5**	**5**	**29**	**13**	**16**

Based on the trip generation findings, the proposed development will not increase trips beyond the ODOT thresholds established in the "change of use" criteria in OAR 734-051-3020(a), (b), and (c).

Additional Highway Safety Analyses

As stated by ODOT, OR Highway 213 is a top 10% SPIS (Safety Priority Index System) corridor in the State. As such, the "change of use" criteria specified in OAR 734-051-3020(d) may apply. To address this, Kittelson has ordered detailed crash data from ODOT for a segment of SE 82nd Avenue in the vicinity of the north site access. We will review the data in order to identify any reoccurring patterns and potential safety issues related to the site access, including possible crashes involving left-turn movements. We will also compare the data to average crash rates for similar facilities in the state, and assess potential mitigation measures that may be needed with this project. That analysis is forthcoming and will be submitted in a separate technical memorandum.

Conclusions

Based on our initial findings, the proposed development does not trigger ODOT's "change of use" criteria specified in OAR 734-051-3020(a), (b), (c), or (e) for the north site driveway to SE 82nd Avenue. Therefore, ODOT's suggested mitigation measures to restrict or limit turn movements at the access do not appear necessary or warranted at this time from a safety standpoint.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Brian J. Dunn, P.E.
Associate Engineer

Attachments: "A" – Site Plan Exhibits
"B" – Speed Survey Results
"C" – Sight Distance Field Measurement Exhibits

Attachment A

ALTA/NSPS LAND TITLE SURVEY

LOTS 1-4, TOGETHER WITH A PORTION OF LOTS 29-32, BLOCK 4, AND A PORTION OF LOTS 29-32, BLOCK 3 "PLEASANT LITTLE HOMES #3" ALSO A PORTION OF VACATED SUNSET LANE (COUNTY ROAD NO. 2674) LOCATED IN THE NORTHEAST ONE-QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN CLACKAMAS COUNTY, OREGON

FIELD WORK DATES: DECEMBER 2018

BASIS OF BEARINGS:

SOUTH 02°[illegible] WEST ALONG THE CENTERLINE OF SE 82ND, ALSO BEING THE EAST LINE OF THE NORTHEAST ONE-QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, AS MEASURED BETWEEN THE NORTHEAST CORNER AND EAST ONE-QUARTER CORNER OF SAID SECTION 29 PER HORIZONTAL DATUM BELOW.

HORIZONTAL DATUM:

HORIZONTAL COORDINATES ARE LOCAL DATUM PLANE GROUND COORDINATES BASED ON THE OCRS (OREGON COORDINATE REFERENCE SYSTEM) - PORTLAND ZONE

VERTICAL DATUM:

ELEVATION DATUM: NAVD 88
ESTABLISHED: OCRS (OREGON COORDINATE REFERENCE SYSTEM) - PORTLAND ZONE

TOPOGRAPHIC LEGEND:

- STORM SEWER LINE
- SANITARY SEWER LINE
- WATER LINE
- GAS LINE
- OVERHEAD WIRE
- ELECTRIC LINE
- BUILDING OVERHANG LINE
- BUILDING LINE
- UTILITY LINE IS BELIEVED TO CONTINUE, CONNECTION NOT LOCATED OR UNKNOWN
- MAJOR CONTOUR - 5' INTERVALS
- MINOR CONTOUR - 1' INTERVALS
- SANITARY SEWER MANHOLE
- CLEANOUT
- STORM SEWER MANHOLE
- CATCH BASIN
- WATER VALVE
- WATER METER
- IRRIGATION BOX
- GAS METER
- TRAFFIC SIGNAL BOX
- POLE WITH PEDESTRIAN PUSH BUTTON
- SIGNAL POLE
- SINGLE POST SIGN
- UNKNOWN STAND PIPE
- SPOT ELEVATION
- GUY WIRE
- LIGHT POLE
- UTILITY POLE
- BOLLARD
- HANDI-CAP PARKING SPACE
- SHRUB / BUSH (SIZE AS NOTED)
- CONIFEROUS TREE (APPROXIMATE DIAMETER BREAST HIGH AS NOTED)
- DECIDUOUS TREE (APPROXIMATE DIAMETER BREAST HIGH AS NOTED)
- EXISTING CONCRETE SURFACE
- EXISTING TACTILE WARNING STRIP
- EXISTING ASPHALT SURFACE
- EXISTING LANDSCAPED AREA

NOTE: SYMBOLS SHOWN HEREON ARE FOR GRAPHICAL REPRESENTATION PURPOSES AND DO NOT NECESSARILY SHOW SHAPE, SIZE, ROTATION, CONDITION, TYPE, ETC. OF THE ACTUAL PHYSICAL IMPROVEMENTS THAT THEY REPRESENT. CONDITION, TYPE, ROTATION, ETC. MAY VARY AMONGST ITEMS SHOWN BY THE SAME SYMBOL.

UTILITY STATEMENT:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM LOCATE PAINT MARKINGS TIED IN THE FIELD SURVEY AND AS-BUILT DRAWINGS PROVIDED BY UTILITY COMPANIES. THIS SURVEY DOES NOT SHOW ANY PAINT MARKINGS PROVIDED AFTER THE FIELD SURVEY WAS COMPLETED. AS-BUILT DRAWING INFORMATION THAT WAS NOT PROVIDED IS NOT REFLECTED ON THIS SURVEY. AS-BUILT INFORMATION, IF PROVIDED, WAS USED TO IDENTIFY UNDERGROUND PIPE SIZE AND TYPE (IF SHOWN, AND NOT MEASURED). [illegible] IF NO LOCATE PAINT MARKINGS WERE PROVIDED, AS-BUILT INFORMATION WAS USED TO HORIZONTALLY LOCATE THE UNDERGROUND UTILITIES.

THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE OF ALL SUCH UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM THE INFORMATION PROVIDED. MANHOLES OTHER THAN SANITARY AND STORM SEWER WERE IDENTIFIED BY MANHOLE LIDS AND MAY NOT BE LABELED CORRECTLY.

UTILITY LOCATIONS MUST BE VERIFIED BY THE STATE UTILITY NOTIFICATION CENTER IMMEDIATELY PRIOR TO ANY EXCAVATION.

UTILITY LOCATES WERE REQUESTED 11/29/18 AND 12/14/2018 UNDER TICKET NUMBERS [illegible] AND [illegible]. FOLLOWING IS A LIST OF UTILITY PROVIDERS NOTIFIED:

[illegible]	CLACKAMAS CNTY D.O.T.	[illegible]	[illegible]	[illegible]
[illegible]	CLACKAMAS CNTY D.O.T.	[illegible]	[illegible]	[illegible]
[illegible]	COMCAST CABLE COMM. MNGMT, LLC	[illegible]	[illegible]	[illegible]
[illegible]	CLACKAMAS RIVER WTR DIST	[illegible]	[illegible]	[illegible]
[illegible]	NW NATURAL	(503)220-2415	(503)220-2415	(800)882-3377
[illegible]	OREGON D.O.T. ELECTRICAL	(503)[illegible]	(971)673-6201	(971)673-6201
PGE01	PORTLAND GENERAL ELECTRIC	(503)[illegible]	(800)[illegible]	(503)464-7777
[illegible]	CTLQL-CENTURYLINK	(800)[illegible]	(800)[illegible]	(800)[illegible]

* = DENOTES ASBUILT MAPS RECEIVED

MANHOLE LOCATION INFORMATION:

DUE TO THE HAZARDOUS NATURE AND APPLICABLE OSHA REQUIREMENTS REGARDING CONFINED SPACES, IT IS COMPANY POLICY TO NOT SEND OUR FIELD STAFF INTO UTILITY MANHOLES TO RETRIEVE DEPTH AND SIZE INFORMATION (PIPE SIZES AND DEPTHS ARE OBTAINED THROUGH ABOVE GROUND METHODS). THEREFORE, ANY MANHOLE ELEVATION INFORMATION SHOWN HEREON IS SUBJECT TO AN UNCERTAINTY IN ACCURACY OF PLUS OR MINUS 0.1' OR GREATER (DEPENDING ON DEPTH, SIZE, FLOW, AND CONSTRUCTION OF MANHOLE). MANHOLE PIPE SIZES ARE ALSO SUBJECT TO AN UNCERTAINTY OF TWO INCHES OR MORE (DEPENDING ON DEPTH, SIZE, FLOW, AND CONSTRUCTION OF MANHOLE). IF A HIGHER ACCURACY IS NEEDED, ADDITIONAL TIME, EQUIPMENT, AND PERSONNEL WILL BE REQUIRED TO ENTER THE MANHOLE AND RETRIEVE SAID INFORMATION.

MANHOLE LOCATIONS SHOWN ARE TO CENTER OF LID, NOT CENTER OF STRUCTURE.

NARRATIVE:

THE PURPOSE OF THIS SURVEY IS TO RETRACE THE BOUNDARY OF THAT TRACT OF LAND DESCRIBED IN OR MODIFIED BY DOCUMENT NUMBERS [illegible] AND 2017-024386, CLACKAMAS COUNTY DEED RECORDS AND AS PLATTED BY "PLEASANT LITTLE HOMES NO. 3" FOR CHASE BANK.

TO LOCATE THE CENTERLINE OF SE 82ND AVENUE, I HELD THE [illegible] BRASS DISC MARKING THE SECTION CORNER COMMON TO SECTIONS 20, 21, 28 AND 29, T1S, R2E, W.M., PER SURVEY NUMBER 2010-204, CLACKAMAS COUNTY SURVEY RECORDS, TOGETHER WITH THE [illegible] BRONZE DISC MARKING THE ONE-QUARTER SECTION CORNER COMMON TO SAID SECTIONS 28 AND 29 PER [illegible], CLACKAMAS COUNTY SURVEY RECORDS. SAID CENTERLINE WAS OFFSET 30.00 FEET WESTERLY TO LOCATE THE EAST LINE OF THE SUBJECT PROPERTY PER "PLEASANT LITTLE HOMES NO. 3".

THE NORTH, SOUTH AND WEST LINES OF THE SUBJECT PROPERTY WERE LOCATED PER PARTITION PLAT NO. [illegible] HOLDING ANGLES AND DISTANCES PER SAID PLAT SOUTHERLY FROM THE POINT OF BEGINNING THEREOF, SAID POINT OF BEGINNING BEING MARKED BY A 3" BRASS DISC AS SHOWN HEREON.

THE COURSES NEAR THE NORTHEAST AND SOUTHEAST PORTIONS OF THE SUBJECT PROPERTY, BEING DEPICTED BY LINES 1-8 AND CURVE 1 AS SHOWN HEREON WERE LOCATED BY STATION AND OFFSET PER DOCUMENT NO. 2017-024386, CLACKAMAS COUNTY DEED RECORDS. THE SECTION CORNER COMMON TO SAID SECTIONS 20, 21, 28 AND 29 WAS HELD AS STATION [illegible] PER SAID DOCUMENT AND O.S.H.D. MAP NO. [illegible], STATIONING ASCENDS SOUTHERLY PER SAID DOCUMENTS.

LEGAL DESCRIPTION:

PER FIRST AMERICAN TITLE INSURANCE COMPANY TITLE REPORT FILE NO. [illegible]

REAL PROPERTY IN THE COUNTY OF CLACKAMAS, STATE OF OREGON, DESCRIBED AS FOLLOWS:

PARCEL I:

LOTS 1 THROUGH 4, INCLUSIVE, AND LOTS 29 THROUGH 32, INCLUSIVE, ALL IN BLOCK 4, PLEASANT LITTLE HOMES NO. 3, TOGETHER WITH THAT PORTION OF VACATED SUNSET LANE ADJOINING THAT WOULD ATTACH THERETO BY ORDER NO. [illegible] RECORDED SEPTEMBER [illegible] AS RECORDING NO. [illegible] IN THE COUNTY OF CLACKAMAS AND STATE OF OREGON.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO FRED MEYER, INC., A DELAWARE CORPORATION BY DEED RECORDED DECEMBER 11, 1990 AS FEE NO. [illegible], CLACKAMAS COUNTY DEED RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF OREGON, BY AND THROUGH ITS DEPARTMENT OF TRANSPORTATION BY WARRANTY DEED RECORDED APRIL 11, 2017 AS RECORDING NO. 2017-024386.

PARCEL II:

A PARCEL OF LAND BEING SITUATED IN THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 2 EAST, OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF CLACKAMAS AND STATE OF OREGON.

SAID PARCEL OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SECTION 29, TOWNSHIP 1 SOUTH, RANGE 2 EAST, OF THE WILLAMETTE MERIDIAN, IN THE COUNTY OF CLACKAMAS AND STATE OF OREGON;
THENCE SOUTH [illegible] WEST ALONG THE EAST LINE OF SAID SECTION 29, A DISTANCE OF [illegible] FEET;
THENCE NORTH [illegible] WEST A DISTANCE OF 30.00 FEET TO THE POINT OF BEGINNING; THENCE SOUTH [illegible] WEST ALONG THE WEST RIGHT OF WAY LINE OF SE 82ND AVENUE, A DISTANCE OF [illegible] FEET TO THE CENTER OF SE SUNSET LANE (VACATED);
THENCE NORTH [illegible] WEST A DISTANCE OF 100.00 FEET ALONG SAID CENTER LINE; THENCE NORTH [illegible] EAST A DISTANCE OF [illegible] FEET;
THENCE SOUTH [illegible] EAST A DISTANCE OF 100.00 FEET TO THE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF OREGON, BY AND THROUGH ITS DEPARTMENT OF TRANSPORTATION BY WARRANTY DEED RECORDED APRIL 11, 2017 AS RECORDING NO. 2017-024386.

STORM SEWER NOTES

[illegible] CLEANOUT

[illegible] CATCH BASIN

[illegible] CATCH BASIN

[illegible] STORM MANHOLE

[illegible] CLEANOUT

[illegible] CLEANOUT

[illegible] CATCH BASIN

[illegible] CATCH BASIN

[illegible] STORM MANHOLE

[illegible] CATCH BASIN (OIL TRAP)

[illegible] STORM MANHOLE

[illegible] CATCH BASIN (OIL TRAP)

[illegible] STORM MANHOLE

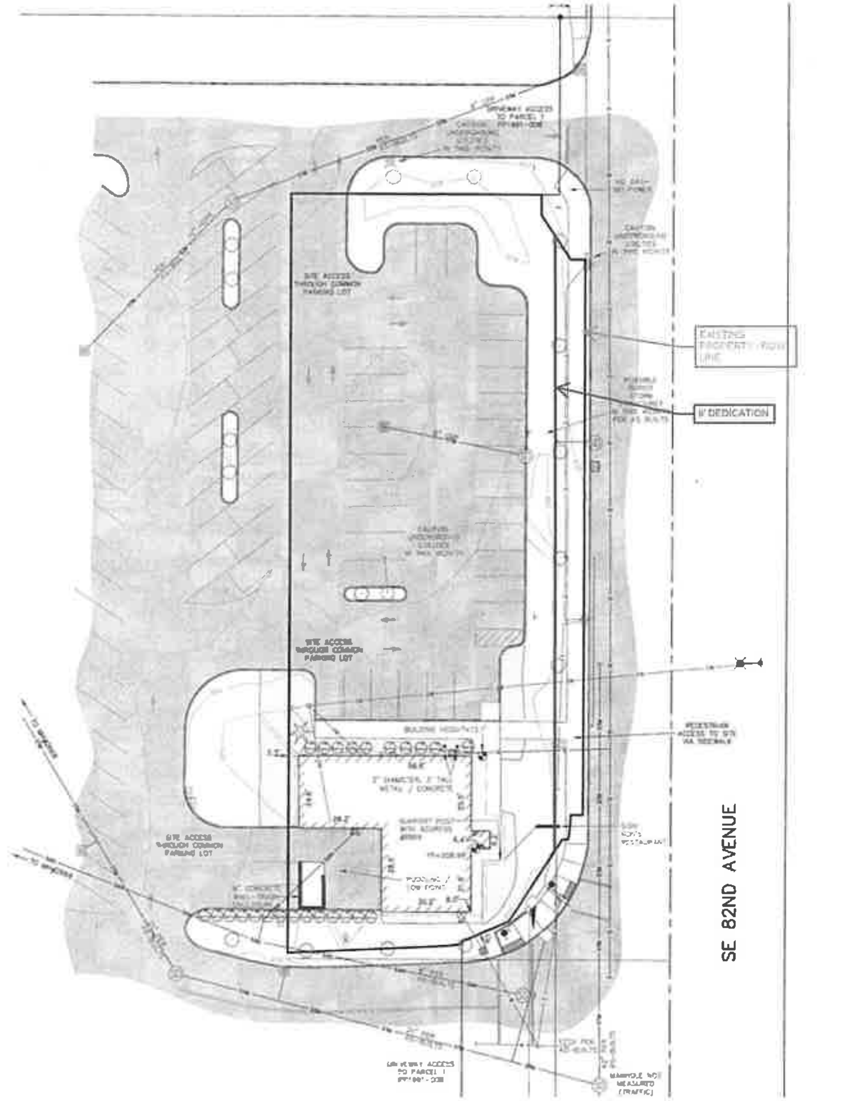
[illegible] CATCH BASIN (OIL TRAP)

[illegible] STORM DRYWELL

SANITARY SEWER NOTES

[illegible] SANITARY MANHOLE

[illegible] SANITARY MANHOLE



ALTA/NSPS LAND TITLE SURVEY
RON'S RESTAURANT ALTA
8869 SE 82ND AVENUE, CLACKAMAS COUNTY, OR

Harper Houf Peterson Righellis Inc.

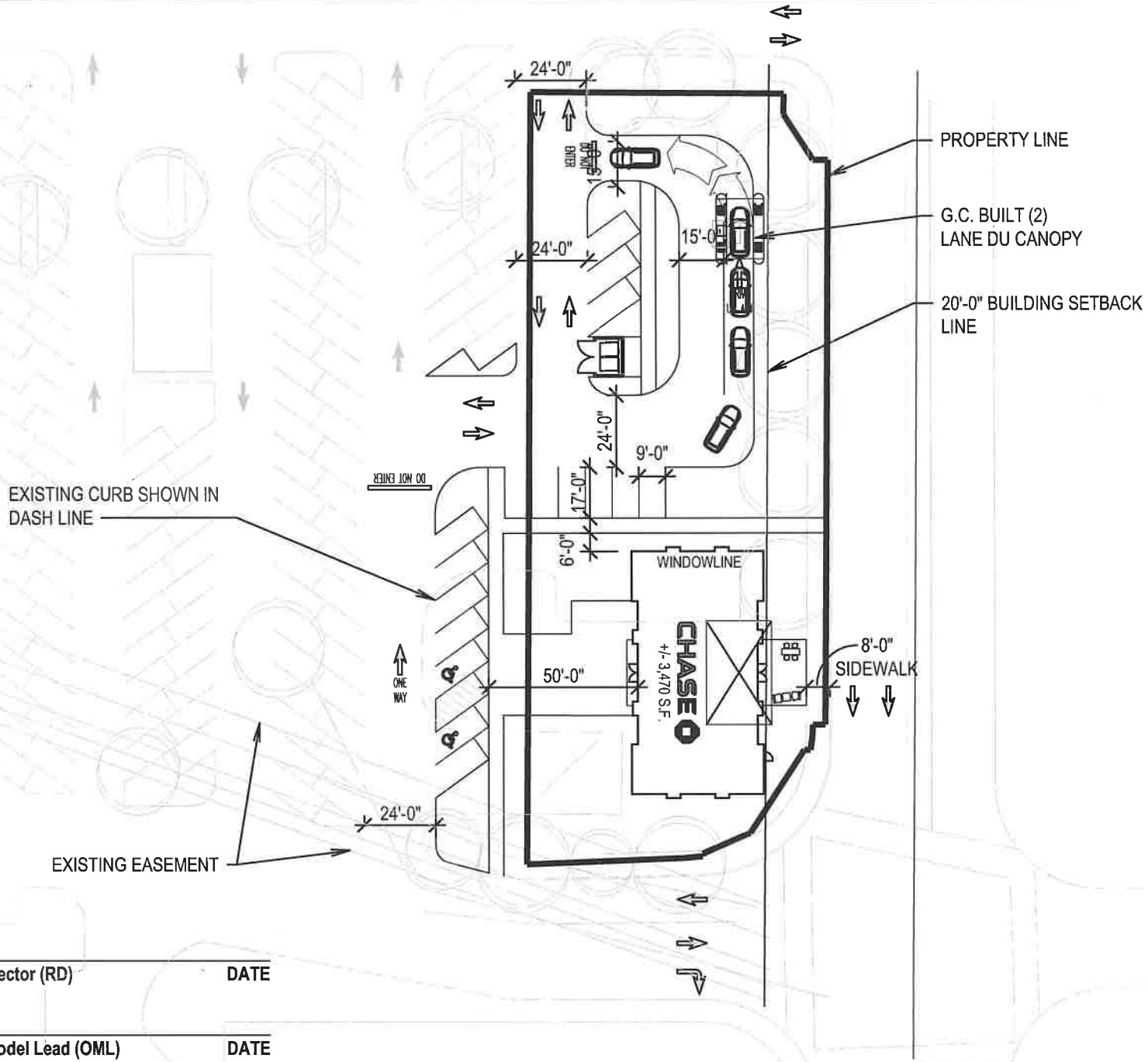
REGISTERED PROFESSIONAL LAND SURVEYOR
OREGON
PATRICK M. GAYLORD

DESIGNED	
DRAWN	TAW
CHECKED	PMG
DATE	12/28/2018

REVISIONS

SHEET NO. 2 of 2

ANK-148



Regional Director (RD) DATE

Operating Model Lead (OML) DATE

CHASE

SITE PLAN

Johnson Creek and SE 82nd Ave

8869 SE 82nd Ave, Portland OR

DATE	DESIGNER	AREA	SCALE
04/25/19	JB	-	1" = 50'

0 10' 25' 50'

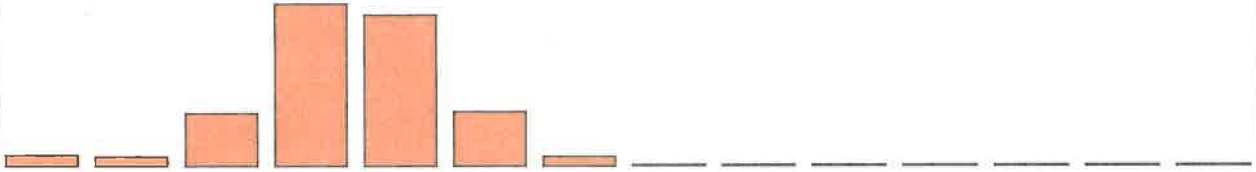
Attachment B

Type of report: Tube Count - Speed Data

LOCATION: 82nd Ave btwn Gray St & Cornwell St, SB
SPECIFIC LOCATION:
CITY/STATE: Clackamas, OR

QC JOB #: 15018101
DIRECTION: SB
DATE: Jun 26 2019

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
12:00 AM	3	1	2	18	42	34	2	2	0	0	0	0	0	0	104	31-40	76
01:00 AM	0	1	2	17	25	22	6	0	0	0	0	0	0	0	73	31-40	47
02:00 AM	0	0	1	4	15	9	1	2	0	0	0	0	0	0	32	31-40	24
03:00 AM	2	1	5	17	21	21	6	0	0	0	0	0	0	0	73	31-40	42
04:00 AM	3	1	7	18	35	25	8	0	0	0	0	0	0	0	97	31-40	60
05:00 AM	2	1	12	37	91	74	27	1	0	0	0	0	0	0	245	31-40	165
06:00 AM	3	1	14	70	159	108	20	3	0	0	0	0	0	0	378	31-40	267
07:00 AM	3	3	34	89	146	99	21	3	0	0	0	0	0	0	398	31-40	245
08:00 AM	7	7	37	128	201	102	19	1	0	0	0	0	0	0	502	26-35	329
09:00 AM	10	11	42	173	266	96	8	2	0	0	0	0	0	0	608	26-35	439
10:00 AM	16	9	64	213	291	110	11	4	1	0	0	0	0	0	719	26-35	504
11:00 AM	23	8	70	305	250	75	9	3	1	0	0	0	0	0	744	26-35	555
12:00 PM	35	21	97	372	254	70	4	1	0	0	0	0	0	0	854	26-35	626
01:00 PM	32	23	173	392	253	54	7	0	0	0	0	0	0	0	934	26-35	645
02:00 PM	9	15	91	366	312	71	9	1	0	0	0	0	0	0	874	26-35	678
03:00 PM	35	27	120	424	280	62	6	1	0	0	0	0	0	0	955	26-35	704
04:00 PM	39	36	121	382	275	50	5	0	0	0	0	0	0	0	908	26-35	657
05:00 PM	29	37	182	419	275	42	4	0	0	0	0	0	0	0	988	26-35	694
06:00 PM	24	27	188	338	195	38	2	1	1	0	0	0	0	0	814	26-35	533
07:00 PM	14	7	69	246	218	63	8	0	0	0	0	0	0	0	625	26-35	464
08:00 PM	7	5	32	166	194	89	19	2	0	0	0	0	0	0	514	26-35	360
09:00 PM	1	4	23	100	167	66	8	0	0	0	0	0	0	0	369	26-35	267
10:00 PM	2	3	13	67	111	52	10	2	0	0	0	0	0	0	260	26-35	178
11:00 PM	1	1	10	35	55	43	5	0	0	0	0	0	0	0	150	31-40	98
Day Total	300	250	1409	4396	4131	1475	225	29	3	0	0	0	0	0	12218	26-35	8527
Percent	2.5%	2%	11.5%	36%	33.8%	12.1%	1.8%	0.2%	0%	0%	0%	0%	0%	0%			
AM Peak Volume	11:00 AM 23	9:00 AM 11	11:00 AM 70	11:00 AM 305	10:00 AM 291	10:00 AM 110	5:00 AM 27	10:00 AM 4	10:00 AM 1	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	12:00 AM 0	11:00 AM 744		
PM Peak Volume	4:00 PM 39	5:00 PM 37	6:00 PM 188	3:00 PM 424	2:00 PM 312	8:00 PM 89	8:00 PM 19	8:00 PM 2	6:00 PM 1	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	12:00 PM 0	5:00 PM 988		



Comments:

Report generated on 6/29/2019 4:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Speed Data

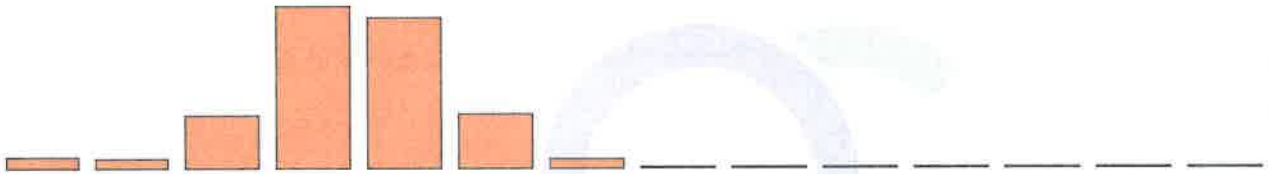
SUMMARY - Tube Count - Speed Data

LOCATION: 82nd Ave btwn Gray St & Cornwell St, SB
SPECIFIC LOCATION:
CITY/STATE: Clackamas, OR

QC JOB #: 15018101
DIRECTION: SB
DATE: Jun 26 2019 -

Speed Range	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
Grand Total Percent	300 2.5%	250 2%	1409 11.5%	4396 36%	4131 33.8%	1475 12.1%	225 1.8%	29 0.2%	3 0%	0 0%	0 0%	0 0%	0 0%	0 0%	12218	26-35	8527
Cumulative Percent	2.5%	4.5%	16%	52%	85.8%	97.9%	99.7%	100%	100%	100%	100%	100%	100%	100%			

ADT
12218



85th Percentile: 34 MPH
Mean Speed(Average): 29 MPH
Median: 29 MPH
Mode: 28 MPH

Comments:

Report generated on 6/29/2019 4:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Type of report: Tube Count - Volume Data

LOCATION: 82nd Ave btwn Gray St & Cornwell St, SB
SPECIFIC LOCATION:
CITY/STATE: Clackamas, OR

QC JOB #: 15018101
DIRECTION: SB
DATE: Jun 26 2019 - Jun 26 2019

Start Time	Mon	Tue	Wed 26 Jun 19	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			104			104			104	
01:00 AM			73			73			73	
02:00 AM			32			32			32	
03:00 AM			73			73			73	
04:00 AM			97			97			97	
05:00 AM			245			245			245	
06:00 AM			378			378			378	
07:00 AM			398			398			398	
08:00 AM			502			502			502	
09:00 AM			608			608			608	
10:00 AM			719			719			719	
11:00 AM			**744**			**744**			**744**	
12:00 PM			854			854			854	
01:00 PM			934			934			934	
02:00 PM			874			874			874	
03:00 PM			955			955			955	
04:00 PM			908			908			908	
05:00 PM			**988**			**988**			**988**	
06:00 PM			814			814			814	
07:00 PM			625			625			625	
08:00 PM			514			514			514	
09:00 PM			369			369			369	
10:00 PM			260			260			260	
11:00 PM			150			150			150	
Day Total			12218			12218			12218	
% Weekday Average			100%							
% Week Average			100%			100%				
AM Peak Volume			11:00 AM 744			11:00 AM 744			11:00 AM 744	
PM Peak Volume			5:00 PM 988			5:00 PM 988			5:00 PM 988	

Comments:

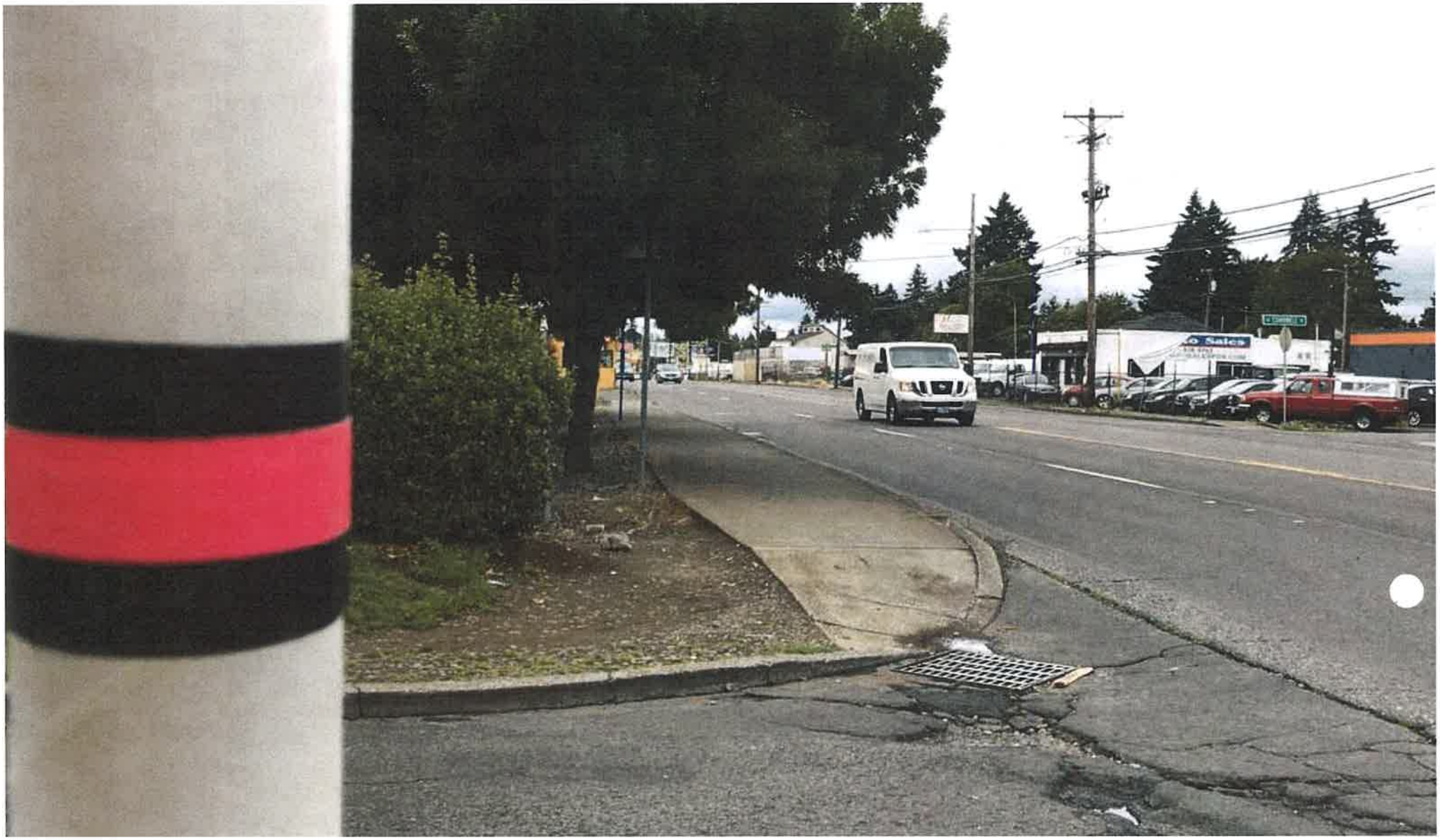
Report generated on 6/29/2019 4:39 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

Attachment C

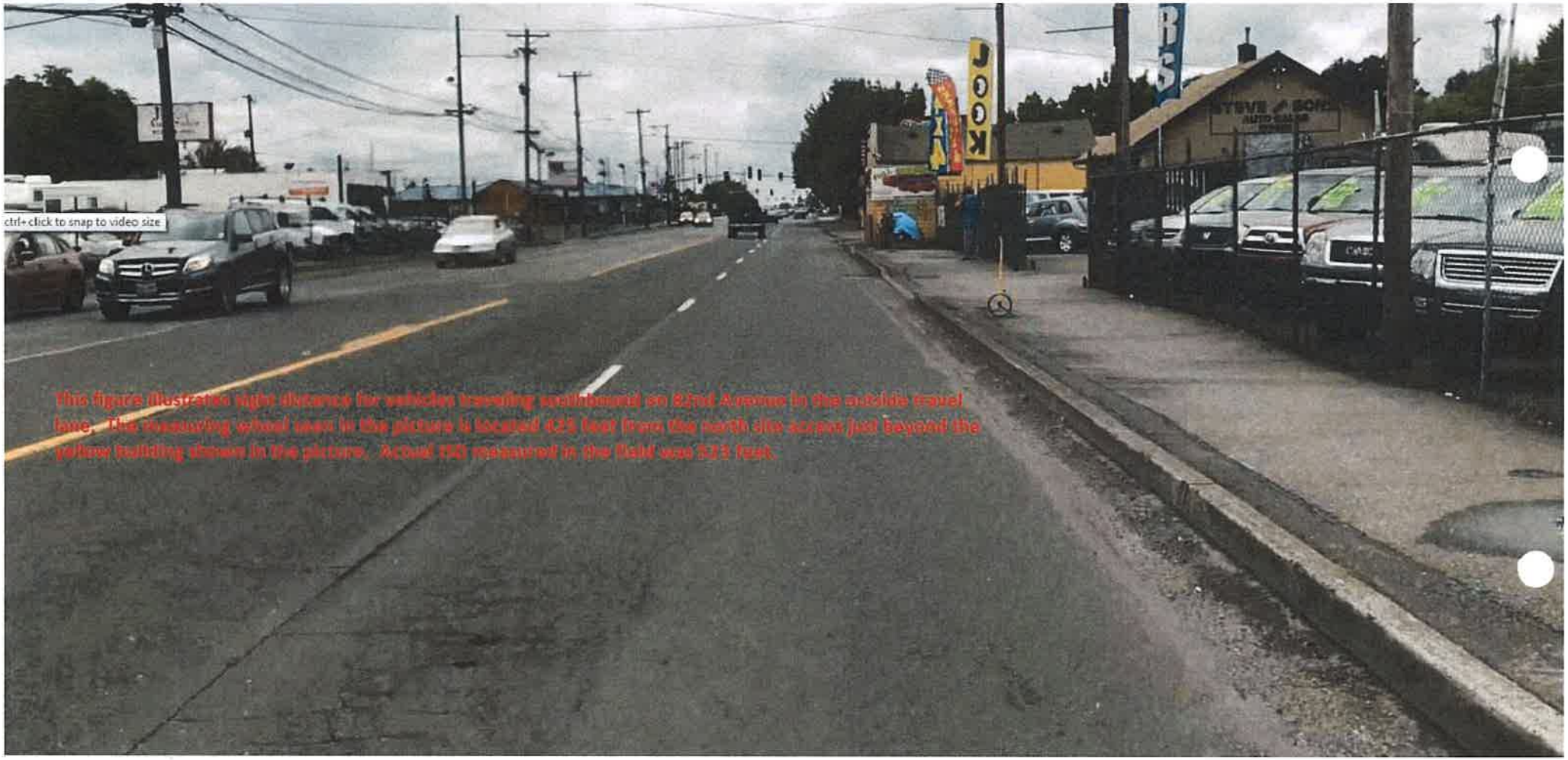
Sales

UTO PARTS


Sales

MT. SCOTT
FLOWERS
MARKET
OPEN
8635
OPEN

SE LUTHER ST
GAS



This figure illustrates sight distance for vehicles traveling southbound on 82nd Avenue in the outside travel lane. The measuring wheel seen in the picture is located 425 feet from the north site access just beyond the yellow building shown in the picture. Actual ISD measured in the field was 523 feet.

GE
Lighting

TYPE 'L-6A'

Evolve™ LED Area Lighting

Recessed Canopy Light (ECRA)

imagination at work

Product Features

The new GE Evolve™ LED Recessed Canopy Light provides an energy-efficient and robust means for lighting areas with canopies, such as gas stations, truck stops and drive-thrus at banks, pharmacies and restaurants. Offering easy installation and maintenance, along with various lumen levels at both 4000K and 5000K color temperatures, this canopy light provides a great LED lighting solution for their outdoor space.

Housing

- Die -cast aluminum housing.
- Integral heat sink for maximum heat transfer.
- Meets 1.5G vibration standards per ANSI C136.31-2010.

LED & Optical Assembly

- Structured LED array for optimized area lighting photometric distributions.
- Evolve™ light engine consisting of reflective technology designed to optimize application efficiency and minimize glare.
- Utilizes high brightness LEDs, 70 CRI at 4000K and 5000K color temperature.
- LM-79 tests and reports are performed in accordance with IESNA standards.

Lumen Maintenance

ECRA SKU	Lxx@50Khrs
A5	L90
B5	L90
C5	L85

- Per TM-21 calculator.
- L70 > 100,000 hrs for all power levels.
- Mounted to Sheet Metal per typical canopy install.
- Ambient Operating condition 25°C.

Ratings

- UL/cUL Listed, suitable for wet locations per UL 1598.
- IP66 rated optical enclosure per ANSI C136.25-2009.
- Temperature rated at –40° to 50°C (C5 SKUs: -40° to 40°C).
- Upward Light Output Ratio (ULOR) = 0.
- Compliant with the material restriction requirements of RoHS.
- DLC Listed.

Please refer to the DLC QPL website for the latest and most complete information. **www.designlights.org/QPL**

Finish

- Corrosion resistant polyester powder painted.
- Standard colors: White, Dark Bronze and Black.

Electrical

- 120-277 volt and 347-480 volt (B5 and C5 optical only), 50/60Hz.
- System power factor is >90% and THD<20%
- Class "A" Sound rating
- EMI: Title 47 CFR 15 Class A
- Motion sensor and integral photo electric sensor available.
- Surge Protection Options: For 120-277VAC and 347-480VAC per IEEE/ANSI C136.2-2015.
  - 6kV/3kA "Basic" standard.
  - 10kV/5kA "Enhanced" R option.

Warranty

- Limited 5-Year Warranty for product launch standard.

Ordering Number Logic

Evolve™ LED Recessed Canopy Light (ECRA)

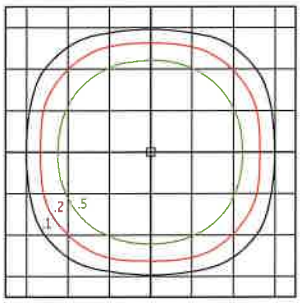
E C R A _ __ F 5 __ _ B ____ ___

PRODUCT ID	PRODUCT GENERATION	VOLTAGE	OPTICAL CODE	LENS TYPE	DRIVE CURRENT	LED COLOR TEMP	MOTION SENSOR/ PE FUNCTION	MOUNTING	COLOR	OPTIONS
E = Evolve C = Canopy R = Recessed	A = Photometric Series "A"	0 = 120 - 277 H = 347-480V* * See below table for available options		F = Flat Lens	5 = 525mA	40 = 4000K 50 = 5000K	1 = None 4 = Motion Sensor and Integral Photocell* * Must order with 10kV surge protection Option "R".	B = 12" Recessed Mount	WHTE = White BLCK = Black DKBZ = Dark Bronze Contact manufacturer for additional colors.	D = Dimmable (0-10 Volt Input) † 002 = Non-Dimming with Junction Box D01 = Dimming with Junction Box R = 10kV/5kA Surge Protection M = NOM31 † Dimming leads will be provided and terminated with quick-disconnect terminals.

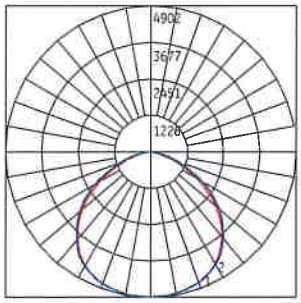
	PHOTOMETRIC TYPE	OPTICAL CODE	LENS TYPE	TYPICAL INITIAL LUMENS 4000K	TYPICAL INITIAL LUMENS 5000K	TYPICAL SYSTEM WATTAGE 120-277V	TYPICAL SYSTEM WATTAGE 347-480V	IES FILE NUMBERS 4000K	IES FILE NUMBERS 5000K
TYPE V	Symmetric Wide	A5	Flat Lens	4170	4230	35	NA	ECRA_A5F540___120-277V.ies	ECRA_A5F550___120-277V.ies
	Symmetric Wide	B5	Flat Lens	8010	8110	64	64	ECRA_B5F540___.ies	ECRA_B5F550___.ies
	Symmetric Wide	C5	Flat Lens	13410	13550	110	110	ECRA_C5F540___.ies	ECRA_C5F550___.ies

Photometrics

ECRA Type V - Symmetric Wide - Flat Lens
13,550 Lumens, 5000K ECRA_C5F550___.ies



Grid Distance in Units of Mounting Height of 15'
Initial Footcandle Values at Grade

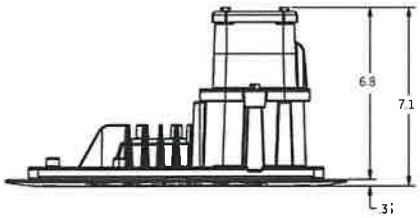


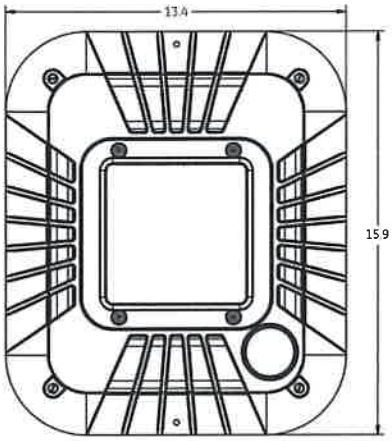
— Vertical plane through horizontal angle of maximum candlepower at 60°
— Horizontal cone through vertical angle of maximum candlepower at 4°

Product Dimensions

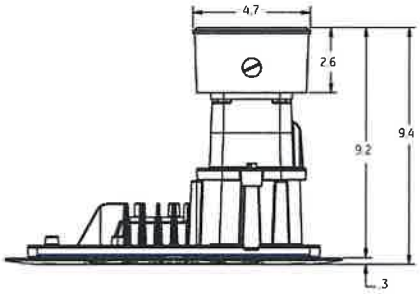
Evolve™ LED Recessed Canopy Light (ECRA)

Standard Lens





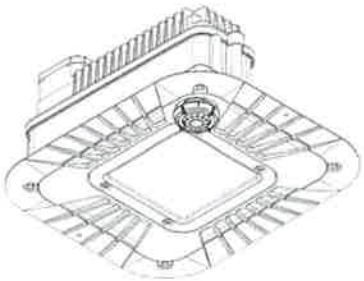
With Optional Electrical Junction Box: 002, D01



DATA

- Approximate Net Weight: Not to exceed 15 lbs.

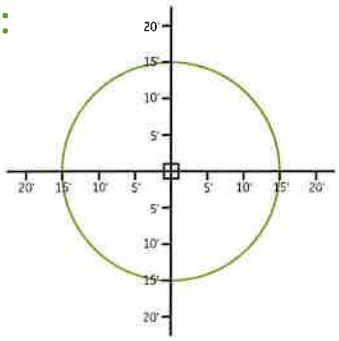
Motion Sensing Option:



- Intended for 8-25ft mounting heights.
- Provides a coverage area radius for walking motion of 15-20ft.
- Provides 360° of coverage.
- Factory pre-set 50% dimmed light output with no occupancy.
- May be reprogrammed using additional remote programmer.
  Remote Programmer part number: WS FSIR-100 PROGRAMMER (197634)
- Photoelectric control is integrated through the motion sensor, and is offered as standard.

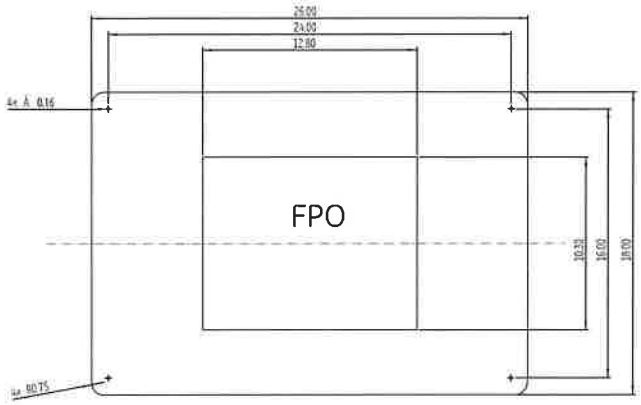
Approximate Sensor Pattern:

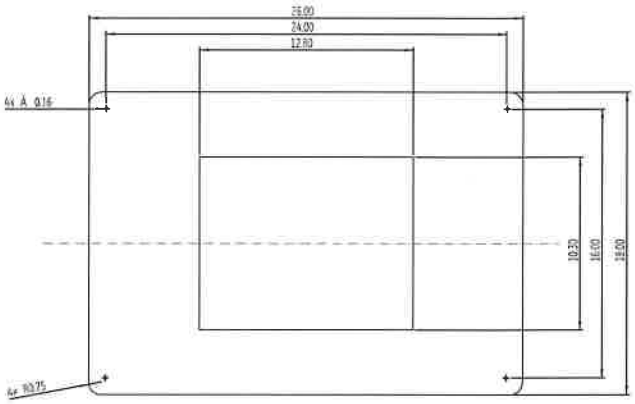
Canopy Fixture
15 ft. Mounting Height



Evolve™ Recessed Canopy Light Accessories

All accessory product ordered and shipped separate from the luminaire.
Contact manufacturer for more information.





Beauty Plates
24" & 32" Escutcheon plates designed to cover unsightly canopy ceilings.

Mounting Plates
26" x 18" Mounting plates designed to ...

E C R — — — E — — — — —

Product ID	Series	Detail	Color
E = Evolve **C** = Canopy **R** = Housing	**E** = Escutcheon Plate	**1** = 24" x 24" Square **2** = 32" x 32" Square	**WHTE** = White **BLCK** = Black **DKBZ** = Dark Bronze RAL custom colors available. Contact Manufacturer.

E C R — — — M — — — — —

Product ID	Series	Detail	Color
E = Evolve **C** = Canopy **R** = Housing	**E** = Mounting Plate*	**1** = 26" x 18"	**WHTE** = White **BLCK** = Black **DKBZ** = Dark Bronze RAL custom colors available. Contact Manufacturer.

* Can be used to hold the weight of the luminaire.

Lumination™ LED Luminaires

LED Architectural Downlight
DI 4" Round Series

Project name _____
Date _____
Type _____

Product Description:

Lumination™ DI Series LED downlights are designed for exceptional efficacy and color rendering. Designed for new construction applications, the DI4R is available in four color temperatures and five lumen packages, all with 90+ CRI. Matching custom engineered reflectors ensure a 45 degree cutoff.

Performance Summary:

Distribution Patterns: Wide 63°
Input Voltage: 120, 277V, 347V
Dimming Options: 0-10V, Phase Dimming, or Daintree to 10%
CCT: 3500K, 4000K
CRI: 90
Color Consistency: 4 Step MacAdam Ellipse
Lifetime Rating: L85 @ 50,000 hrs; TriGain™ L70 @ 60,000 hrs (MLT Modules)
Input Frequency (Hz): 60Hz
Power Factor: >0.9
Mounting Options: Hanger bars for grid ceilings (ordered separately under Accessories)
Weight: 5.1 lb
IC Rating: Non-IC Rated
Limited Warranty: 5 years system
Files Available: LM79, LM80, IES, Revit

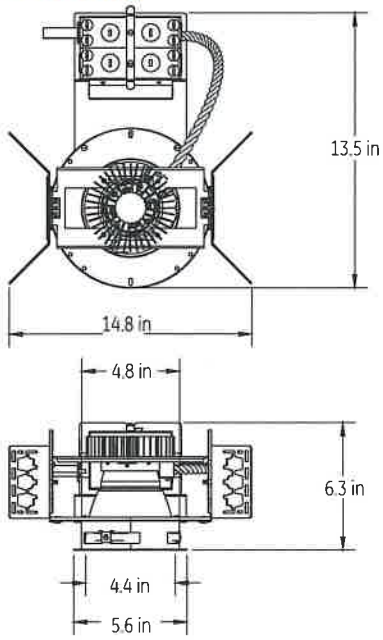
Nominal Module Lumens	1000	1500	2000	3000	4000
Delivered Lumen Output	870	1290	1750	2620	3426
System Input Power (W)	14	20	25	38	51
System Efficacy (LPW)	62	66	70	69	67
Emergency Mode Lumens	630	630	630	630	630

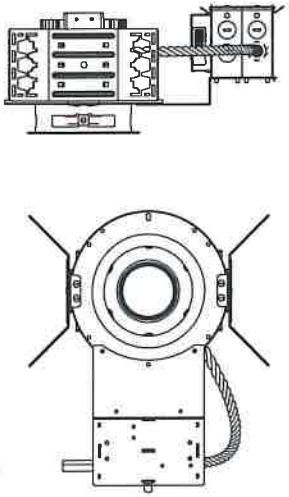
Daintree driver adds 1.4 Watts to System Input Power (W).

Product Dimensions:

TYPE 'L-7'

4" DI Round





Listings:
- UL and cUL Listed.
- Suitable for damp locations.
- Wet Rated options available.

reveal TriGain technology from GE | Daintree WIRELESS CONTROLS | Trade Agreements Act FAR 52.225-5

Ordering Information: A complete fixture consists of a **Housing + Reflector**

1. Housing + Module

D I 4 R 9 V

INTERNAL CODE	FIXTURE TYPE	MODULE LUMEN OUTPUT	CRI/CCT	VOLTAGE	DRIVER	OPTIONS	GENERATION
DI	4R = 4" Round Downlight	10 = 1000 LM* 15 = 1500 LM* 20 = 2000 LM* 30 = 3000 LM 40 = 4000 LM* *NOTE: 1000lm, 2000lm, 4000lm with 3500K must order G2 option.	935 = 90CRI, 3500K 940 = 90CRI, 4000K	1V = 120V 2V[4] = 277V 3V = 347V	10 = 0-10V Dimming Driver PH[8] = Phase Dimming TQ[4,6,9] = Daintree	(blank) = None EL[4,5] = Emergency Light (only available with 0-10V dimming) H = CCEA Chicago Plenum	(blank) = None G2 = Gen 2 fixture* *NOTE: 1000lm, 2000lm, 4000lm with 3500K must order G2 option. 3000lm is (blank).

2. Reflector

R D I 4 R W

REFLECTOR	HOUSING TYPE	BEAM SPREAD	REFLECTOR FINISH	REFLECTOR COLOR	FLANGE FINISH	LENS OPTIONS
R = Reflector	DI4R = 4" Round	W = Wide 63°	SD = Semi-diffused DF = Diffused PT = Painted	Blank = Clear (no color) WE[1] = Wheat PW[1] = Pewter GO[1] = Gold BL[2] = Black WT[3] = White Paint	WT = White Paint MR = Match Reflector	(blank) = No Lens WR = Wet Rated (clear and white paint only)

Ordering Notes:

1. Wheat, pewter, and gold anodized reflector colors available in SD = Semi-Diffused reflector finish only. Contact factory representative for quote.
2. Black anodized reflectors available in DF = Diffused finish only. Contact factory representative for quote.
3. White painted reflectors only available in PT = Painted reflector finish and WT = White Paint flange finish.
4. The 277V input, 1000lm version, and Daintree, and all EL options are not Energy Star certified.
5. EL option not available with 347V input voltage , phase dimming, Daintree, and G2 options.
6. Contact manufacturer representative for quote.
7. Contact manufacturer representative for quote.
8. Phase dimming only available with 1000, 1500, and 2000 lumen packages, and is not available on any G2 options. Only available for 120V.
9. Daintree driver adds 1.4 Watts to System Input Power (W)

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Housing-Only Option

Lumination™ DI series fixtures without LED modules are stocked in GE distribution centers for quick shipment. These fixtures can be shipped directly to job sites for rough-in, and then later fitted with the appropriate LED module and trim kit to complete the installation.

With the Housing-Only option, distributors can:

- Order just the housings for stock, and then complete the order with the appropriate LED module and reflector at a later date
- Order the stocked housing, module, and reflector all at once for a complete fixture in under 2 weeks

For the housing-only option: A complete fixture consists of a **Housing + LED Module + Reflector**

4" Round Housing-Only Fixtures & LED Modules

QUICKSHIP available on selected products.
Contact factory representative for complete listing.

Downlight Housing-Only			Compatible LED Modules		
PRODUCT CODE	DESCRIPTION CODE	PRODUCT DESCRIPTION	PRODUCT CODE	DESCRIPTION CODE	PRODUCT DESCRIPTION
93079190	DI4RLL101V10HOG2	4" Round Housing-Only, 120V, 1000lm, 0-10V Gen2	**93064853**	MLT35A	1000lm, 90 CRI, 3500K
93079191	DI4RLL102V10HOG2	4" Round Housing-Only, 277V, 1000lm, 0-10V Gen2	**93064854**	MLT40A	1000lm, 90 CRI, 4000K
93078862	DI4RLL1V10HO	4" Round Housing-Only, 120V, 1500lm, 0-10V	**19485**	DLM1500/935/G2	1500 LM, 90 CRI, 3500K
93078863	DI4RLL2V10HO	4" Round Housing-Only, 277V, 1500lm, 0-10V	**93115560**	DLM1500/940/G3	1500 LM, 90 CRI, 4000K
93104619	DI4RLL151V10ELHOG2	4" Round Housing-Only, 120V, 1500lm, Gen2, **EL option**	**93064853**	MLT35A	1500 LM, 90 CRI, 3500K
93104620	DI4RLL152V10ELHOG2	4" Round Housing-Only, 277V, 1500lm, Gen2, **EL option**	**93064854**	MLT40A	1500 LM, 90 CRI, 4000K
93079194	DI4RLL201V10HOG2	4" Round Housing-Only, 120V, 2000lm, 0-10V Gen2	**93064853**	MLT35A	2000lm, 90 CRI, 3500K
93079195	DI4RLL202V10HOG2	4" Round Housing-Only, 277V, 2000lm, 0-10V Gen2	**93064854**	MLT40A	2000lm, 90 CRI, 4000K
93104323	DI4RLL202V10ELHOG2	4" Round Housing-Only, 277V, 2000lm, Gen2, **EL option**			
93040522	DI4RHL1V10HO	4" Round Housing-Only, 120V, 3000lm, 0-10V	**19595**	DLM3000/935	3000 LM, 90 CRI, 3500K
93040523	DI4RHL2V10HO	4" Round Housing-Only, 277V, 3000lm, 0-10V	**34178**	DLM3000/940	3000 LM, 90 CRI, 4000K
93103507	DI4RHL401V10HOG2	4" Round Housing-Only, 120V, 4000lm, 0-10V Gen2	**93104259**	MH935A	4000 LM, 90 CRI, 3500K
93103508	DI4RHL402V10HOG2	4" Round Housing-Only, 277V, 4000lm, 0-10V Gen2	**93104260**	MH940A	4000 LM, 90 CRI, 4000K

4" Round Stocked Reflectors

PRODUCT CODE	DESCRIPTION CODE	PRODUCT DESCRIPTION
93984	RDI4RWSDMR	4" Round Reflector, Wide Distribution, Semi-Diffuse, Polished Flange
93985	RDI4RWSDWT	4" Round Reflector, Wide Distribution, Semi-Diffuse, White Flange
86022	RDI4RWPTWTWT	4" Round Reflector, Wide Distribution, Semi-Diffuse, All-White Painted
93027440	RDI4RWSDMRWR	4" Round Reflector, Wide Distribution, Semi-Diffuse, Polished Flange Wet Rated
93027441	RDI4RWSDWTWR	4" Round Reflector, Wide Distribution, Semi-Diffuse, White Flange Wet Rated
93030441	RDI4RWPTWTWTWR	4" Round Reflector, Wide Distribution, Semi-Diffuse, All-White Painted Wet Rated

Accessories (ordered separately)

PRODUCT DESCRIPTION	MATERIAL DESCRIPTION	MATERIAL
ENLIGHTED SENSOR KIT	LCACBAVQNUNGALV	93029451
DAINTREE SENSOR KIT	LCACBAVTQUNGALV	93057194
HANGER BAR, C-CHANNEL - 25 1/4" (BOXED PAIR)	BH3	93110306

current powered by GE

Photometric Data: Lumination™ DI4R Series Downlights

Wide Distribution - 1000, 1500, 200 lumen

COEFFICIENTS OF UTILIZATION																		
RC	80%				70%				50%			30%			10%			0%
RW	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	111	108	106	111	108	106	104	104	102	101	101	99	98	97	96	95	93
2	108	103	98	95	105	101	97	94	98	95	92	95	92	90	92	90	88	86
3	102	95	90	86	100	94	89	86	91	87	84	89	86	83	87	84	82	80
4	97	89	83	79	95	88	82	78	86	81	77	84	80	77	82	78	76	74
5	91	83	77	73	90	82	76	72	80	75	72	78	74	71	77	73	70	69
6	87	78	71	67	85	77	71	67	75	70	66	74	69	66	72	68	65	64
7	82	73	66	62	81	72	66	62	71	65	62	69	65	61	68	64	61	60
8	78	68	62	58	77	68	62	58	67	61	57	65	61	57	65	60	57	56
9	74	64	58	54	73	64	58	54	63	57	54	62	57	54	61	57	53	52
10	70	61	55	51	69	60	54	51	59	54	50	58	54	50	58	53	50	49

NOTE: Floor Cavity Reflectance : 20%

CANDLEPOWER SUMMARY

NOMINAL MODULE LUMENS	1000	1500	2000
Angle	Candela	Candela	Candela
0	697	1029	1394
5	730	1077	1459
10	782	1154	1563
15	825	1217	1649
20	817	1206	1634
25	703	1038	1406
30	515	760	1030
35	334	492	667
40	200	296	401
45	88	130	176
50	28	42	57
55	12	17	24
60	6	9	13

CONE OF LIGHT

NOMINAL MODULE LUMENS	1000	1500	2000	
Height	fc	fc	fc	Dia. (ft.)
6'	19	29	39	6.9
8'	11	16	22	9.2
10'	7	10	14	11.5
12'	5	7	10	13.9
14'	4	5	7	16.2
16'	3	4	5	18.5
18'	2	3	4	20.8
20'	2	3	3	23.1

ZONAL LUMEN SUMMARY

NOMINAL MODULE LUMENS	1000	1500	2000	
Zone	Lumens	Lumens	Lumens	% of Fixture
0 - 30°	597	881	1194	69.1
0 - 40°	788	1163	1576	91.1
0 - 60°	860	1269	1719	99.4
0 - 90°	865	1277	1730	100

APPLICATION REFERENCE (Open Space)

NOMINAL MODULE LUMENS	1000		1500		2000	
Spacing	Avg. fc	W/ft²	Avg. fc	W/ft²	Avg. fc	W/ft²
4' x 4'	54.5	1.08	80.4	1.50	-	-
6' x 6'	25.5	0.50	37.6	0.70	50.9	0.90
8' x 8'	13.7	0.27	20.1	0.38	27.3	0.48
10' x 10'	9.1	0.18	13.4	0.25	18.2	0.32
	10' ceiling, Open Space: 50' x 40' x 10'					

LLF:1.0 Initial, 80/50/20 Reflectances, 2.5' workplane

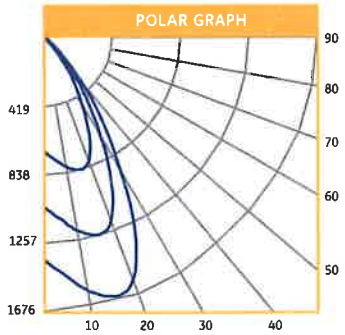
APPLICATION REFERENCE (Corridor)

NOMINAL MODULE LUMENS	1000		1500		2000	
Spacing	Avg. fc	W/ft²	Avg. fc	W/ft²	Avg. fc	W/ft²
4' on ctr.	23.5	0.75	34.6	1.04	46.9	1.33
6' on ctr.	16.0	0.51	23.5	0.71	31.9	0.91
8' on ctr.	11.3	0.36	16.6	0.50	22.5	0.64
10' on ctr.	9.4	0.30	13.9	0.42	18.8	0.53
	10' ceiling, Corridor: 6' W x 100' L					

LLF: 1.0 Initial, 80/50/20 Reflectances, Light levels on the ground

Spacing Criteria: DI4R - Wide = 1.14

Wide - 1000, 1500, 2000 Lm



current powered by GE

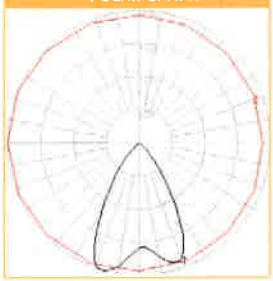
Photometric Data: Lumination™ DI4R Series Downlights

3000 Lumen LED Module

COEFFICIENTS OF UTILIZATION

RC	80%				70%				50%			30%			10%			0%
RW	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	111	108	106	111	109	106	104	105	103	101	101	99	98	97	96	95	94
2	108	103	99	96	106	101	98	95	98	95	92	95	93	90	92	90	89	87
3	102	96	91	87	100	95	90	86	92	88	85	90	86	84	87	85	82	81
4	97	90	84	80	95	88	83	79	86	82	78	84	80	77	82	79	77	75
5	92	84	78	74	90	83	77	73	81	76	73	79	75	72	78	74	71	70
6	87	78	72	68	86	78	72	68	76	71	67	75	70	67	73	69	66	65
7	83	74	67	63	82	73	67	63	72	66	63	70	66	62	69	65	62	61
8	79	69	63	59	78	69	63	59	67	62	59	66	62	58	65	61	58	57
9	75	65	59	55	74	65	59	55	64	58	55	63	58	55	62	58	54	53
10	71	61	56	52	70	61	55	52	60	55	51	59	55	51	59	54	51	50

POLAR GRAPH



Effective Floor Cavity Reflectance 0.20

ZONAL LUMEN SUMMARY

Zone	Lumens	% of	% of Fixture
0-20	912.79	N.A.	35.50
0-30	1832.90	N.A.	71.30
0-40	2404.87	N.A.	93.50
0-60	2567.57	N.A.	99.80
0-80	2572.30	N.A.	100.00
0-90	2572.31	N.A.	100.00

Total Luminaire Efficiency = N.A.%

LUMINANCE DATA (CD/SQ.M)

Angle in Degrees	0°	45°	90°
45°	29695	28450	28628
55°	2192	2192	2192
65°	893	1190	1190
75°	486	486	486
85°	0	0	0

ZONAL LUMEN SUMMARY

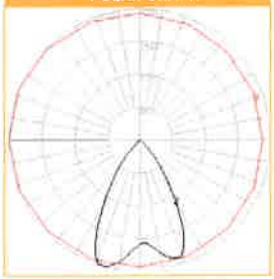
Zone	Lumens
0-10	212.17
10-20	700.62
20-30	920.11
30-40	571.96
40-50	152.25
50-60	10.45

4000 Lumen LED Module

COEFFICIENTS OF UTILIZATION

RC	80%				70%				50%			30%			10%			0%
RW	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	111	108	106	111	109	106	104	105	103	101	101	99	98	97	96	95	93
2	108	103	99	96	106	101	98	94	98	95	92	95	93	90	92	90	89	87
3	102	96	91	87	100	95	90	86	92	88	85	90	86	84	87	85	82	81
4	97	90	84	80	95	88	83	79	86	82	78	84	80	77	82	79	77	75
5	92	84	78	73	90	83	77	73	81	76	73	79	75	72	78	74	71	70
6	87	78	72	68	86	78	72	68	76	71	67	75	70	67	73	69	66	65
7	83	74	67	63	82	73	67	63	72	66	63	70	66	62	69	65	62	61
8	79	69	63	59	78	69	63	59	67	62	59	66	62	58	65	61	58	57
9	75	65	59	55	74	65	59	55	64	58	55	63	58	55	62	58	54	53
10	71	61	56	52	70	61	55	52	60	55	51	59	55	51	59	54	51	50

POLAR GRAPH



Effective Floor Cavity Reflectance 0.20

ZONAL LUMEN SUMMARY

Zone	Lumens	% of	% of Fixture
0-20	1194.27	N.A.	35.50
0-30	2398.16	N.A.	71.20
0-40	3146.58	N.A.	93.50
0-60	3359.74	N.A.	99.80
0-80	3366.28	N.A.	100.00
0-90	3366.38	N.A.	100.00

Total Luminaire Efficiency = N.A.%

LUMINANCE DATA (CD/SQ.M)

Angle in Degrees	0°	45°	90°
45°	38941	37340	37340
55°	2850	2850	3069
65°	1488	1488	1488
75°	486	972	486
85°	0	0	0

ZONAL LUMEN SUMMARY

Zone	Lumens
0-10	277.60
10-20	916.67
20-30	1203.89
30-40	748.42
40-50	199.33
50-60	13.84

Product Specifications:

Ratings:

- Operating temperature: -20°C to +35°C
- Storage temperature: -40°C to +70°C
- Surge protection: ANSI C82.77-5 compliant
- Environmental: RoHS compliant

Construction:

- 16 gauge galvanized steel housing
- 0.032" thick reflectors resist dents during transportation and installation
- Custom engineered heat sinks for passive cooling at all lumen options
- Galvanized steel junction box with multiple 1/2" trade-sized knockouts

Installation:

- Universal mounting brackets with over 3" of vertical adjustment accommodate several types of hanger bars
- Accommodates ceilings up to 1.5" thick
- Mount in T-bar grid ceilings, not for drywall applications.
- LED module twists in at time of trim installation, preventing damage to module during ceiling installation. Refer to Installation Guide for proper installation procedures if self-installing.

Optical System:

- Custom engineered reflectors for precise beam distributions and 45° cutoff to light source and source image
- Self-flanged design with white painted or reflector-matching trim
- Standard semi-diffuse finish for ideal combination of optical efficiency and low glare

Electrical System:

- LED module provides exceptional performance and tool-free upgradeability
- Standard 0-10V dimming, high efficiency drivers
- Thermal protection feature in module protects LEDs from overheating in abnormal conditions

For more information and access to all of our resources, including our design tool visit: www.products.CurrentByGE.com

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TYPE 'SL-1' & 'SL-1.1'

Evolve™ LED Area Light

N Series (EANB)

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Product Features

The next generation of the GE Evolve™ LED Area Light is an exciting solution to efficiently illuminate site and area applications. The smaller-form design of the EANB fixture provides superior illuminance at impressive site ROIs. The exclusive optical ring design effectively directs the light and produces impressive vertical illuminance and glare control. Additionally, the Evolve LED Area Light provides significant operating cost benefits over the life of each fixture with reduced energy consumption and a long rated life that virtually eliminates ongoing maintenance expenses.

Applications

- Site, area, roadway and general lighting applications utilizing advanced LED optical system providing high uniformity, excellent vertical light distribution, reduced offsite visibility, reduced on-site glare and effective security light levels.
- Obtain a truly optimized and efficient parking space with dimming and occupancy sensing features.

Housing

- Die-cast aluminum housing.
- Slim architectural design incorporates an integral heat sink and light engine, ensuring maximum heat transfer, long LED life, and a reduced Effective Projected Area (EPA).
- Meets 2G vibration level per ANSI C136.31-2010.

LED & Optical Assembly

- Structured LED arrays for optimized area light photometric distribution.
- Evolve light engine with directional reflectors designed to optimize application efficiency and minimize glare.
- Utilizes high brightness LEDs, 70 CRI at 3000K, 4000K and 5000K typical.

Lumen Maintenance

- Projected L90>50,000 hours per IES TM-21
- Projected Lxx per IES TM-21 at 25°C for reference:

SKU	LXX (10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
EANB	L98	L95	L90

NOTES: 1) Projected Lxx based on LM-80 (10,000 hour testing).
2) DOE Lighting Facts Verification Testing Tolerances apply to initial luminous flux and lumen maintenance measurements.

Lumen Ambient Temperature Factors:

LUMEN AMBIENT TEMPERATURE FACTORS:	
AMBIENT TEMPERATURE (°C)	INITIAL FLUX FACTOR
10	1.02
20	1.01
25	1.00
30	0.99
40	0.98
50	0.97

DLC Standard qualified models available. Please refer to http://www.designlights.org/QPL for complete information.

Ratings

- UL/cUL listed, suitable for wet locations.
- IP66 rated optical enclosure per ANSI C136.25-2009.
- Temperature rated at -40° to 50°C.
- Upward Light Output Ratio (ULOR) = 0.
- Title 24 compliant with "H" motion sensor option.
- Compliant with the material restriction requirements of RoHS.

Mounting

Option A
- 10-inch (254mm) mounting arm for square pole prewired with 24-inch (610mm) leads.

Option B
- 10-inch (254mm) mounting arm for round pole prewired with 24-inch (610mm) leads.

Option C
- Slipfitter mounting for 2 3/8-inch (60mm) O.D. pipe prewired with 24-inch (610mm) leads.

Option D
- 10-inch (254mm) mounting arm for round or square pole prewired with 24-inch (610mm) leads.

Finish

- Corrosion resistant polyester powder painted, minimum 2.0 mil. thickness.
- Standard colors: Black & Dark Bronze.
- RAL & custom colors available.

Electrical

- 120-277 VAC and 347-480 VAC available.
- System power factor is >90% and THD <20%.
- ANSI C136.41 7-pin dimming receptacle, standard.
- ANSI photo electric sensors (PE) available for all voltages. Light Grid compatible.
- Dimming/Occupancy:
  - Wired 0-10V continuous dimming
  - DALI digital dimming. Contact manufacturer for availability.
  - Standalone motion sensor based dimming using "H" option code.
- Surge Protection per ANSI C136.2-2015.
  - 6kV/3kA "Basic" surge protection, standard.
  - 10kV/5kA "Enhanced" surge protection optional.

Accessories

- PE Accessories - See Page 3

Ordering Number Logic

Evolve™ LED Area Light N Series (EANB)

E A N B _ _ _ _ _ 7 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

PROD. ID	PHOTOMETRIC SERIES	VOLTAGE	OPTICAL CODE	CRI	LED COLOR TEMP	PE FUNCTION	MOUNTING ARM	COLOR	OPTIONS
E = Evolve A = Area Light N = Housing Series	B = Photometric Series "B"	0 = 120-277* 1 = 120 2 = 208 3 = 240 4 = 277 5 = 480 D = 347 H = 347-480V* * Not available with Fusing. Must choose a discreet voltage with F Option.		7 = 70 (min)	30 = 3000K◇ 40 = 4000K 50 = 5000K ◇Select 3000K CCT for IDA Approved units	1 = None A = ANSI C136.41 7-pin PE Receptacle # D = ANSI C136.41 7-pin PE Receptacle with Shorting Cap # # Order Dimming/ Control PE as a separate item. See accessories section of this datasheet for ordering information.	A = 10" Arm for Square Pole, supplied with leads B = 10" Arm for Round Pole, supplied with leads C = EXT Slipfitter 2" Pipe (2.378 in. OD) supplied with leads D = 10" Arm for Round or Square poles, supplied with leads and additional hardware	BLCK = Black DKBZ = Dark Bronze GRAY = Gray WHTE = White Contact manufacturer for other colors.	D = External Dimming Leads Provided (0-10Volt Input) F = Fusing L = Tool less entry R = 10kV Enhanced Surge Protection H = Motion Sensor *# U = DALI Dimming+^ XXX = Special Options *May only be selected in conjunction with A, B or D Mounting Arm. # R & H options cannot be purchased together. + Compatible with LightGrid 2.0 nodes. ^ Not compatible at 347-480V, with A-level optical code, or with motion sensor control.

	OPTICAL CODE	TYPE	TYPICAL INITIAL LUMENS 3000K	TYPICAL INITIAL LUMENS 4000K & 5000K	TYPICAL SYSTEM WATTAGE 120-277V, 347-480V	BUG RATING 3000K B-U-G	BUG RATING 4000K & 5000K B-U-G	IES FILE NUMBER 3000K	IES FILE NUMBER 4000K	IES FILE NUMBER 5000K
TYPE IV	A4	Asymmetric Forward	4,000	4,300	44	B1-U0-G1	B1-U0-G1	EANB_A4730__.IES	EANB_A4740__.IES	EANB_A4750__.IES
	B4	Asymmetric Forward	5,800	6,200	58	B1-U0-G2	B1-U0-G2	EANB_B4730__.IES	EANB_B4740__.IES	EANB_B4750__.IES
	C4	Asymmetric Forward	7,500	8,000	70	B1-U0-G2	B1-U0-G2	EANB_C4730__.IES	EANB_C4740__.IES	EANB_C4750__.IES
	D4	Asymmetric Forward	9,200	9,800	89	B1-U0-G2	B2-U0-G2	EANB_D4730__.IES	EANB_D4740__.IES	EANB_D4750__.IES
	E4	Asymmetric Forward	10,800	11,500	98	B2-U0-G2	B2-U0-G2	EANB_E4730__.IES	EANB_E4740__.IES	EANB_E4750__.IES
	F4	Asymmetric Forward	12,900	13,700	125	B2-U0-G3	B2-U0-G3	EANB_F4730__.IES	EANB_F4740__.IES	EANB_F4750__.IES
TYPE III	A3	Asymmetric Wide	4,300	4,600	44	B1-U0-G1	B1-U0-G1	EANB_A3730__.IES	EANB_A3740__.IES	EANB_A3750__.IES
	B3	Asymmetric Wide	6,200	6,600	58	B1-U0-G1	B1-U0-G1	EANB_B3730__.IES	EANB_B3740__.IES	EANB_B3750__.IES
	C3	Asymmetric Wide	8,100	8,600	70	B1-U0-G2	B1-U0-G2	EANB_C3730__.IES	EANB_C3740__.IES	EANB_C3750__.IES
	D3	Asymmetric Wide	9,900	10,500	89	B2-U0-G2	B2-U0-G2	EANB_D3730__.IES	EANB_D3740__.IES	EANB_D3750__.IES
	E3	Asymmetric Wide	11,600	12,400	98	B2-U0-G2	B2-U0-G2	EANB_E3730__.IES	EANB_E3740__.IES	EANB_E3750__.IES
	F3	Asymmetric Wide	13,900	14,700	125	B2-U0-G2	B2-U0-G2	EANB_F3730__.IES	EANB_F3740__.IES	EANB_F3750__.IES
TYPE II	A2	Asymmetric Narrow	4,200	4,500	44	B1-U0-G1	B1-U0-G1	EANB_A2730__.IES	EANB_A2740__.IES	EANB_A2750__.IES
	B2	Asymmetric Narrow	6,100	6,500	58	B1-U0-G1	B1-U0-G1	EANB_B2730__.IES	EANB_B2740__.IES	EANB_B2750__.IES
	C2	Asymmetric Narrow	7,900	8,400	70	B2-U0-G2	B2-U0-G2	EANB_C2730__.IES	EANB_C2740__.IES	EANB_C2750__.IES
	D2	Asymmetric Narrow	9,700	10,300	89	B2-U0-G2	B2-U0-G2	EANB_D2730__.IES	EANB_D2740__.IES	EANB_D2750__.IES
	E2	Asymmetric Narrow	11,400	12,100	98	B2-U0-G2	B2-U0-G2	EANB_E2730__.IES	EANB_E2740__.IES	EANB_E2750__.IES
	[illegible]	Asymmetric Narrow	13,600	14,400	125	B2-U0-G2	B2-U0-G2	EANB_F2730__.IES	EANB_F2740__.IES	EANB_F2750__.IES

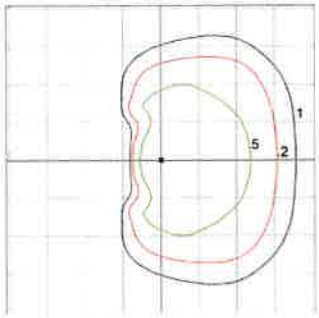
PE Accessories (to be ordered separately)

SAP Number	Part Number	Description
93029237	PED-MV-LED-7	ANSI C136.41 Dimming PE, 120-277V
93029238	PED-347-LED-7	ANSI C136.41 Dimming PE, 347V
93029239	PED-480-LED-7	ANSI C136.41 Dimming PE, 480V

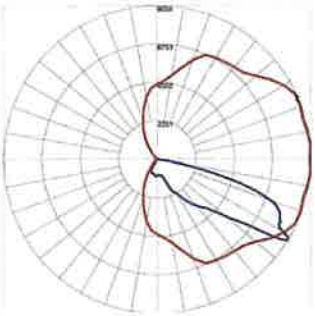
SAP Number	Part Number	Description
28299	PEC0TL	STANDARD 120-277V
28294	PEC5TL	STANDARD 480V
80436	PECDTL	STANDARD 347V
73251	SCCL-PECTL	Shorting cap

Photometrics

EANB Type IV - Asymmetric Forward (F4)
13,700 Lumens, 5000K (EANB_F4750___.IES)

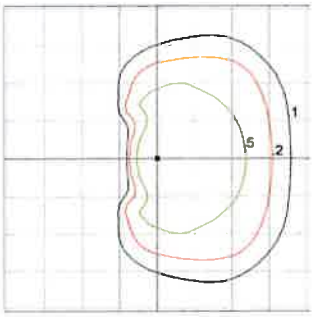


Grid Distance in Units
of Mounting Height at 30' Initial
Footcandle Values at Grade

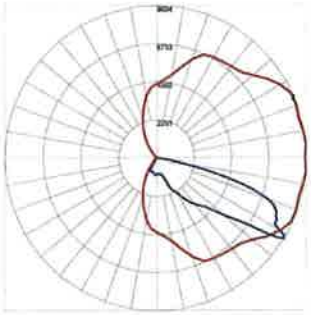


— Vertical plane through horizontal angle
of maximum candlepower at 45°
— Vertical plane through horizontal angle of 72.5°

EANB Type IV - Asymmetric Forward (A4)
4,300 Lumens, 5000K (EANB_A4750___.IES)

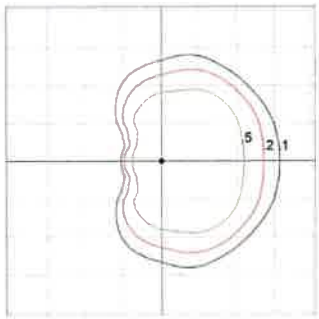


Grid Distance in Units
of Mounting Height at 15' Initial
Footcandle Values at Grade

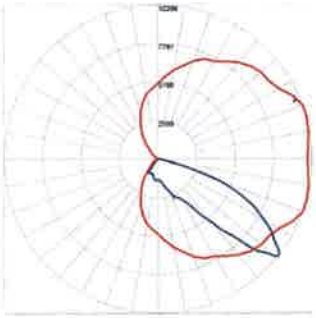


— Vertical plane through horizontal angle
of maximum candlepower at 45°
— Vertical plane through horizontal angle of 72.5°

EANB Type III - Asymmetric Wide (F3)
14,700 Lumens, 5000K (EANB_F3750___.IES)

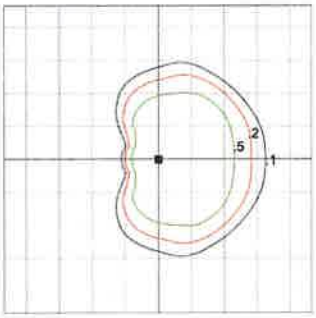


Grid Distance in Units
of Mounting Height at 30' Initial
Footcandle Values at Grade

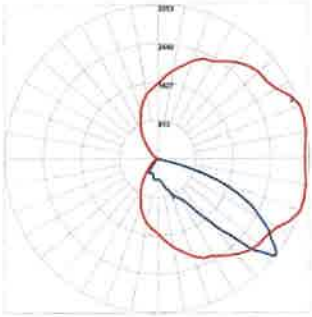


— Vertical plane through horizontal angle
of maximum candlepower at 20°
— Vertical plane through horizontal angle of 52.5°

EANB Type III - Asymmetric Wide (A3)
4,600 Lumens, 5000K (EANB_A3750___.IES)

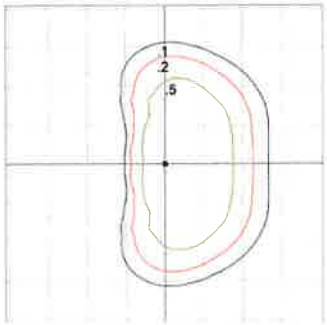


Grid Distance in Units
of Mounting Height at 15' Initial
Footcandle Values at Grade

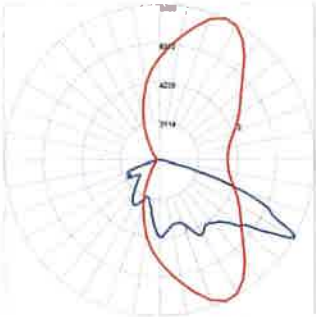


— Vertical plane through horizontal angle
of maximum candlepower at 20°
— Vertical plane through horizontal angle of 52.5

EANB Type II - Asymmetric Narrow (F2)
14,400 Lumens, 5000K (EANB_F2750___.IES)

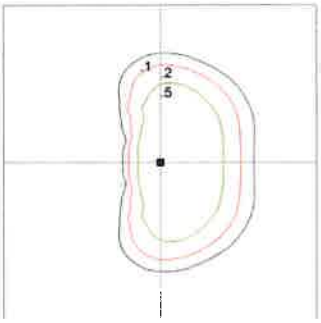


Distance in Units
of Mounting Height at 30' Initial
Footcandle Values at Grade

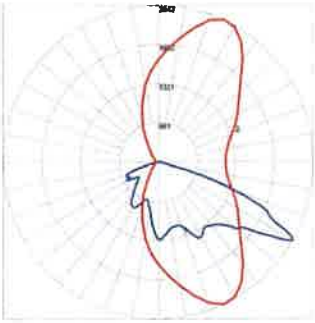


— Vertical plane through horizontal angle
of maximum candlepower at 65°
— Vertical plane through horizontal angle of 60°

EANB Type II - Asymmetric Narrow (A2)
4,500 Lumens, 5000K (EANB_A2750___.IES)



Grid Distance in Units
of Mounting Height at 15' Initial
Footcandle Values at Grade

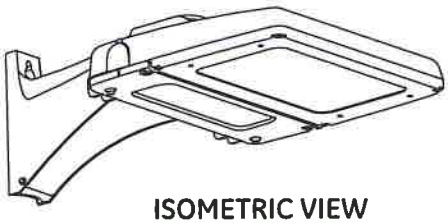


— Vertical plane through horizontal angle
of maximum candlepower at 65°
— Vertical plane through horizontal angle of 60°

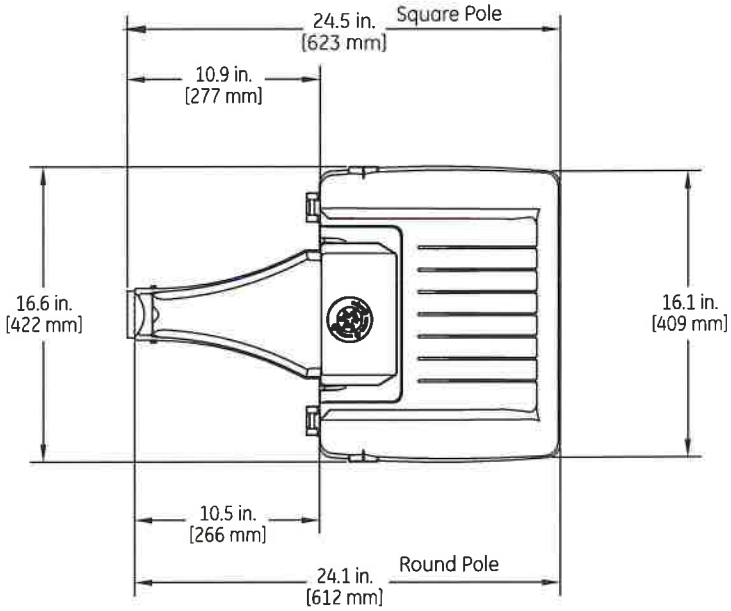
Product Dimensions

10" Arm For Square Pole Mount (Option A)
10" Arm For Round Pole Mount (Option B)
10" Arm For Square Pole Mount or Round Role Mount (Option D)

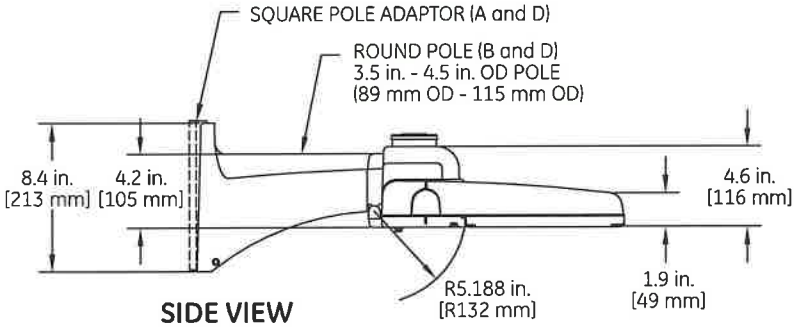
Option D includes all mounting hardware in Option A and Option B



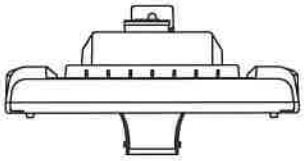
ISOMETRIC VIEW



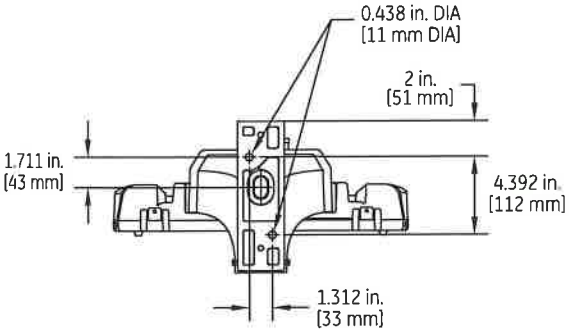
TOP VIEW



SIDE VIEW

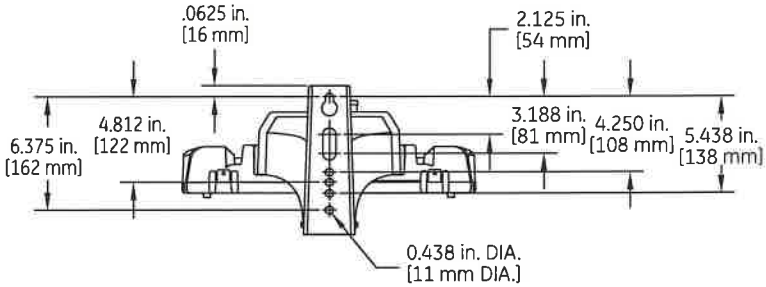


FRONT VIEW



BACK VIEW

Option A and D Square Pole
3.5 in. - 4.5 in POLE
(89 mm - 115 mm)



BACK VIEW

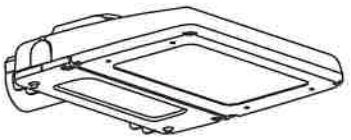
Option A and D Round Pole
3.5 in. - 4.5 in OD POLE
(89 mm OD - 115 mm OD)

DATA

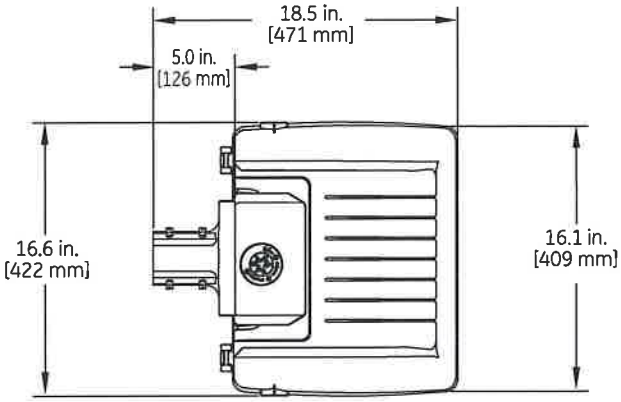
- Approximate net weight: 20 lbs (9.07 kgs)
- Effective Projected Area (EPA) with 10" Mounting Arm: 0.67 sq ft max (0.06 sq m)

Product Dimensions

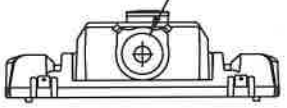
Slipfitter Arm Mount (Option C)



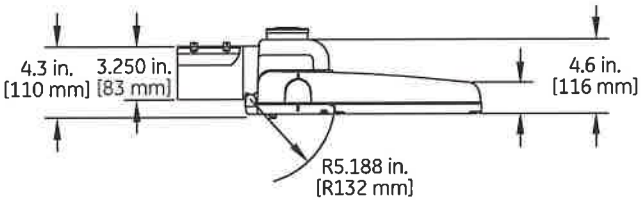
ISOMETRIC VIEW



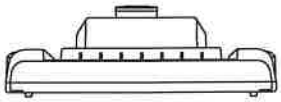
TOP VIEW



BACK VIEW



SIDE VIEW



FRONT VIEW

DATA

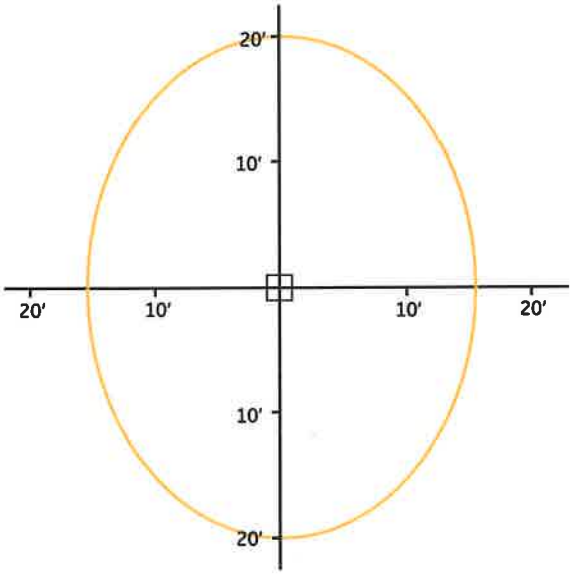
- Approximate net weight: 19 lbs (8.61 kgs)
- Effective Projected Area (EPA) with Slipfitter: 0.43 sq ft max (0.04 sq m)

H-Motion Sensing Option:

- Intended for high mounting applications, between 15-30ft (4.57-9.14m). For mounting heights exceeding 30ft, pole mounted sensors are recommended.
- Provides a coverage area radius for walking motion of 15-20ft (4.57-6.10m).
- Provides 270° of coverage (~90° is blocked by the pole).
- Comes standard with 50% dimmed light output with no occupancy, and full power at occupancy.
- Comes standard with photocell function. Note: It is not necessary to also purchase PE receptacle or control.
- Comes standard with a 5 minute occupancy time delay and a 5 minute ramp-down to the 50% dimmed level.
- Must order with decorative mounting arm options "A" or "B".
- Fixture power increase of 1W expected with sensor use.

Note: Standard options may be reprogrammed in the field. Reprogramming instructions included in product shipment.

Sensor Pattern:



Sensing Pattern Area Fixture
Up to 30 ft.

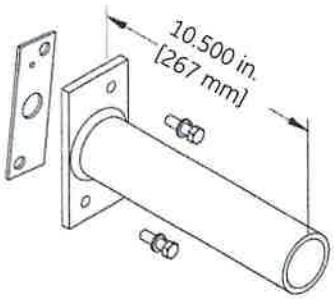
Mounting Information

Mounting Arms for Slipfitter

Order separately with Mounting Option C (External Slipfitter)

SQUARE POLE MOUNTING ARM

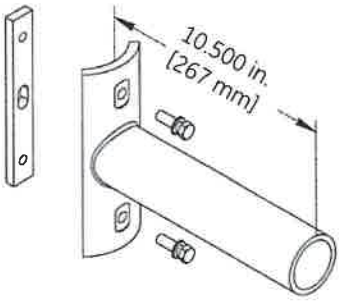
3.5 TO 4.5-inch (89 to 114mm) SQUARE
(WILL ALLOW 4 FIXTURES PER POLE @ 90 DEGREES.)



ORDER SEPARATELY FROM FIXTURE AS CATALOG NUMBER
SPA-EAMT10BLCK "Black"
SPA-EAMT10DKBZ "Dark Bronze"

ROUND POLE MOUNTING ARM

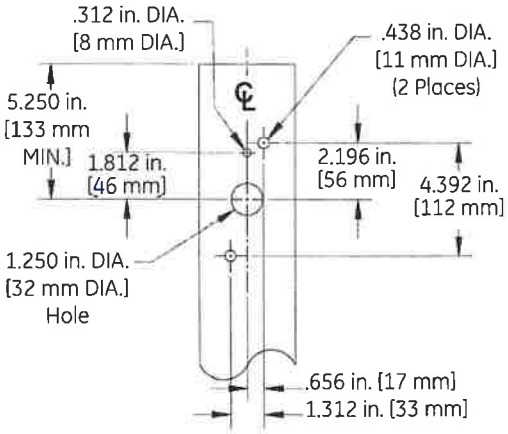
3.5 TO 4.5-inch (89 to 114mm) OD
(WILL ALLOW 4 FIXTURES PER POLE @ 90 DEGREES.)



ORDER SEPARATELY FROM FIXTURE AS CATALOG NUMBER
RPA-EAMT10BLCK "Black"
RPA-EAMT10DKBZ "Dark Bronze"

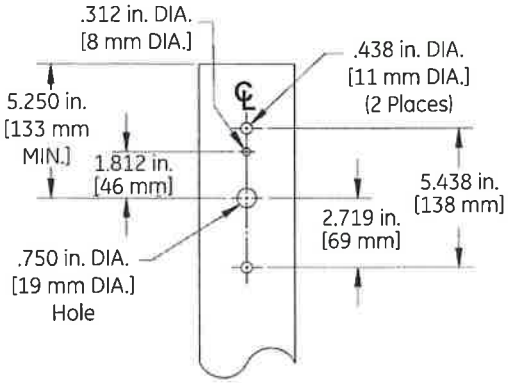
Drilling Templates for Slipfitter Arms & Arm Mount

SQUARE POLE MOUNTING



ROUND POLE MOUNTING

3.5 TO 4.5-inch (89 to 114mm) OD
round pole mounting arm



Other mounting patterns are available for retrofit installations.
Contact manufacturing for other available mounting patterns.

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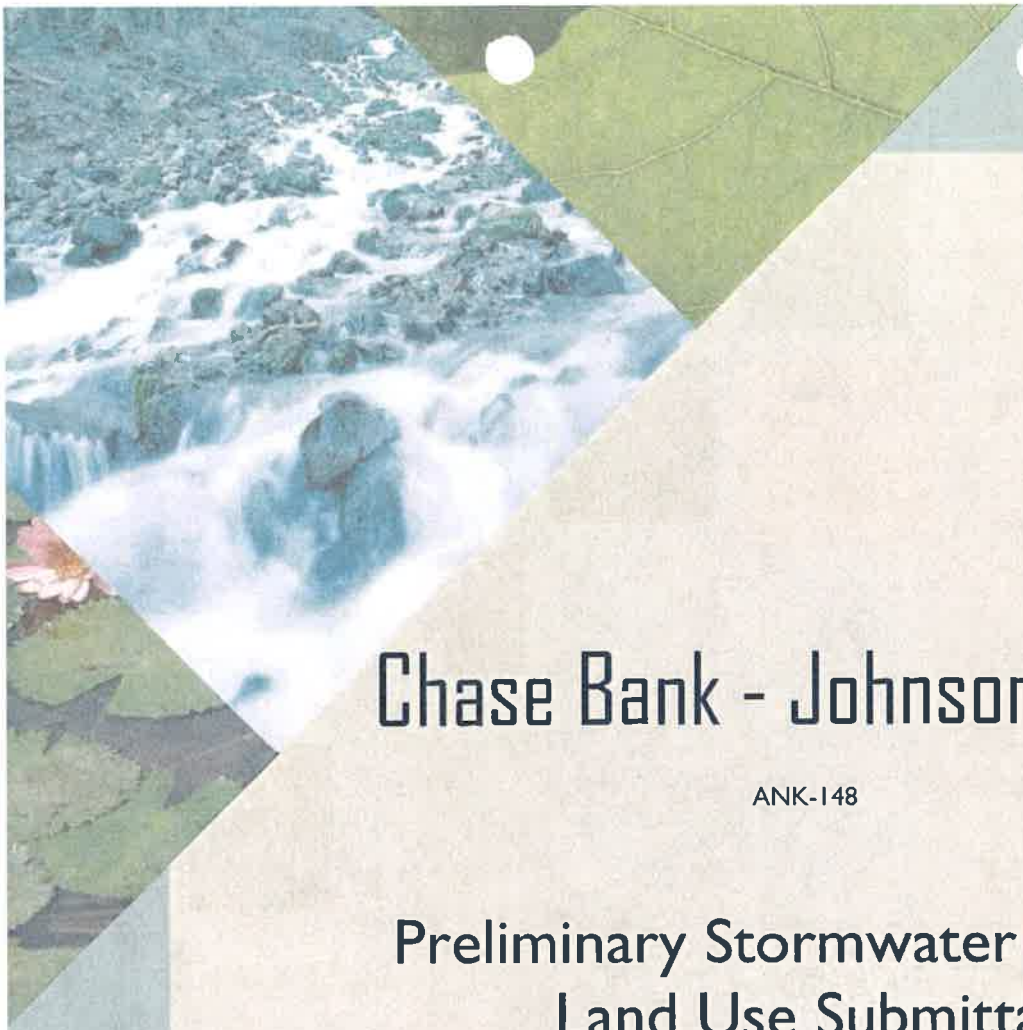
OLP3118 (Rev 05/04/17



Harper
Houf Peterson
Righellis Inc.

Chase Bank - Johnson Creek

ANK-148

Preliminary Stormwater Report
Land Use Submittal

July 15, 2019

Prepared For:

Ankrom Moisan Architects
38 NW Davis St #300
Portland, OR 97209
Attn: Josh Behr

ANK-148

Prepared By:

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Alex Simpson, PE

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OREGON
SEPT. 13, 2016
ALEXANDER J. SIMPSON

EXPIRES: 06/30/2020

HHPR

ENGINEERS ◆ PLANNERS
LANDSCAPE ARCHITECTS ◆ SURVEYORS

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Project Overview and Description: 2
Existing Site Conditions 2
Existing Public Facilities 2
Proposed Site Improvements 2
Basin and Soil Characteristics 2
Stormwater Management: 3
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Stormwater Quality 3
Table 2 – Basin Summary 3
Stormwater Quantity / On-Site Infiltration 4
Engineering Conclusions 4
References 4

Appendix

Stormwater Exhibits
Water Quality Calculations
Water Quantity (drywell) Calculations

Project Overview and Description:

The proposed Chase Bank – Johnson Creek branch is located at 8869 SE 82nd Avenue in Happy Valley, OR. It is within un-incorporated Clackamas County. The project includes construction of a new bank building, parking lot with drive-through, and associated hardscape and landscape elements. The site is bordered on the east by SE 82nd Avenue (ODOT r.o.w.) and Fred Meyer to the west.

Existing Site Conditions

The site is developed with an existing restaurant and pavement parking lot that will be demolished. The site has an existing stormwater conveyance system that conveys runoff to one centrally located depressed catch basin which then appears to connect to SE 82nd Avenue. This area does lend itself to on-site infiltration, as discussed in further detail below. There are existing private drywell systems on the adjacent property to the west that serve the Fred Meyer's development.

Existing Public Facilities

The site is bordered by SE 82nd Avenue to the east. This public frontage is fully improved and includes a public stormwater system. No modifications are proposed to public stormwater facilities.

Proposed Site Improvements

The project includes construction of a new bank building, parking lot with drive-through, and associated hardscape and landscape elements. It will include new stormwater facilities in order to meet current WES standards. The on-site water quality facilities will consist of a Contech CDS pre-treatment unit to provide water quality for the site area per current WES standards. Private on-site drywells will provide complete on-site stormwater infiltration for the site.

Refer to the Stormwater Exhibit EX-1 for additional detail.

Basin and Soil Characteristics

According to the SCS Soil Survey for Clackamas County the site is underlain with Multnomah Silt Loam (soil group B), which is characterized by moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. Infiltration testing at the site by Central Geotechnical (see appendix) in February 2019 provided rates ranging from 18 in/hr to 96 in/hr at depths between 5' BGS and 13' BGS.

Soils Assumptions:

Curve Numbers =	98 for Impervious Areas
	69 for Fair Condition Open Space - Landscape (Soil Group B)

Stormwater Management:

Stormwater design is per 2013 WES Clackamas County Service District No.1 Standards:

Table 1 – WES Stormwater Management Requirements

Design Requirement	WES
Treatment Area	All Area within the Limits of Improvements
Treatment Storm	2/3 of 2-year, 24-hour storm (1.73 inches) – using Pre-Treatment mechanical units
Detention	2-year post-developed runoff to ½ 2-year pre-developed runoff
Infiltration	½" in 24-hour rainfall to infiltrate in 96-hours

The following rainfall event intensities were used:

- WQ Storm: 1.73 inches
- 2-Year: 2.60 inches
- 10-Year: 3.40 inches
- 25-Year: 4.00 inches

Stormwater Quality

Current WES stormwater code allows for a proprietary (i.e. underground mechanical) "pre-treatment" unit to satisfy the water quality requirement providing that the WQ flow is 2/3 of the 2-year event and the unit is approved GULD by the Washington DOE. This will be accomplished with the Contech CDS unit, which is DOE GULD approved for pre-treatment. See water quality calculations in the Appendix.

All basins are collected and conveyed to a single proposed mechanical proprietary treatment unit (Contech CDS) installed in the parking lot.

Table 2 – Basin Summary

WQ Basin	Basin Impervious Area	Basin Pervious Area	Basin Total Area	Treatment Method
A	4,000 SF / 0.09 AC	1,900 SF / 0.04 AC	5,900 SF / 0.13 AC	New Contech CDS MH
B	850 SF / 0.02 AC	335 SF / 0.01 AC	1,185 SF / 0.03 AC	New Contech CDS MH
C	4,690 SF / 0.10 AC	560 SF / 0.02 AC	5,250 SF / 0.02 AC	New Contech CDS MH
D	3,560 SF / 0.08 AC	1,355 SF / 0.03 AC	4,915 SF / 0.11 AC	New Contech CDS MH
E	3,470 SF / 0.08 AC	0 SF / 0 AC	3,470 SF / 0.08 AC	New Contech CDS MH
TOTAL	**16,570 SF / 0.38 AC**	**4,150 SF / 0.10 AC**	**20,720 SF / 0.48 AC**	

Stormwater Quantity / On-Site Infiltration

This site will utilize complete on-site infiltration through the proposed drywells. This satisfies both WES requirements for detention / flow-control as well as the on-site infiltration requirement. The project will construct two new drywells to infiltrate the 100-year design storm and drawn down within 30 hours. The drywells are constructed in series with connecting pipes between each structure such that they will function together. Three infiltration rates were measured at depths of 5' BGS and 13' BGS and a raw un-factored average infiltration rate of 71 in/hr was found. A factor of safety of two is applied and a design infiltration rate of 35 in/hr. is used. The proposed drywells will be tested during construction to confirm design infiltration rates. If the tested drywell infiltration rates are less than the design rate the site has room to construct additional drywells as necessary to meet requirements.

The volume of storm drainage was calculated using Hydraflow Hydrographs for AutoCAD 2018. The size, depth, and quantity of drywells was calculated utilizing a combination of the infiltration and storage capacity. Exfiltration value assumes infiltration consists only of the drywell perforated section (15' depth) and rock storage area.

The owner of the site will have access to the drywells through a manhole.

The following table summarizes that the system meets the critical design elements. These values are from a 100-yr, 24 hour design storm simulation. Calculations are included in the Appendix.

Area	**100-yr Design Storm Volume (cuft)**	Maximum Water Depth (ft)	Drywell Design Depth (ft)
Total Site Basin	**6,953 CF**	11.62'	15.00'

As seen above, the total volume of stormwater infiltrated over the 24-hour 100-year storm event is greater than the volume produced by the design storm and therefore the maximum water level does not reach the upper portion of the drywell. Therefore, these drywells will effectively provide stormwater management for the site.

Engineering Conclusions

The proposed stormwater management plan will achieve stormwater management to Clackamas County's Water Environment Services Standards.

References

Central Geotechnical Services. (March 2019). Geotechnical Investigation: Chase Bank Building 8869 SE 82nd Avenue Happy Valley, Oregon.

Appendix

Stormwater Exhibits
Water Quality Calculations
Water Quantity (drywell) Calculations

2 EXTERIOR ELEVATION - SOUTH
SCALE 1/4" = 1'-0"

0 2 4 8 FT

1 EXTERIOR ELEVATION - WEST
SCALE 1/4" = 1'-0"

0 2 4 8 FT

RECEIVED

AUG 15 2019

Clackamas County
Planning & Zoning Division

REYNOBOND 'SILVER'

REYNOBOND 'PROGRAM BLUE'

SW 7045 'INTELLECTUAL GRAY'

SW 7036 'ACCESSIBLE BEIGE'

SW 6108 'LATTE'

SPANDREL GLASS (OR) SHADING FILM

CERTAINTEED SHINGLES 'WEATHERED WOOD'

4" BRICK VENEER 'RED SUNSET'

HARVEY CEMENT 'SAVANNA STONE'

Ankrom Moisan

ISSUE	DATE	DESCRIPTION
---	XX/XX/2019	PERMIT ISSUE

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

CONTENTS

EXTERIOR ELEVATIONS

XX.XX.2019

SHEET

A2.0

2 EXTERIOR ELEVATION - NORTH
SCALE 1/4" = 1'-0"

0 2 4 8 FT

1 EXTERIOR ELEVATION - EAST
SCALE 1/4" = 1'-0"

0 2 4 8 FT

REYNOBOND 'SILVER'

REYNOBOND 'PROGRAM BLUE'

SW 7045 'INTELLECTUAL GRAY'

SW 7036 'ACCESSIBLE BEIGE'

SW 6108 'LATTE'

SPANDREL GLASS (OR) SHADING FILM

CERTAINTEED SHINGLES 'WEATHERED WOOD'

4" BRICK VENEER 'RED SUNSET'

HARVEY CEMENT 'SAVANNA STONE'

Ankrom Moisan

ISSUE	DATE	DESCRIPTION
—	XX/XX/2019	PERMIT ISSUE

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

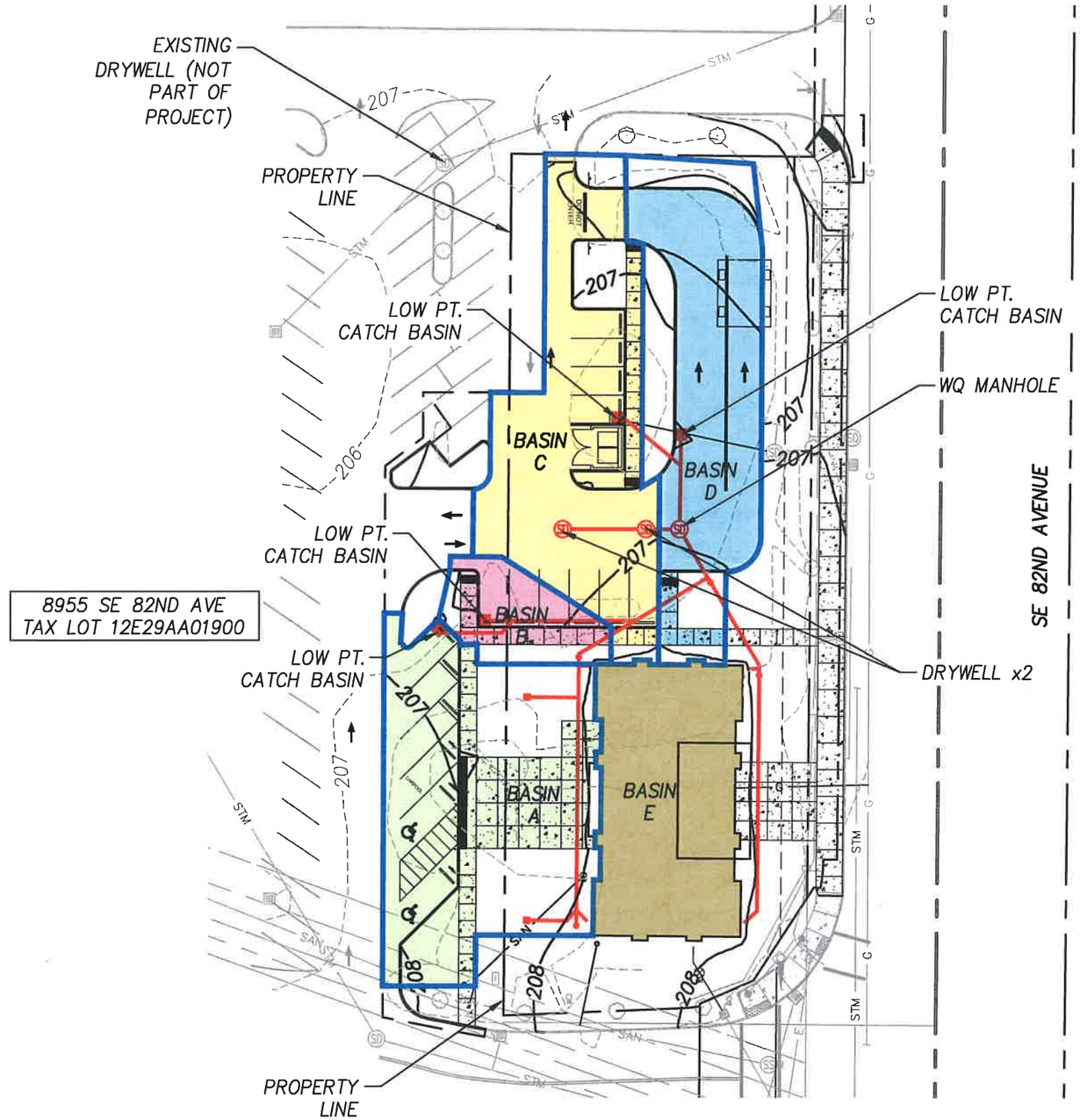
CONTENTS

EXTERIOR ELEVATIONS

XX.XX.2019

SHEET

A2.1



PROPOSED BASIN AREAS

Basin	Impervious Area	Pervious Area	Total Basin Area
A	4,000 SF (0.09 AC)	1,900 SF (0.04 AC)	5,900 SF (0.13 AC)
B	850 SF (0.02 AC)	335 SF (0.01 AC)	1,185 SF (0.03 AC)
C	4,690 SF (0.10 AC)	560 SF (0.02 AC)	5,250 SF (0.12 AC)
D	3,560 SF (0.08 AC)	1,355 SF (0.03 AC)	4,915 SF (0.11 AC)
E	3,470 SF (0.08 AC)	0 SF (0.0 AC)	3,470 SF (0.08 AC)

0 20 40 80

SCALE: 1" = 40'

DATE	NO.	DESCRIPTION

R E V I S I O N S

DESIGNED: HHPR
DRAWN: HHPR
CHECKED: HHPR
DATE: JULY 2019

HHPR Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

STORMWATER EXHIBIT - POST DEVELOPED

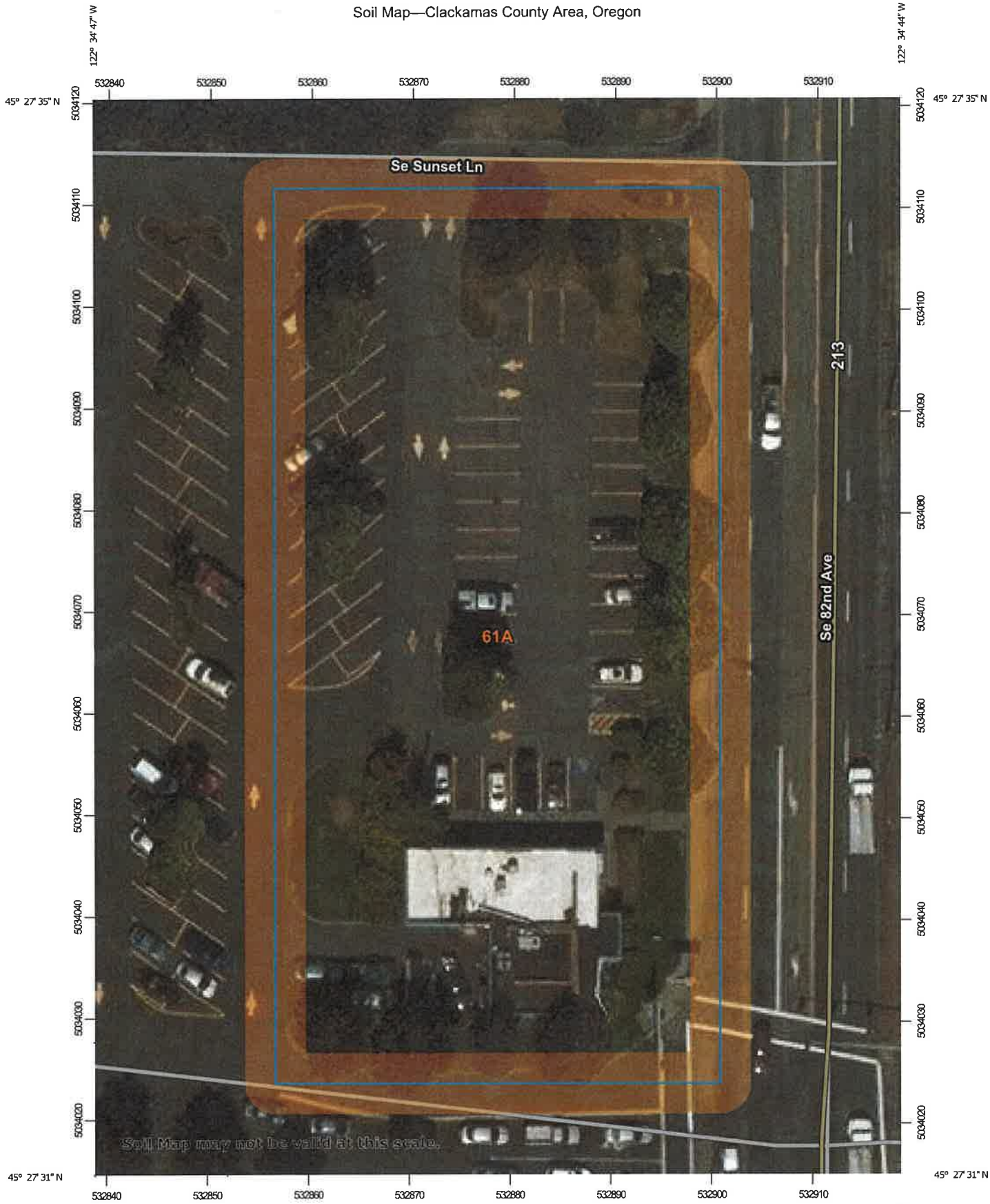
CHASE BANK - SE 82ND AVE & SE JOHNSON CREEK BLVD

HAPPY VALLEY, OR

SHEET NO. EX-1

JOB NO. ANK-148

P:\ANK (Ankrom Moisan)\ANK-148 (Chase Johnson Creek)\ANK148-DWGS\EXHIBITS\Storm Exhibits\ POST DEVELOPED CONDITIONS.dwg



Map Scale: 1:515 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 5 10 20 30

Feet: 0 25 50 100 150

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 14, Sep 18, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 26, 2014—Sep 5, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Clackamas County Area, Oregon

61A—Multnomah silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2265
Elevation: 150 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Multnomah and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Multnomah

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed gravelly alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 38 inches: gravelly loam
H3 - 38 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Clackamas County Area, Oregon
Survey Area Data: Version 14, Sep 18, 2018

Table C-2
RUNOFF CURVE NUMBERS

Runoff curve numbers for urban areas*

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries, etc.):					
Poor condition (grass cover <50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Runoff curve numbers for other agricultural lands*

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range-continuous forage for grazing					
<50% ground cover or heavily grazed with no mulch	Poor	68	79	86	89
50 to 75% ground cover and not heavily grazed	Fair	49	69	79	84
>75% ground cover and lightly or only occasionally grazed	Good	39	61	74	80
Meadow-continuous grass, protected from grazing and generally mowed for hay	-	30	58	71	78
Brush--weed-grass mixture with brush as the major element					
<50% ground cover	Poor	48	67	77	83
50 to 75% ground cover	Fair	35	56	70	77
>75% ground cover	Good	30	48	65	73
Woods-grass combination (orchard or tree farm)	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79

Stormwater Quality Hydrograph Calculations

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.147	2	474	2,079	------	------	------	Impervious Basin Area
2	SBUH Runoff	0.001	2	1154	47	------	------	------	Pervious Basin Area
3	Combine	0.147	2	474	2,126	1, 2	------	------	Combined Total Basin
5	Reservoir	0.000	2	456	0	3	190.42	78.4	Route thru Drywell

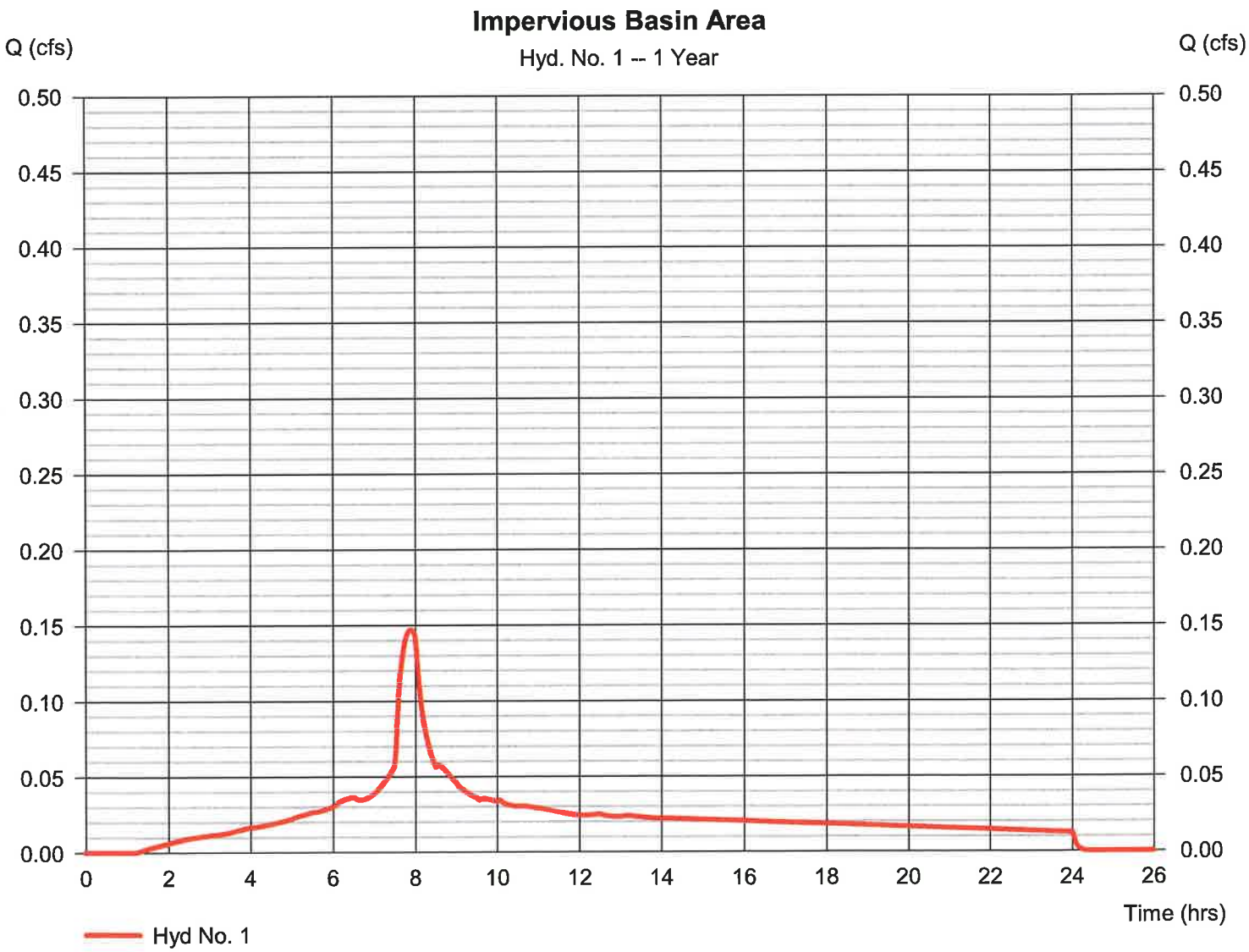
Hydrograph Repor

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 1

Impervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.147 cfs
Storm frequency	= 1 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 2,079 cuft
Drainage area	= 0.380 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 1.73 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



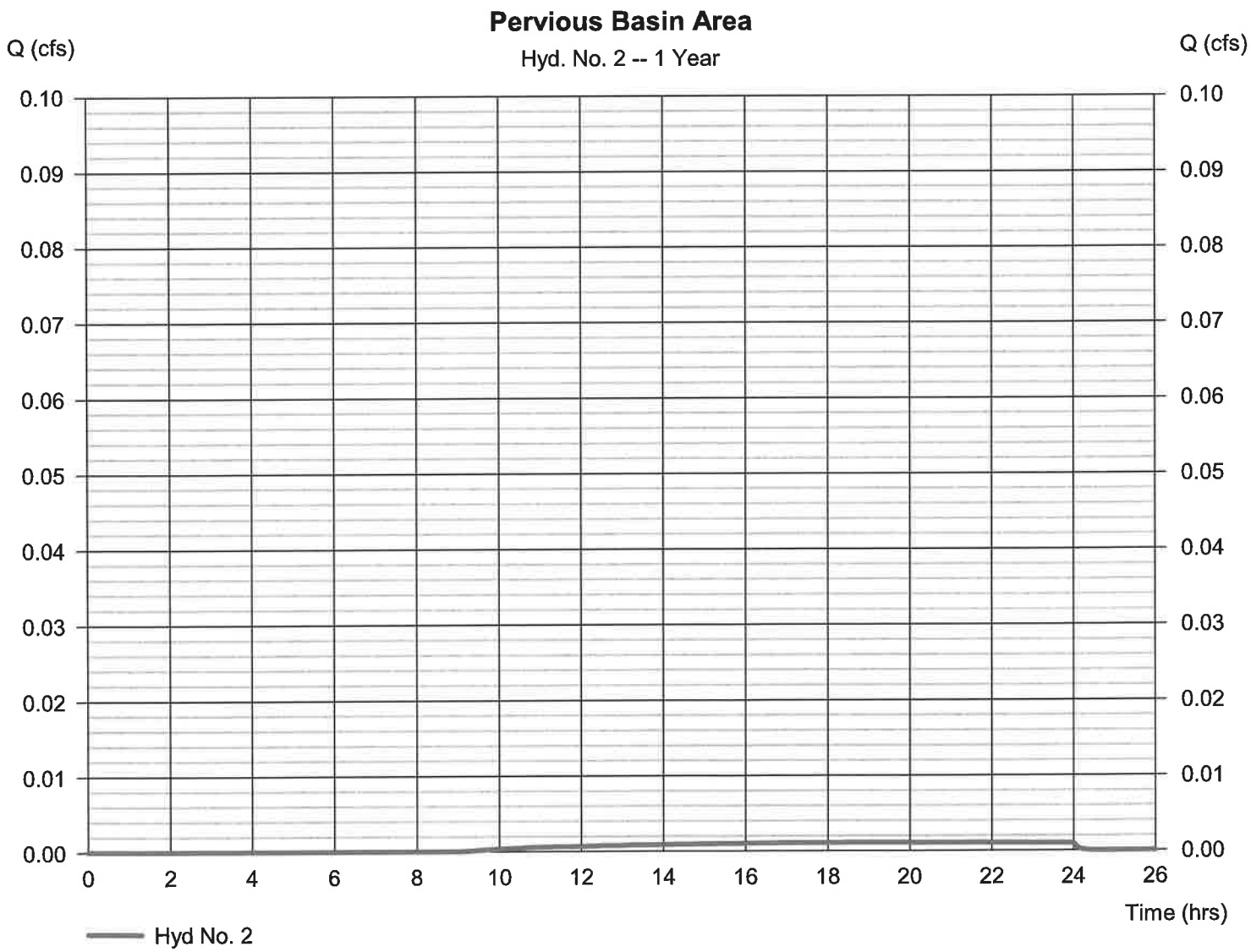
Hydrograph Repor

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 2

Pervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.001 cfs
Storm frequency	= 1 yrs	Time to peak	= 19.23 hrs
Time interval	= 2 min	Hyd. volume	= 47 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.20 min
Total precip.	= 1.73 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



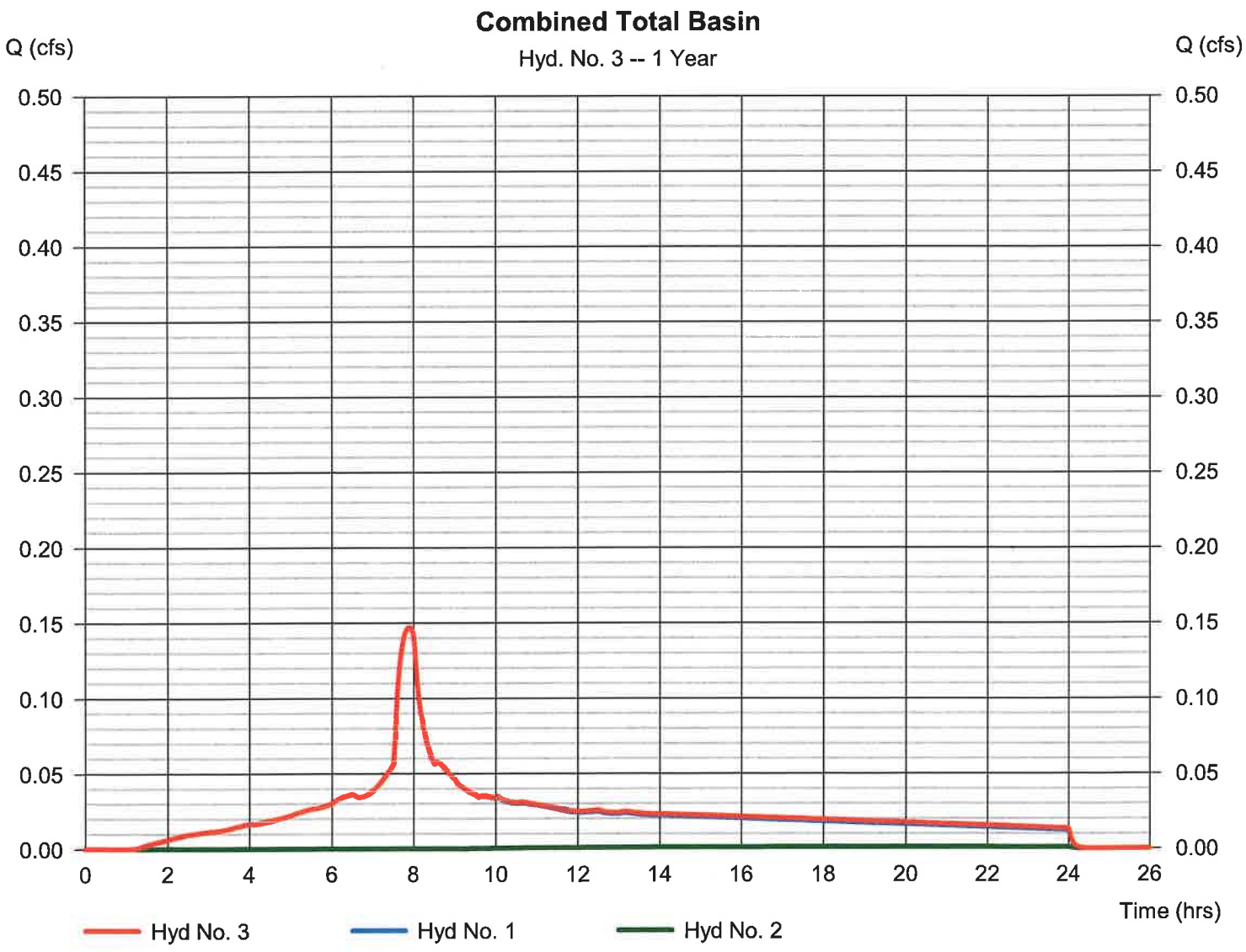
Hydrograph Repo

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 3

Combined Total Basin

Hydrograph type	= Combine	Peak discharge	= 0.147 cfs
Storm frequency	= 1 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 2,126 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.480 ac



Stormwater Quantity (Drywell) Hydrograph Calculations

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.228	2	474	3,269	------	------	------	Impervious Basin Area
2	SBUH Runoff	0.004	2	482	170	------	------	------	Pervious Basin Area
3	Combine	0.230	2	474	3,439	1, 2	------	------	Combined Total Basin
5	Reservoir	0.000	2	292	0	3	192.71	151	Route thru Drywell

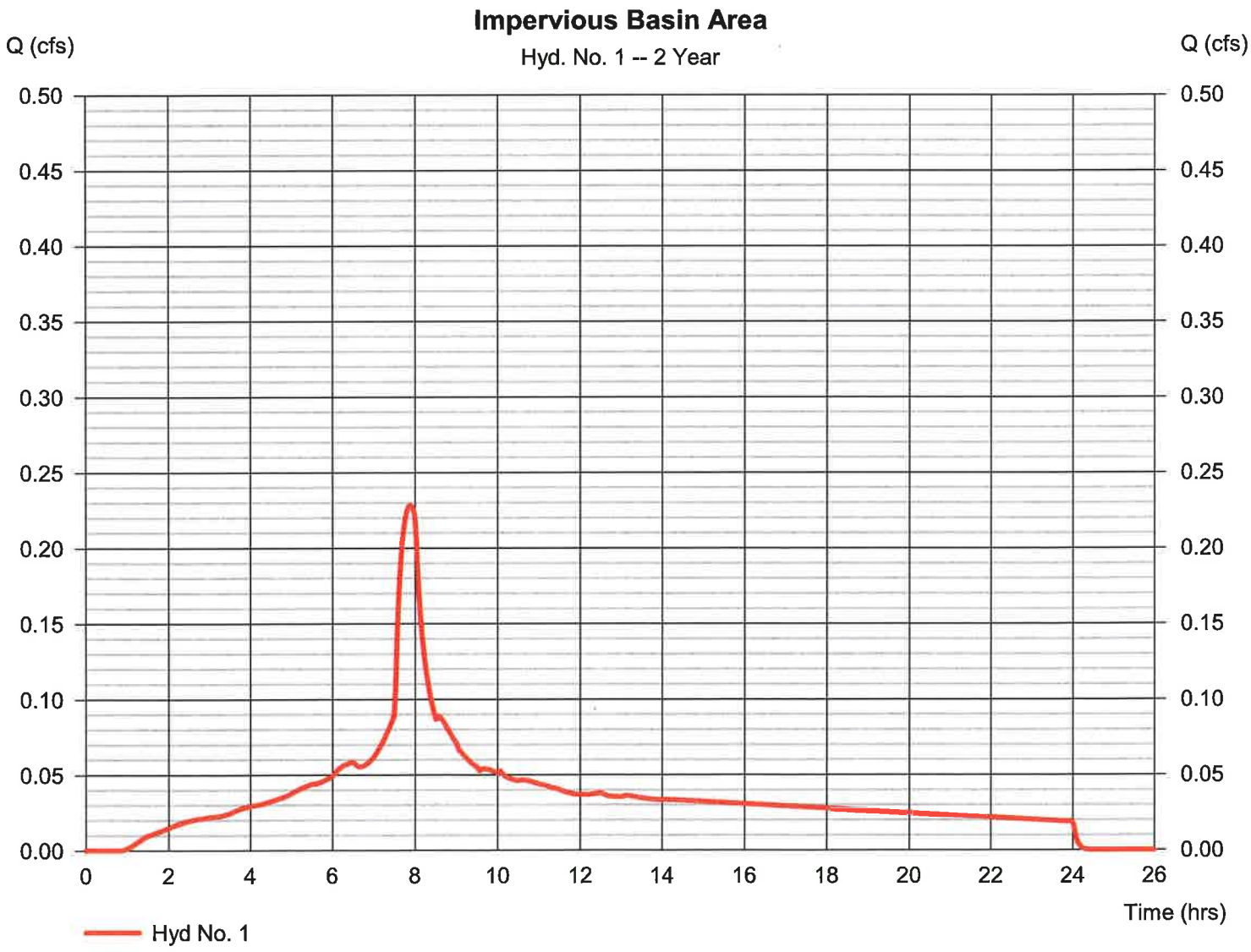
Hydrograph Repoı

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 1

Impervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.228 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 3,269 cuft
Drainage area	= 0.380 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.60 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



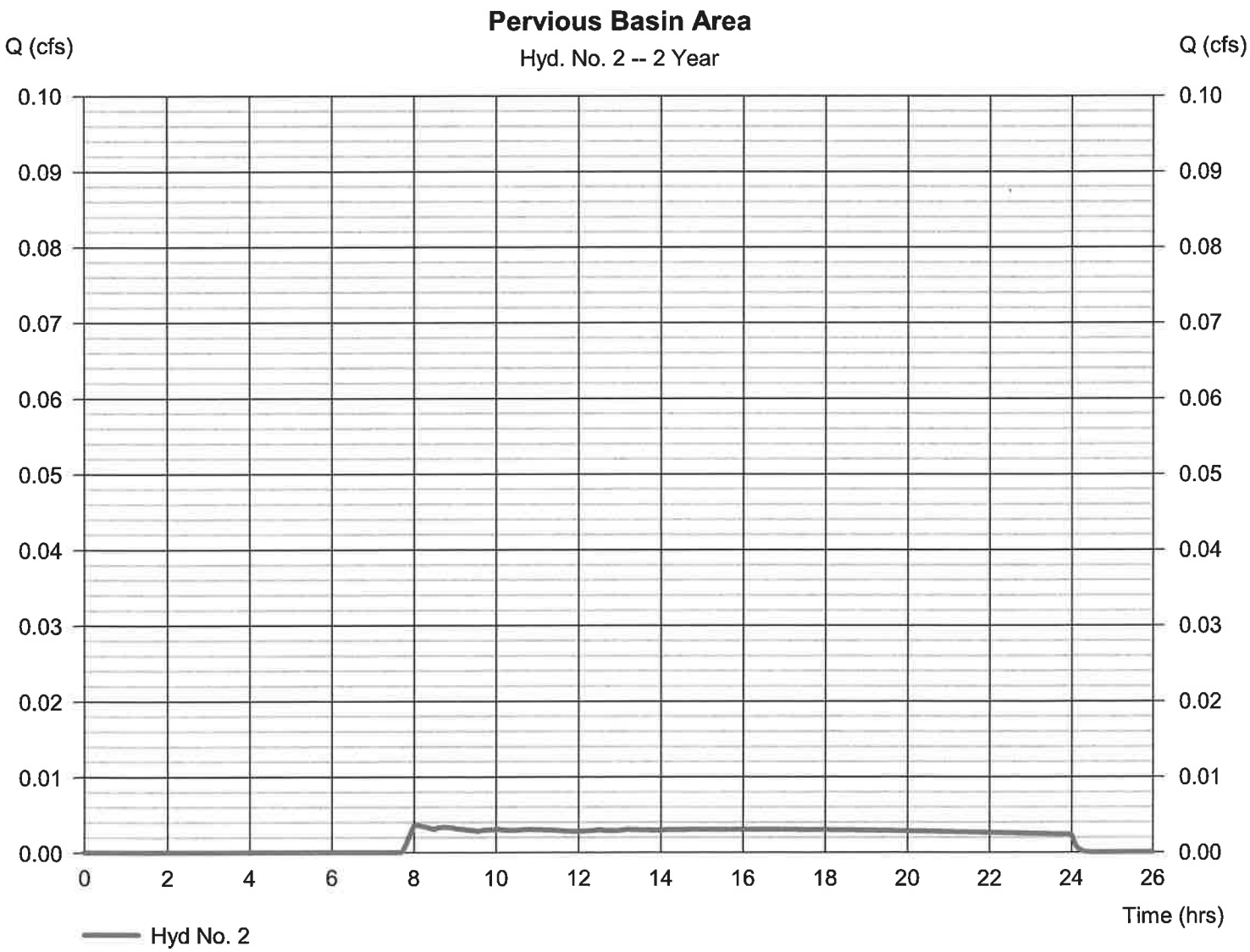
Hydrograph Repoı

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 2

Pervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.004 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 170 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.20 min
Total precip.	= 2.60 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

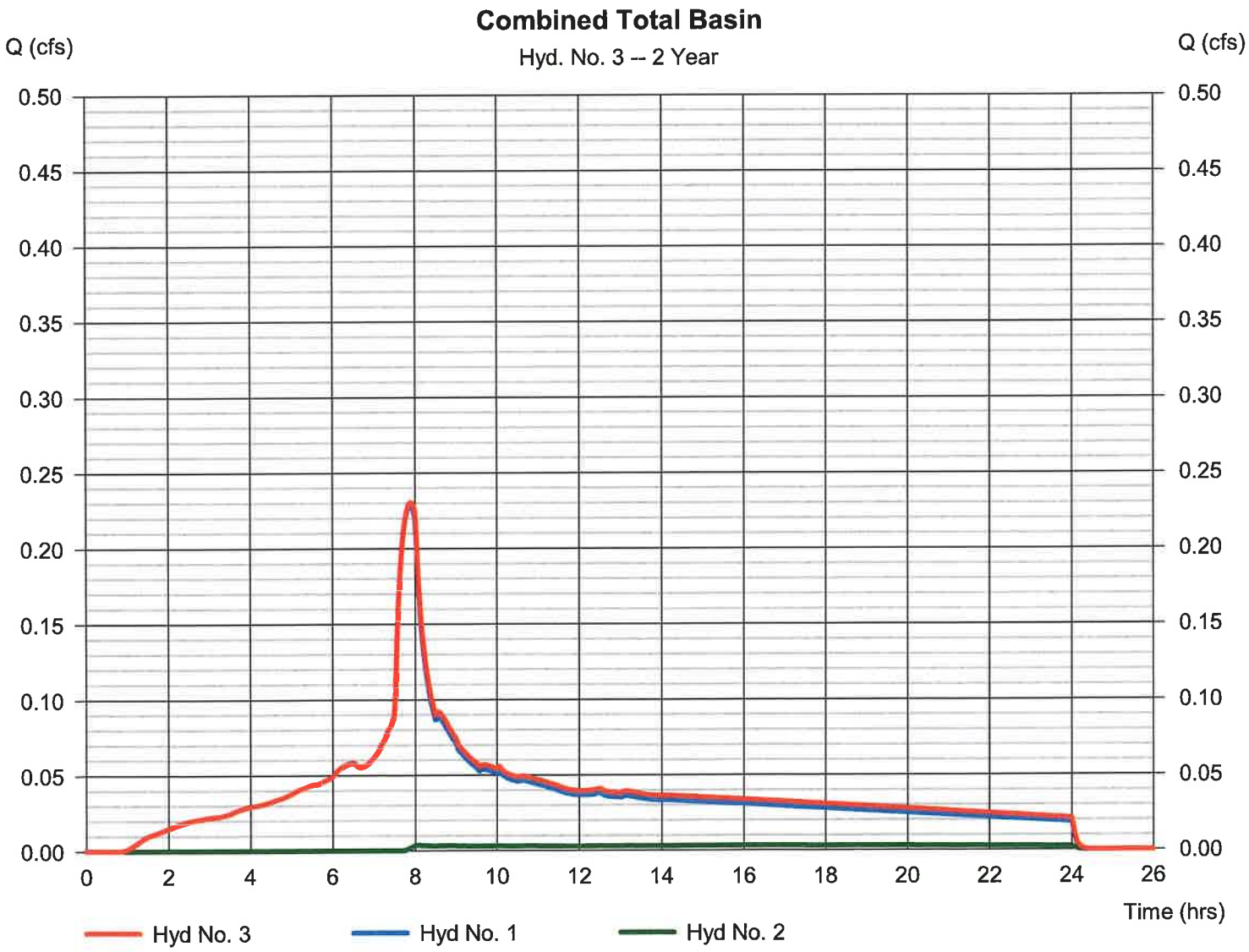


Hydrograph Repoı

Hyd. No. 3

Combined Total Basin

Hydrograph type	= Combine	Peak discharge	= 0.230 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 3,439 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.480 ac



Hydrograph Repo

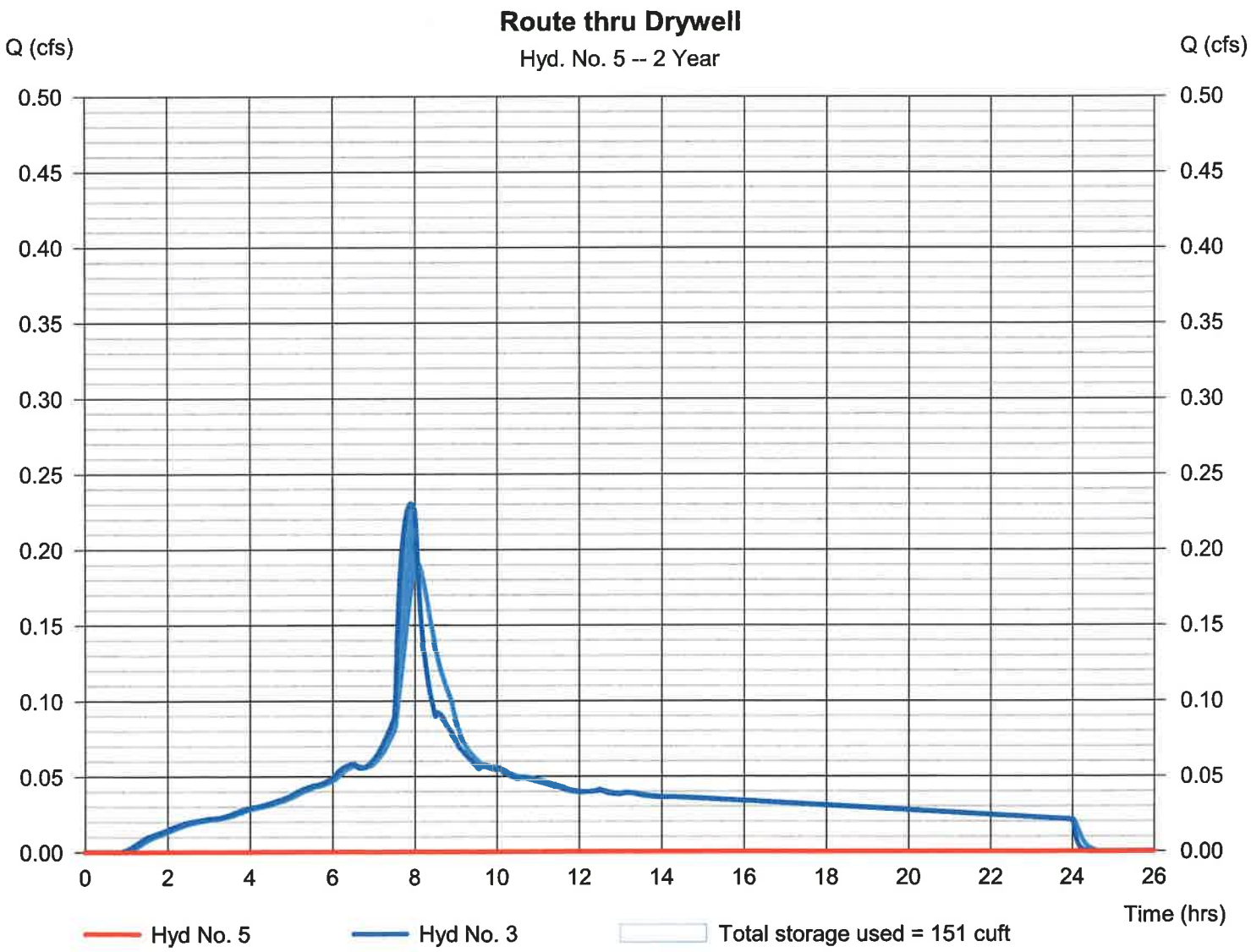
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 5

Route thru Drywell

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 2 yrs	Time to peak	= 4.87 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Combined Total Basin	Max. Elevation	= 192.71 ft
Reservoir name	= Drywell	Max. Storage	= 151 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Pond No. 1 - Drywell

Pond Data

Trapezoid -Bottom L x W = 8.5 x 8.5 ft, Side slope = 0.00:1, Bottom elev. = 187.90 ft, Depth = 15.00 ft, Voids = 43.30%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	187.90	72	0	0
1.50	189.40	72	47	47
3.00	190.90	72	47	94
4.50	192.40	72	47	141
6.00	193.90	72	47	188
7.50	195.40	72	47	235
9.00	196.90	72	47	282
10.50	198.40	72	47	328
12.00	199.90	72	47	375
13.50	201.40	72	47	422
15.00	202.90	72	47	469

Culvert / Orifice Structures

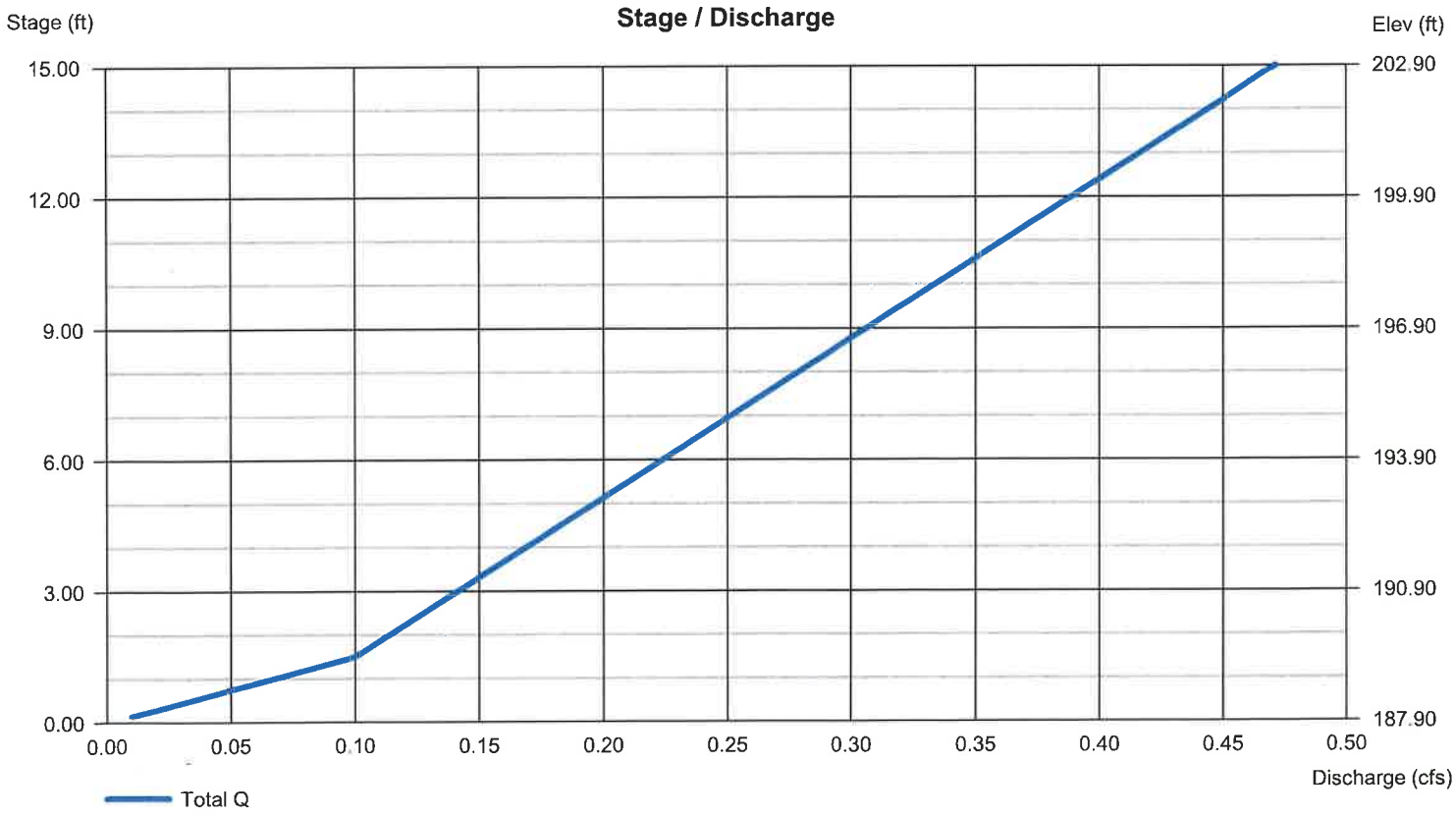
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 35.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.302	2	474	4,368	------	------	------	Impervious Basin Area
2	SBUH Runoff	0.014	2	480	325	------	------	------	Pervious Basin Area
3	Combine	0.314	2	474	4,693	1, 2	------	------	Combined Total Basin
5	Reservoir	0.000	2	430	0	3	195.08	225	Route thru Drywell

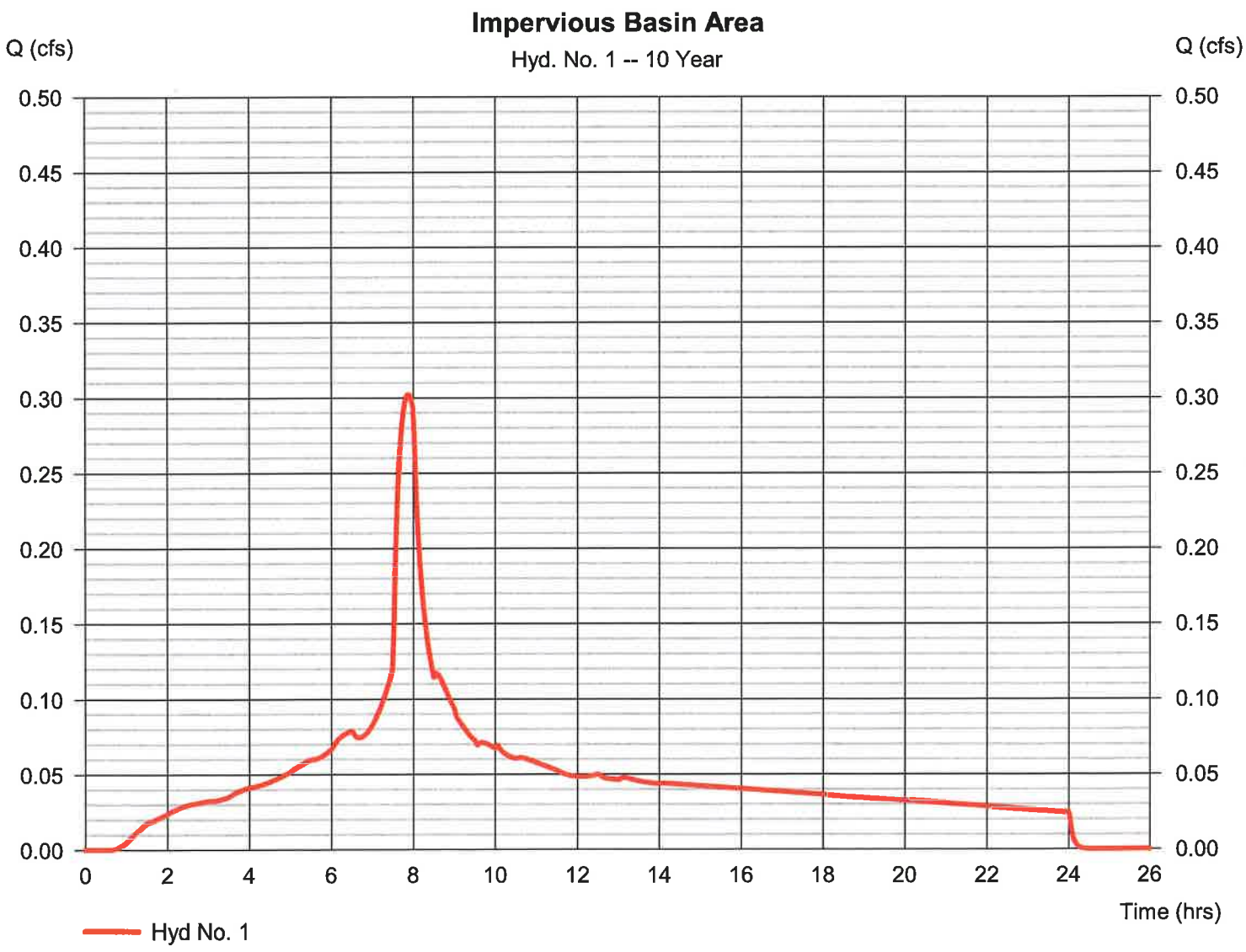
Hydrograph Repoı

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 1

Impervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.302 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 4,368 cuft
Drainage area	= 0.380 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

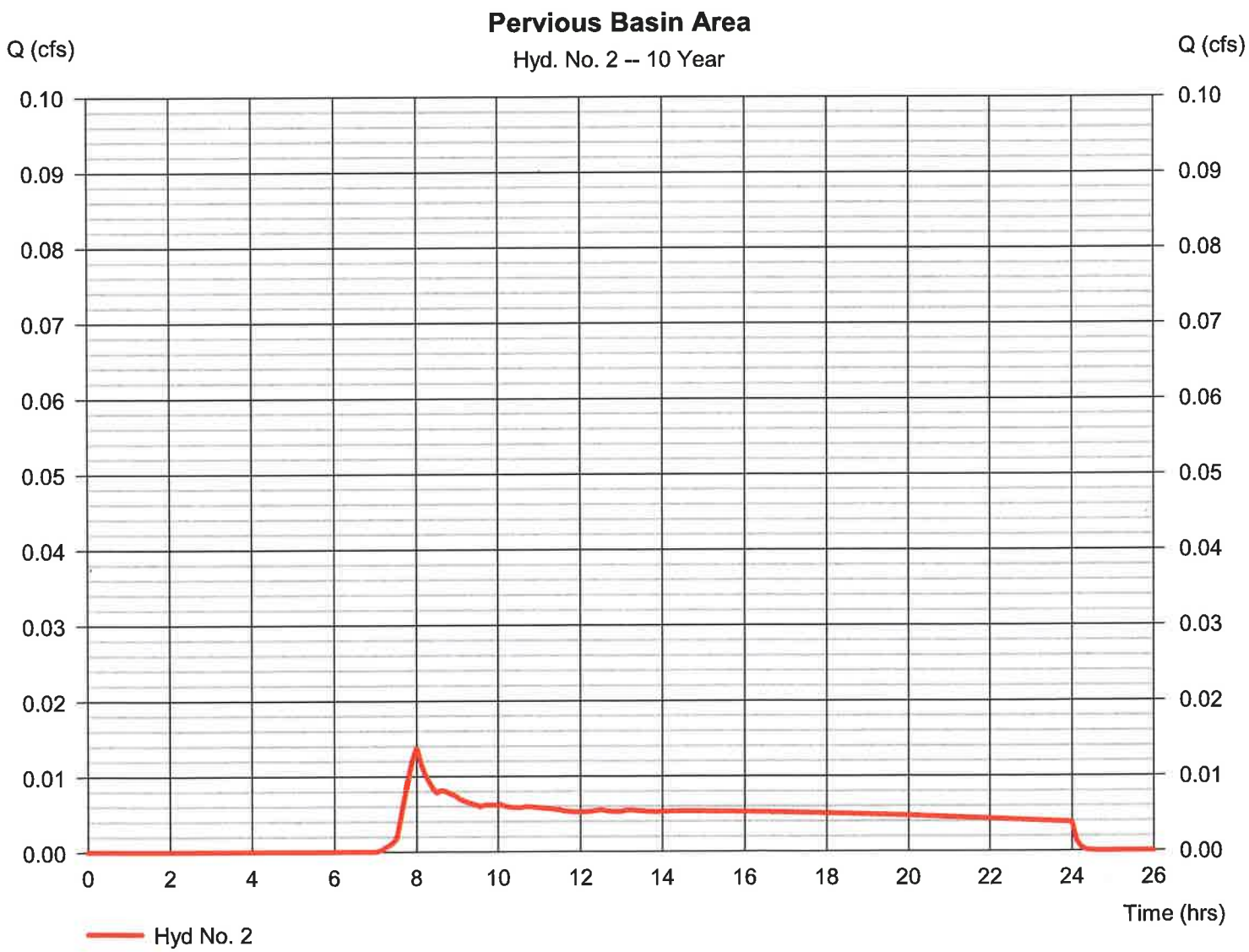


Hydrograph Repor

Hyd. No. 2

Pervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.014 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 325 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.20 min
Total precip.	= 3.40 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

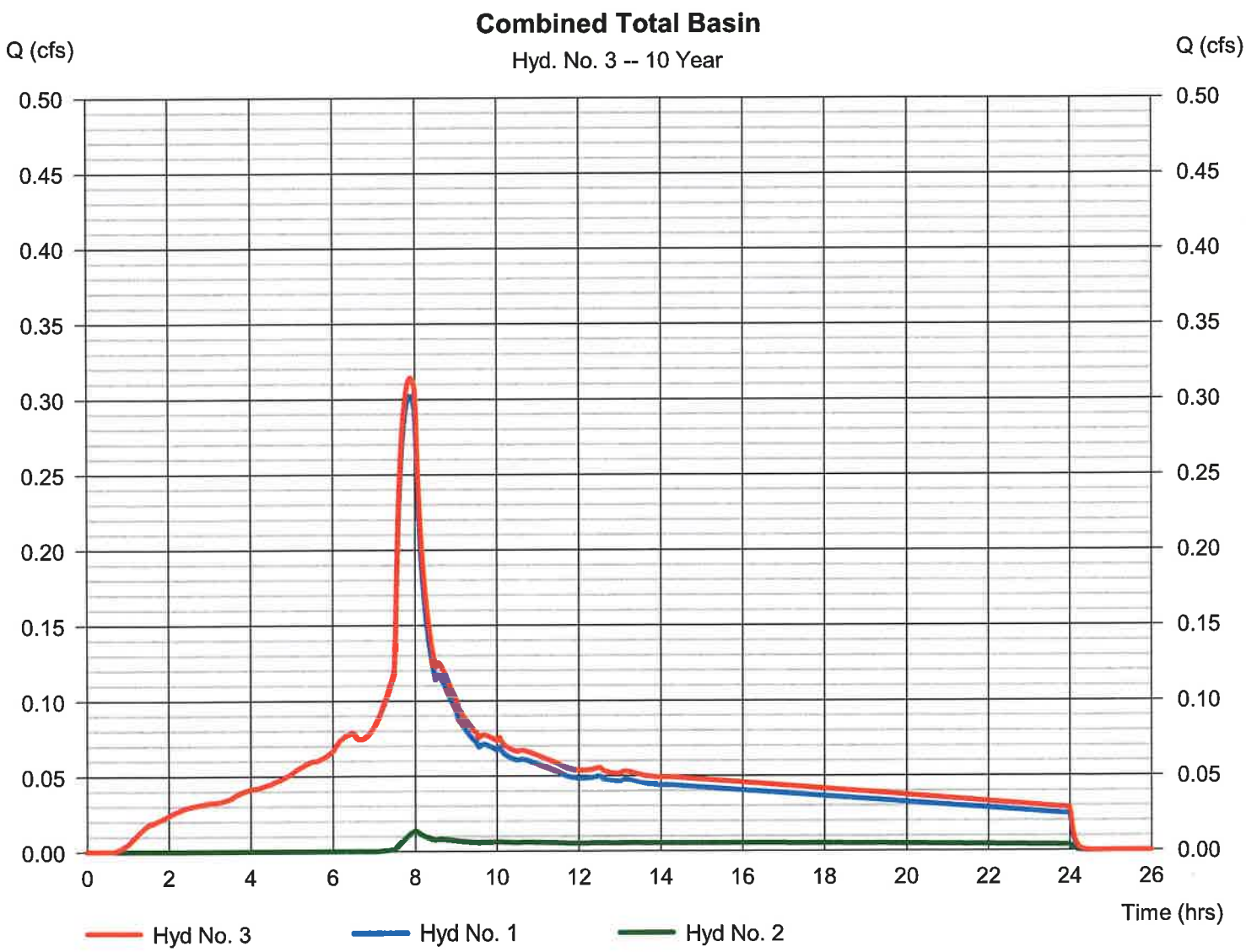


Hydrograph Repoı

Hyd. No. 3

Combined Total Basin

Hydrograph type	= Combine	Peak discharge	= 0.314 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 4,693 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.480 ac



Hydrograph Repoı

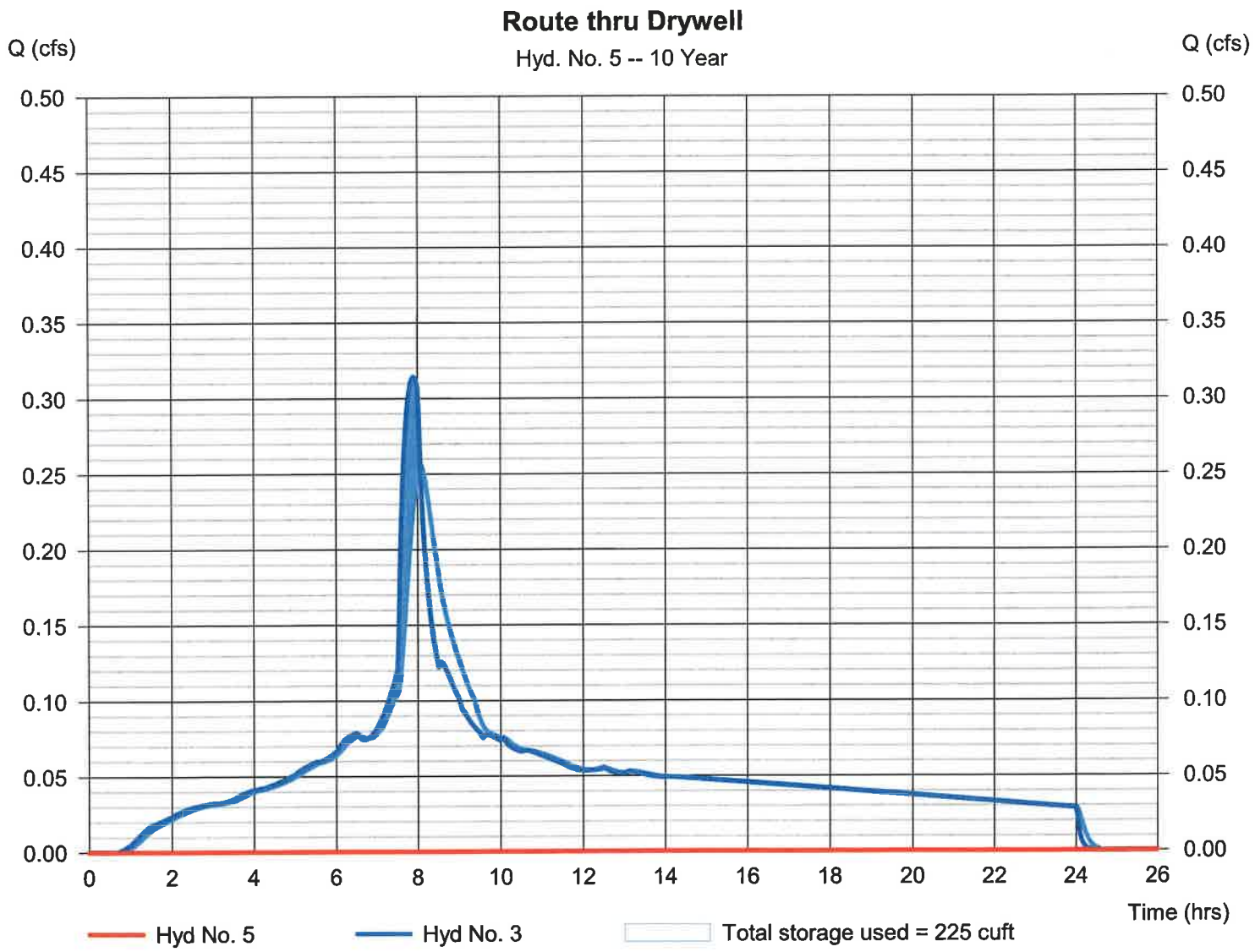
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 5

Route thru Drywell

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.17 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Combined Total Basin	Max. Elevation	= 195.08 ft
Reservoir name	= Drywell	Max. Storage	= 225 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.357	2	474	5,194	------	------	------	Impervious Basin Area
2	SBUH Runoff	0.023	2	480	460	------	------	------	Pervious Basin Area
3	Combine	0.378	2	474	5,653	1, 2	------	------	Combined Total Basin
5	Reservoir	0.000	2	328	0	3	196.95	283	Route thru Drywell

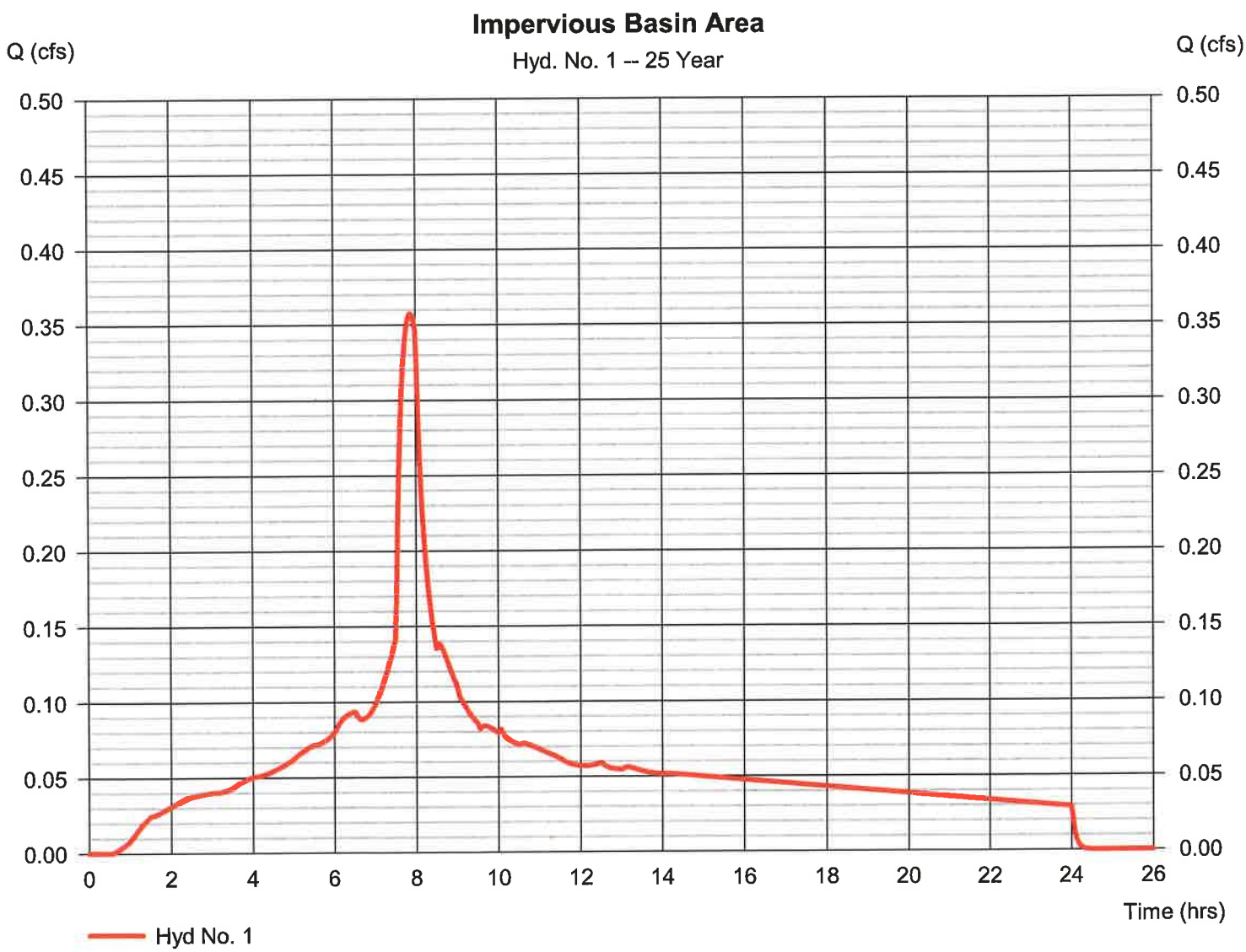
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 1

Impervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.357 cfs
Storm frequency	= 25 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 5,194 cuft
Drainage area	= 0.380 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



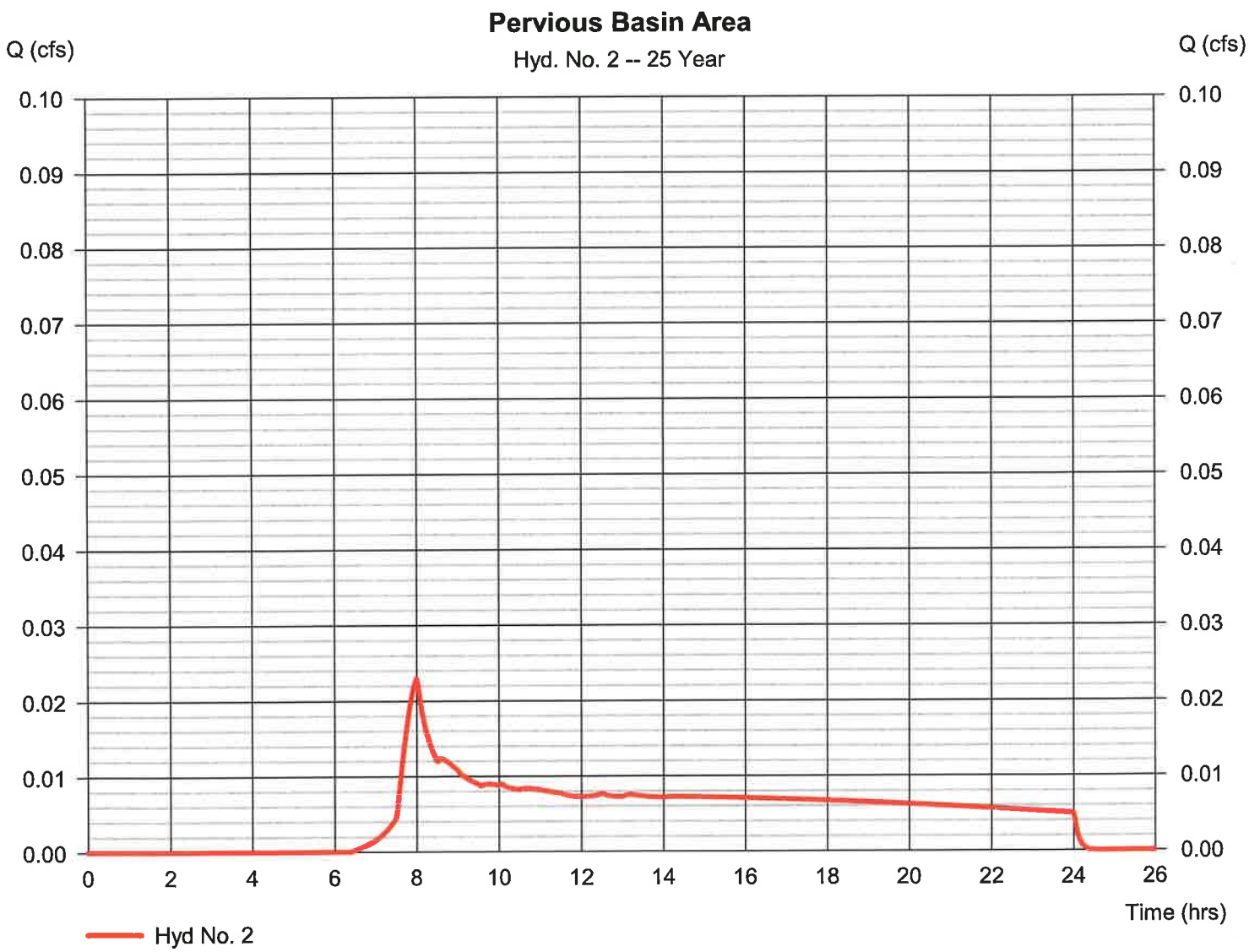
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 2

Pervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.023 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 460 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.20 min
Total precip.	= 4.00 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



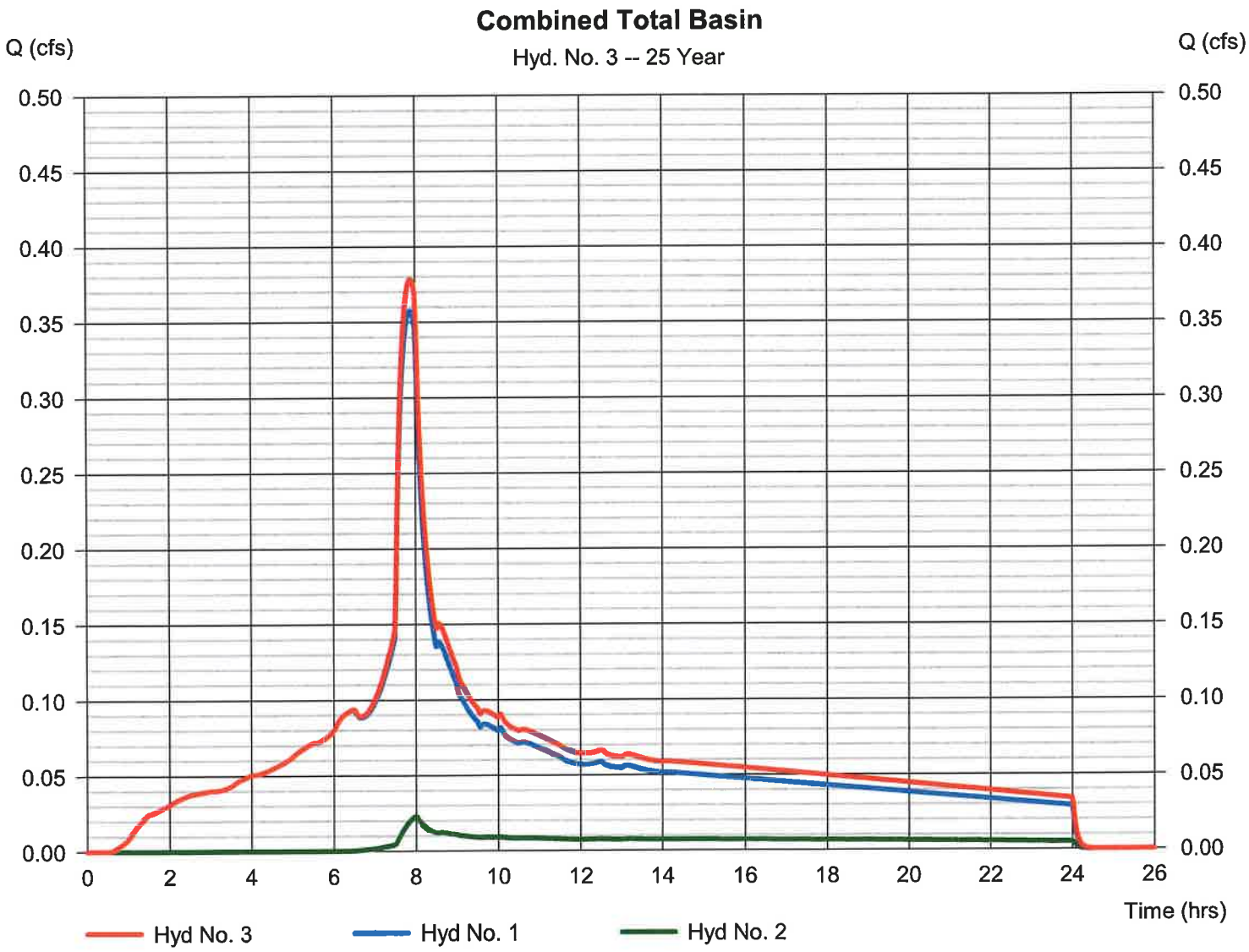
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 3

Combined Total Basin

Hydrograph type	= Combine	Peak discharge	= 0.378 cfs
Storm frequency	= 25 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 5,653 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.480 ac



Hydrograph Report

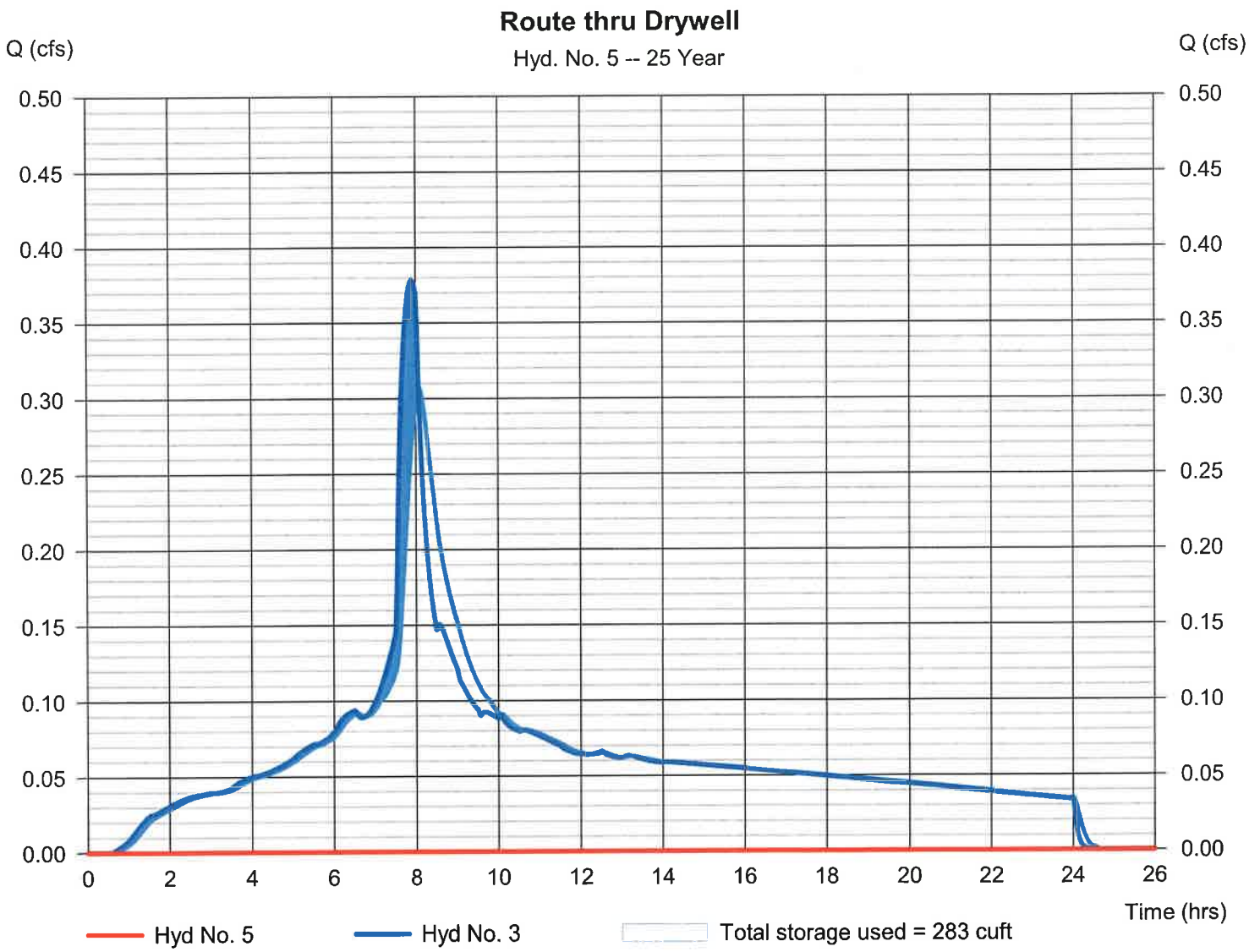
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 5

Route thru Drywell

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 25 yrs	Time to peak	= 5.47 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Combined Total Basin	Max. Elevation	= 196.95 ft
Reservoir name	= Drywell	Max. Storage	= 283 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SBUH Runoff	0.431	2	474	6,295	------	------	------	Impervious Basin Area
2	SBUH Runoff	0.037	2	480	658	------	------	------	Pervious Basin Area
3	Combine	0.465	2	474	6,953	1, 2	------	------	Combined Total Basin
5	Reservoir	0.000	2	342	0	3	199.52	363	Route thru Drywell

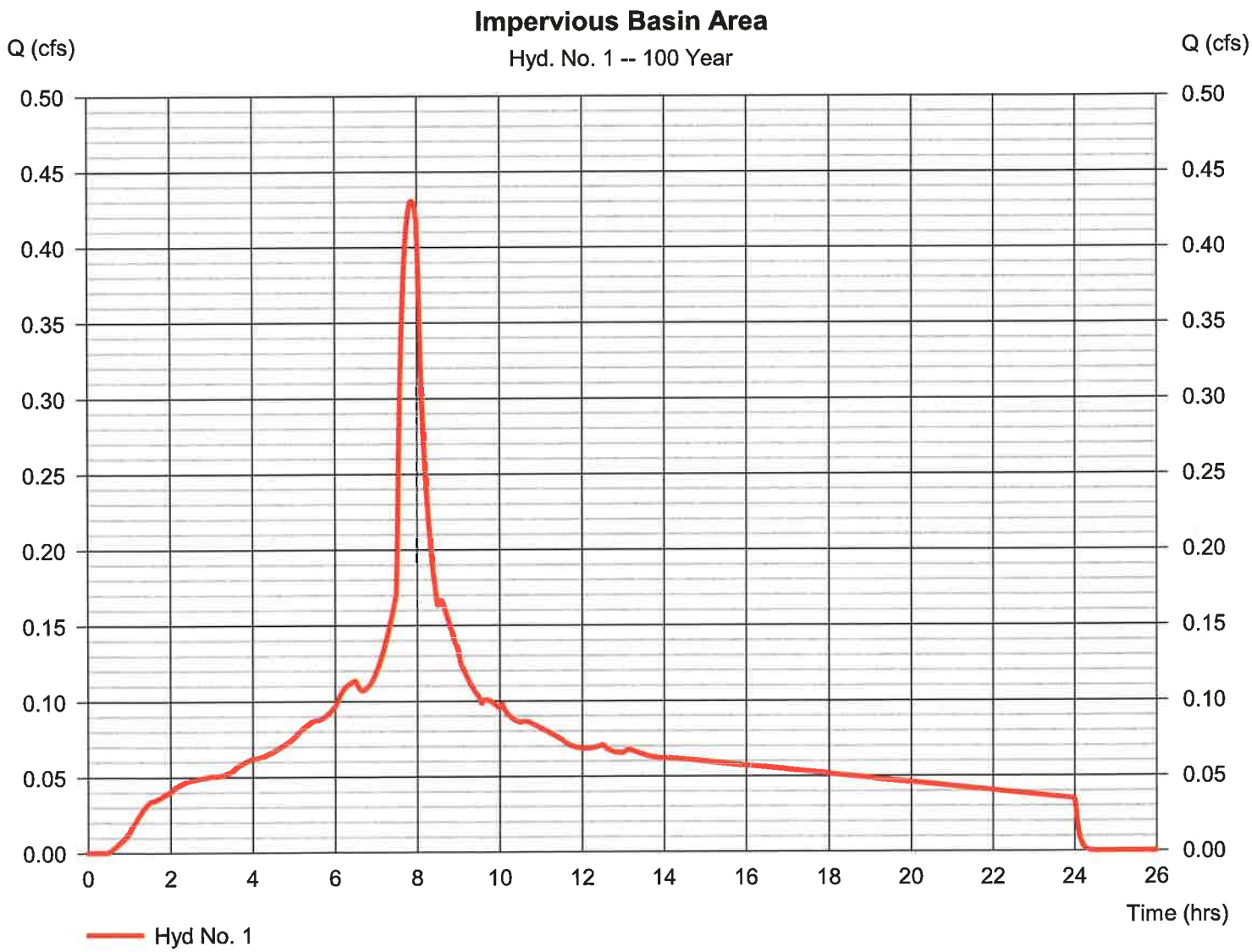
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 1

Impervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.431 cfs
Storm frequency	= 100 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 6,295 cuft
Drainage area	= 0.380 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 4.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



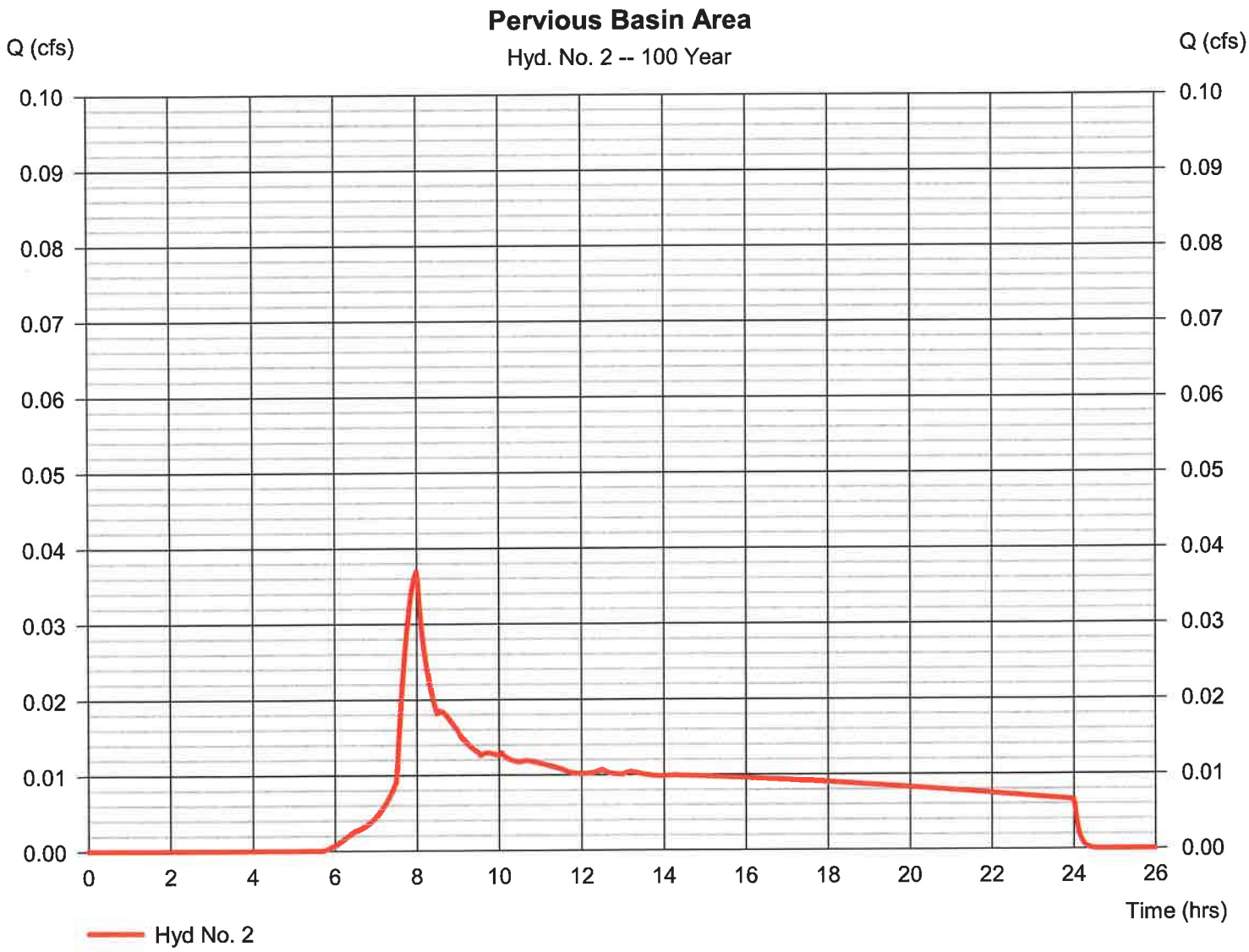
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 2

Pervious Basin Area

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.037 cfs
Storm frequency	= 100 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 658 cuft
Drainage area	= 0.100 ac	Curve number	= 69
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 6.20 min
Total precip.	= 4.80 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



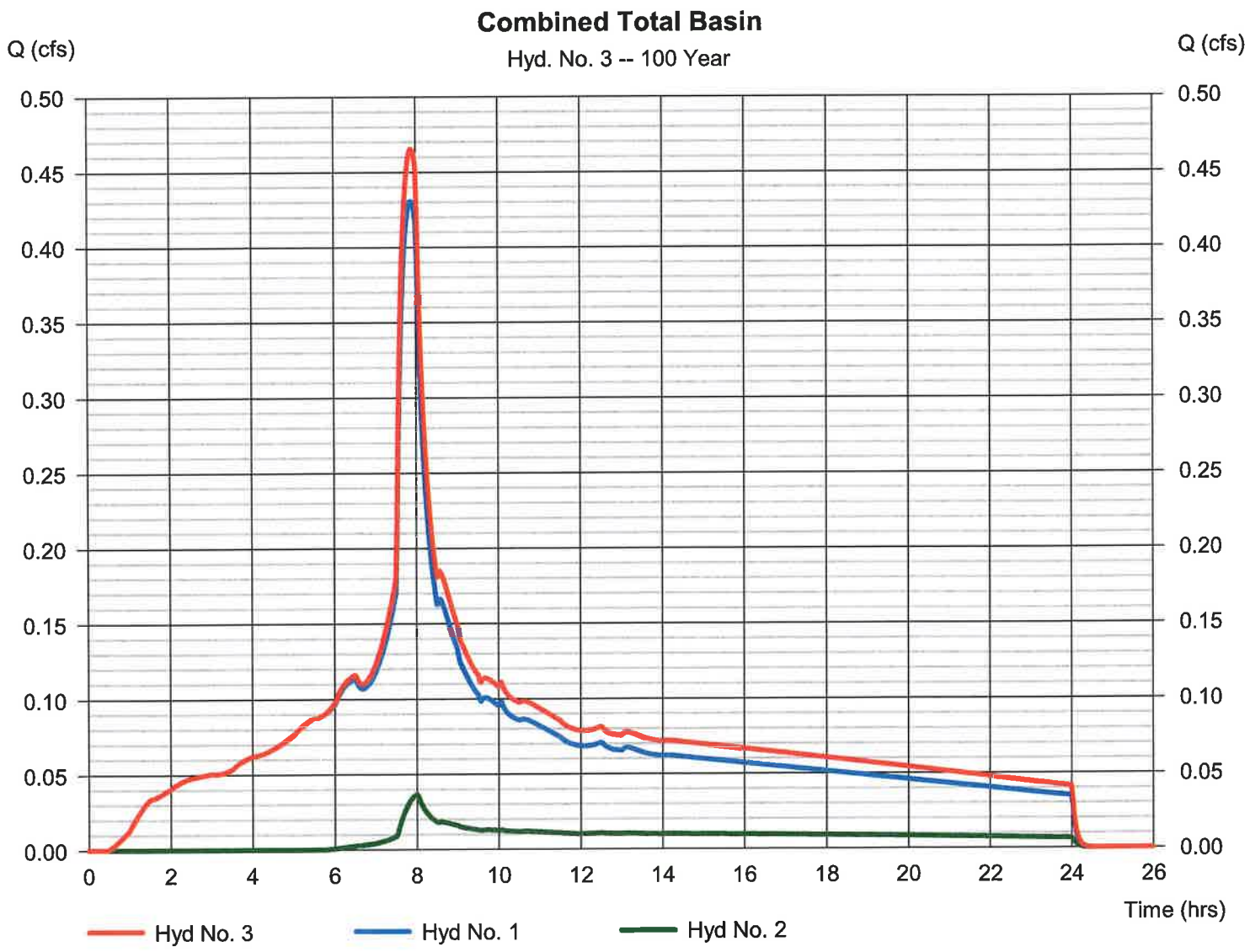
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 3

Combined Total Basin

Hydrograph type	= Combine	Peak discharge	= 0.465 cfs
Storm frequency	= 100 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 6,953 cuft
Inflow hyds.	= 1, 2	Contrib. drain. area	= 0.480 ac



Hydrograph Report

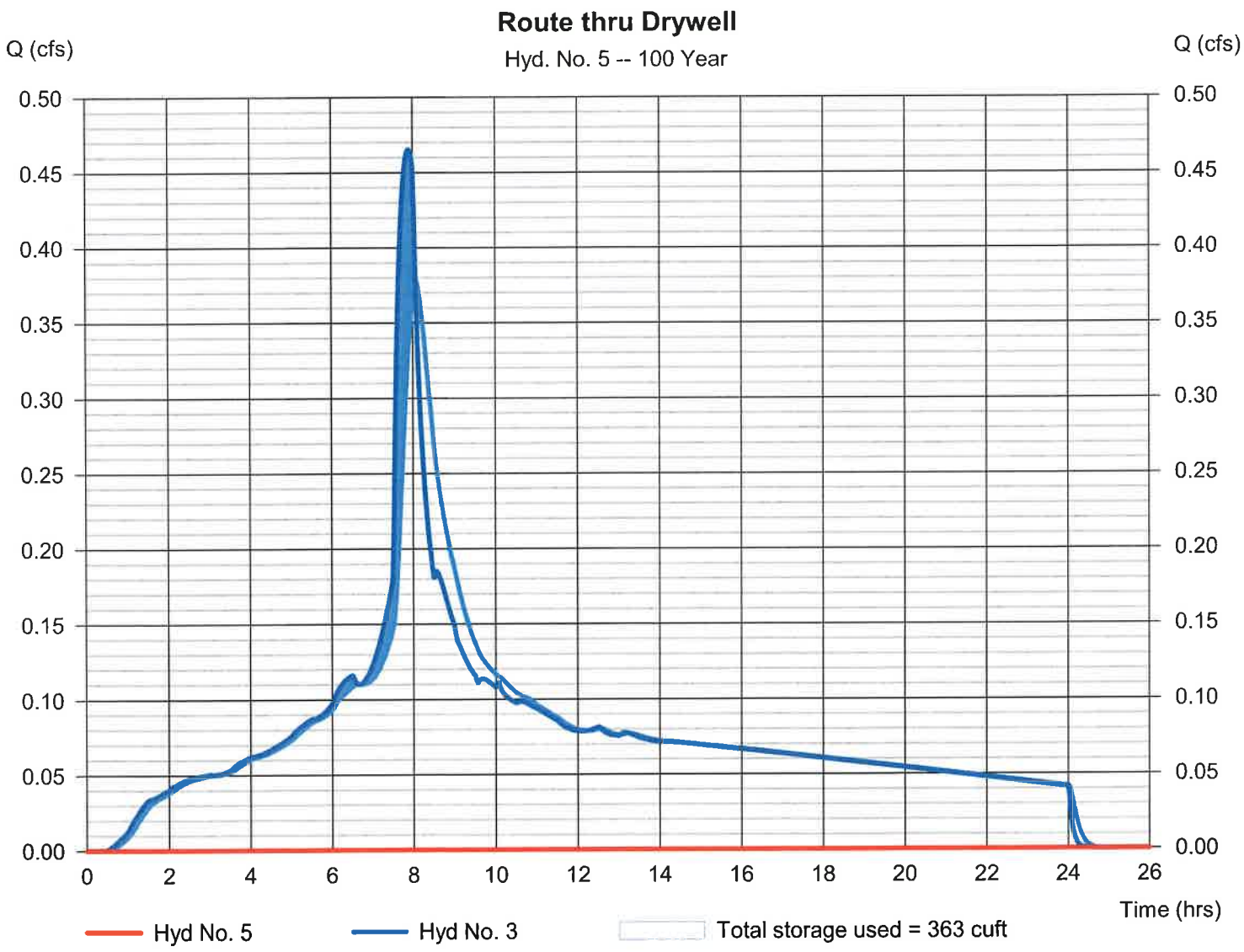
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Monday, 07 / 15 / 2019

Hyd. No. 5

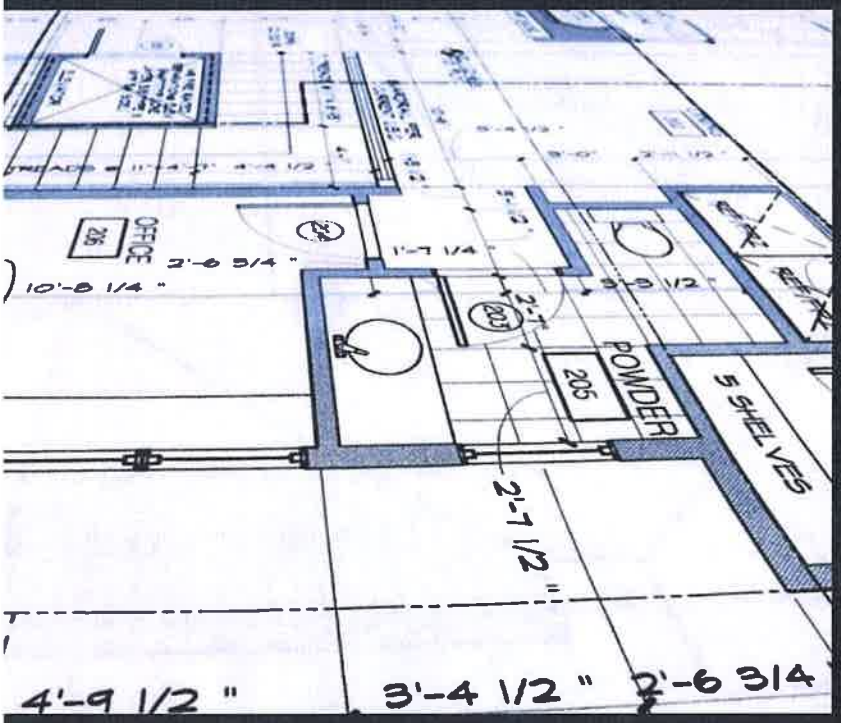
Route thru Drywell

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 5.70 hrs
Time interval	= 2 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 3 - Combined Total Basin	Max. Elevation	= 199.52 ft
Reservoir name	= Drywell	Max. Storage	= 363 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Geotechnical Engineering Report (for reference)



Geotechnical Investigation:

Chase Bank Building
8869 SE 82nd Avenue
Happy Valley, Oregon

AMA Project Number: 184640

Prepared For:

Ankrom Moisan

March 9, 2019

Submitted by:

CENTRAL
GEOTECHNICAL SERVICES, LLC

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1.0 INTRODUCTION AND PURPOSE OF REPORT

The purpose of this Geotechnical Investigation Report is to engage with the owner/developer and provide technical insight and analysis for the project, based on various public data, local findings onsite, lab data of local soils, and experience.

After receiving direction from Ankrom-Moisan Architects, Central Geotechnical Services (CGS) was requested to provide a Geotechnical Investigation, along with general recommendations for the design and construction of a bank building development. The construction recommendations cover topics such as investigative soils data, allowable soil bearing pressure, lateral pressures, compaction requirements, foundation placement, pavement, and seismic considerations.

This report intends to facilitate the preliminary focus of future development and initiate the requirements for the design and permitting of the proposed development project.

1.1 Project Description

Ankrom-Moisan Architects Inc. provided building criteria in the form of Chase Bank Design Standards Drawing Sheets A1.1.3, A1.3.3, A2.3 and S2.3, Version 18.3, dated September 28, 2018. Harper, Houf, Peterson, Righellis, Inc. (HHPR), the project Civil Engineer, provided a site plan showing the preliminary layout of the proposed development, dated December 18, 2018. A grading plan for the project has not yet been prepared.

The project involves the construction of a 3,470 square foot, one-story building with pavement for driveways, parking, a drive-through ATM, and other associated features. The building will be 17 to 26 feet tall with wood-framing, CMU walls and roof trusses. The new building will be located on the south portion of the property in the vicinity of the existing restaurant. We presume the floor of the building will be near to the existing ground elevation of approximately 208 feet.

The building will be supported on shallow, spread footings with a concrete slab-on-grade floor. The concrete slab may include thickened edge slab footings for interior walls and columns. Structural loading information is not available at this time. We expect that column loads will be less than 50 kips and wall loads less than 3 kips per lineal foot. Expected loads on the concrete slab-on-grade floor will be relatively light, with no forklifts or heavy equipment operated on the slab surface.

The pavement areas will include driveways and parking for passenger vehicles, light trucks, fire department apparatus access, and new parking stalls. Ancillary structures include two ATM enclosures including one with a canopy roof.

The area is served by both private and public storm water management facilities. We expect that storm water runoff from the project may be managed with private, infiltration disposal facilities such as subsurface chamber or drywell systems, if not connected with City stormwater mains.

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2.0 INVESTIGATION SUMMARY

2.1 Site Location and Surface Conditions

The proposed redevelopment site is located at 8869 SE 82nd Avenue in Happy Valley, Oregon at the intersection with SE Lindy Street. The site includes five tax lots that will be combined into a single parcel with a total area of 24,998 square feet. The site is currently occupied by a restaurant building, surrounded by asphalt pavement and landscaping berms. The property is identified as Tax Assessor Lot 12E29AA06500, and is zoned as commercial land.

An area map of the site is shown in Figure 2-1.

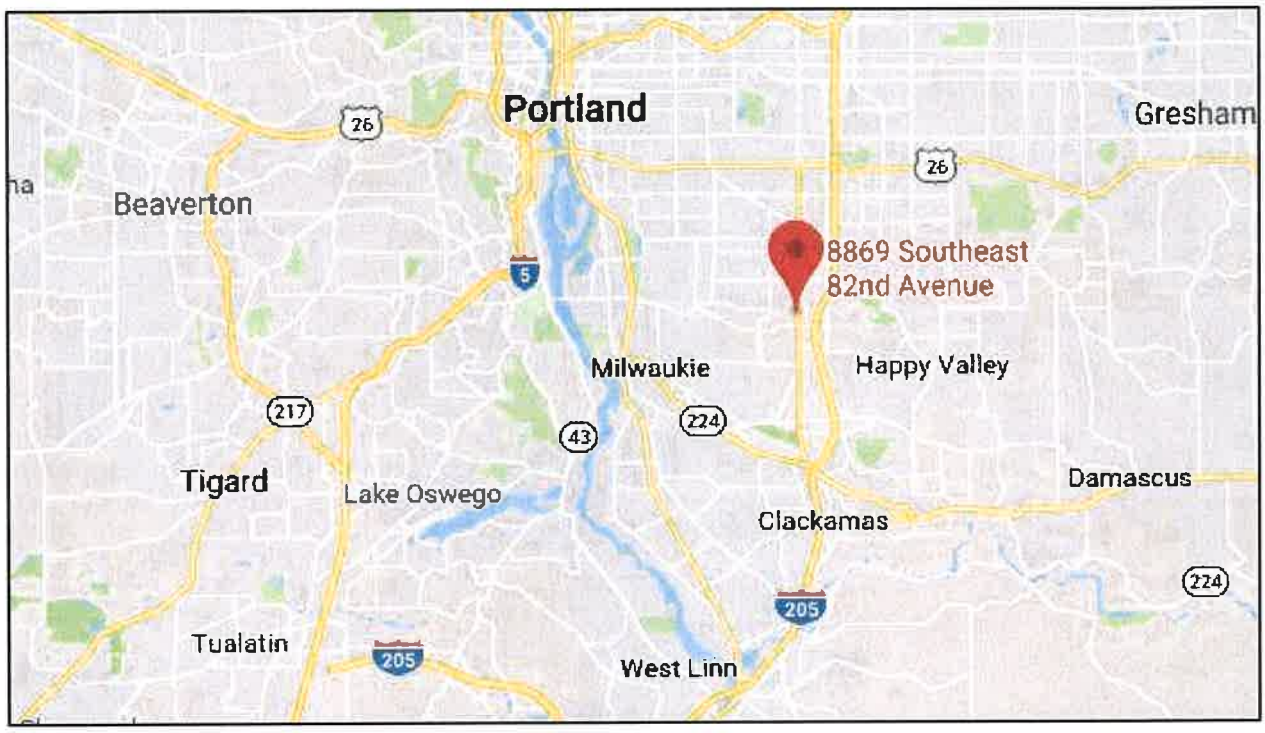

Figure 2-1: Area map of project site (Source: Google Maps)

The site is located in the Portland Basin on a broad alluvial plain with gentle topography at an approximate elevation of 208 feet above sea level. The site lies about 1,100 feet east of Johnson Creek, about 30 feet vertical above the creek channel.

The existing development is a one-story building constructed on the south end of the site with asphalt pavement on the north and west for parking. SE 82nd Avenue borders the site on the east and the main driveway entrance to Fred Meyer #153 – Johnson Creek borders the site on the south. The surrounding area is developed with commercial, light industrial, and residential buildings.

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The proposed development area is shown below in Figure 2-2.

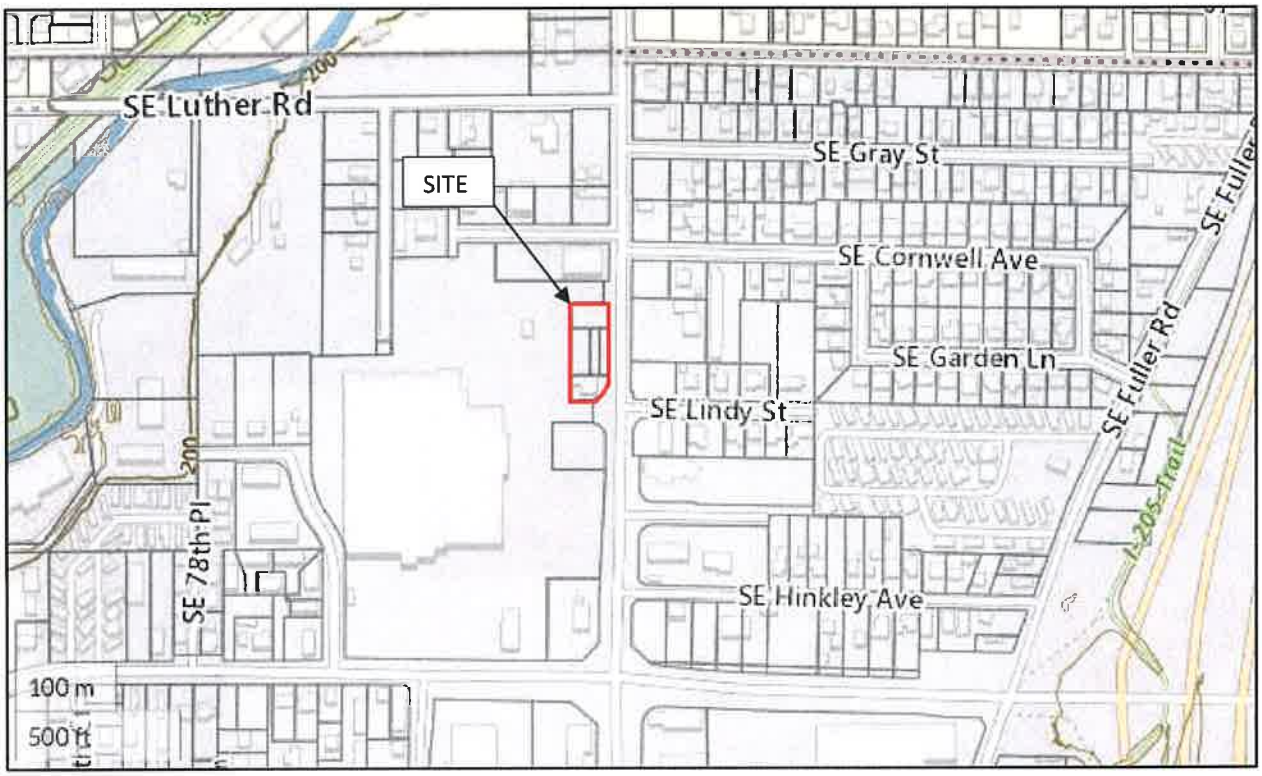

Figure 2-2: Topography in site vicinity. (Source: Metromaps, Metro Data Resource Center)

2.2 Site Geology

The site is located in the central portion of the Portland Basin, a structural basin filled with a thick sequence of sedimentary strata. Basin sediment near the ground surface was deposited during repeated glacial outburst flooding of the Columbia River and its tributaries, known as the Missoula Floods. The Missoula Flood Deposits are primarily silt to fine sand deposited in short-lived floodwater lakes, and sand, gravel and boulders deposited in broad fans and channels. The last flooding event occurred at the end of the last glacial period about 9,000 to 10,000 years ago[1].

Regional geologic mapping shows the site is underlain by complexly interlayered silt, sand, gravel and boulders of the Missoula Flood Deposit[2]. The deposit varies from open framework gravel to considerable sand and silt matrix material, and is up to 100 feet thick. Two deep explorations drilled into the deposit by DOGAMI at

[1]Waitt, R. B. Jr., 1985, Case for Periodic Colossal Jokulhlaups from Pleistocene Lake Missoula; Geological Society of America Bulletin, v. 96, no. 10, p. 1271-1286.
[2] Madin, I.P., 1990, Earthquake Hazard Geology Maps of the Portland Metropolitan Area, Oregon; Oregon Department of Geology and Mineral Industries, Open File Report O-90-02, map scale 1:24,000.

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locations several miles north and northwest of the site encountered very-dense sand and gravel with an average seismic velocity in the upper 100 feet of 1,300 and 1,400 feet per second[3].

Beneath Missoula Flood Deposit is the Pliocene to Miocene age (2 to 5 million years ago) Troutdale Formation, a conglomerate composed of sandy gravel and cobbles with minor interbeds of sandstone, siltstone and claystone[4]. The conglomerate is typically cemented and poorly to moderately indurated (hardened by temperature and pressure). In the Portland Basin, the Troutdale Formation is exposed at the ground surface along incised river channels and is encountered in deep drill holes. The total thickness of Troutdale Formation in the central Portland Basin is about 300 feet.

2.3 Tectonic and Seismic Setting

The Tualatin Basin is subject to seismic events stemming from three possible sources: the Cascadia Subduction Zone (CSZ) at the interface between the Juan de Fuca Plate and the North American Plate, intraslab faults within the Juan de Fuca Plate, and crustal faults in the North American Plate.

The CSZ is seismically active. Intraslab events with inland epicenters, such as the 6.8 M_W Nisqually earthquake in 2001, have occurred on a frequent basis in the Puget Sound, contributing small to moderate magnitude ground motions in southern Washington. The maximum magnitude for a CSZ interface event is expected to be in the range of moment magnitude (M_W) 9.0 with an offshore epicenter located about 40 miles west of the project site.

Inland crustal faults in the North American Plate are considered potentially active. Five moderate magnitude earthquakes attributed to crustal faults have occurred in the Portland-Vancouver metropolitan Area since 1877 including a 5.2 M_W earthquake in 1962. Slip rates for the crustal faults are very low (i.e., less than about 0.2 mm per year) and no documented surface rupture has occurred in the last 10,000 years. The Portland Hills Fault is considered capable of generating a magnitude 6.8 earthquake.

The tectonic structure of the Portland-Vancouver region is generally interpreted to be a pull-apart basin within a larger dextral (left-stepping) wrench faulting zone dominated by strike-slip or oblique reverse-slip movement. Focal mechanism solutions for crustal earthquakes show a predominant strike-slip or reverse oblique slip movement consistent with north-northeast to south-southwest directed compressive stress[5].

Quaternary age (last 1.6 million years) crustal faults inventoried in the USGS National Fault and Fold Database that lie within 10 miles of the site are the Portland Hills, Oatfield, and Canby-Molalla Faults about 2.3, 3.8 and 8.8 miles to southwest, respectively, the East Bank Fault about 4.4 miles to the north, and the Damascus-Tickle Creek Fault about 1.5 miles to the east.

---

[3] Mabey, M.A. and Madin, I.P., 1995, Downhole and Seismic Cone Penetrometer Shear-wave Velocity Measurements for the Portland Metropolitan Area, 1993 and 1994; Oregon Department of Geology and Mineral Industries, Open-File Report O-95-7.

[4] Beeson, I.P., Tolan, T.L. and Madin, I.P., 1991, Geologic Map of the Portland Quadrangle, Oregon and Clark County, Washington; Oregon Department of Geology and Mineral Industries, GMS-75, map scale 1:24,000.

[5] Wong, I.G., Hemphill-Haley, M.A., Liberty, L.M, and Madin, I.P., 2001, The Portland Hills Fault: An earthquake generator or just another old fault?: Oregon Department of Geology and Mineral Industries, Oregon Geology v. 63, no. 2, p. 39-50.

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The contribution of potential earthquake-induced ground motion from all known sources, including the faults described above, are provided by the seismic design parameters for the project site presented in the recommendations section of this report.

2.4 Liquefaction Hazard

Strong seismic shaking can result in ground failure due to the phenomenon known as liquefaction. Soil liquefaction occurs when saturated soil temporarily loses strength and behaves as a fluid in response to seismic shaking. Liquefaction is generally limited to loose, granular, cohesionless soil located below a shallow water table. Various types of ground deformation can occur including but not limited to slope movement, lateral spreading, sand boils, settlement, ground oscillation and cracking.

A regional assessment of the probability for earthquake-induced liquefaction or landslides in a Cascadia Subduction Zone (M_W 9.0) event was completed for the Portland metropolitan area in a 2018 Study[6]. This study designates the site vicinity as having a negligible to low probability for liquefaction (negligible to 5%).

2.5 Subsurface Soil Conditions

We completed a program of subsurface exploration at the site that included drilling six geotechnical borings at the approximate locations shown in Figure 2-3. The soil and groundwater conditions encountered are described in the following sections. Field exploration procedures, summary logs of the explorations, and Soil Classification and Description Guidelines are presented in Appendix A.

2.5.1 Fill

Based on our explorations, the majority of the site is covered with a thin layer of fill extending from the ground surface to an approximate depth of 1 to 6 feet. In pavement areas, the fill is crushed aggregate baserock (angular, sandy GRAVEL) that was 6 to 15 inches thick beneath asphalt. In boring B-1, we encountered fill about 6 feet thick consisting of sandy GRAVEL (GW) resembling the native soil. Based on Standard Penetration Tests in borings, the fill was generally medium-dense to very-dense with isolated loose areas in the upper foot. We expect that fill is also present around existing foundation footings, subsurface structures, and other existing or abandoned improvements.

2.5.2 Missoula Flood Deposit

Beneath the fill, we encountered sandy GRAVEL (GW) to gravelly SAND (SW) with cobbles and small boulders and trace silt belonging to the Missoula Flood Deposit. In general, the deposit is well-graded with grain sizes ranging from cobbles, gravel, coarse- to very-fine sand and silt. The gravel is generally subrounded, while the sand is generally subangular. Gravel sizes up to 4-inches in diameter were recovered from the drill cuttings.

[6] Bauer, J.M., Burns, W.J. and Madin, I.P., 2018, Earthquake Regional Impact Analysis for Clackamas, Multnomah, and Washington Counties, Oregon; Oregon Department of Geology and Mineral Industries Open File Report O-18-02, 74 p., 16 Plates.

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Based on Standard Penetration Tests in borings, the sandy GRAVEL (GW) and gravelly SAND (SW) is generally medium-dense to very-dense with isolated loose areas in the upper foot. In boring B-2, we encountered auger refusal with a truck-mounted drill rig on a pocket of hard (R4) boulders at a depth of 13 feet bgs.

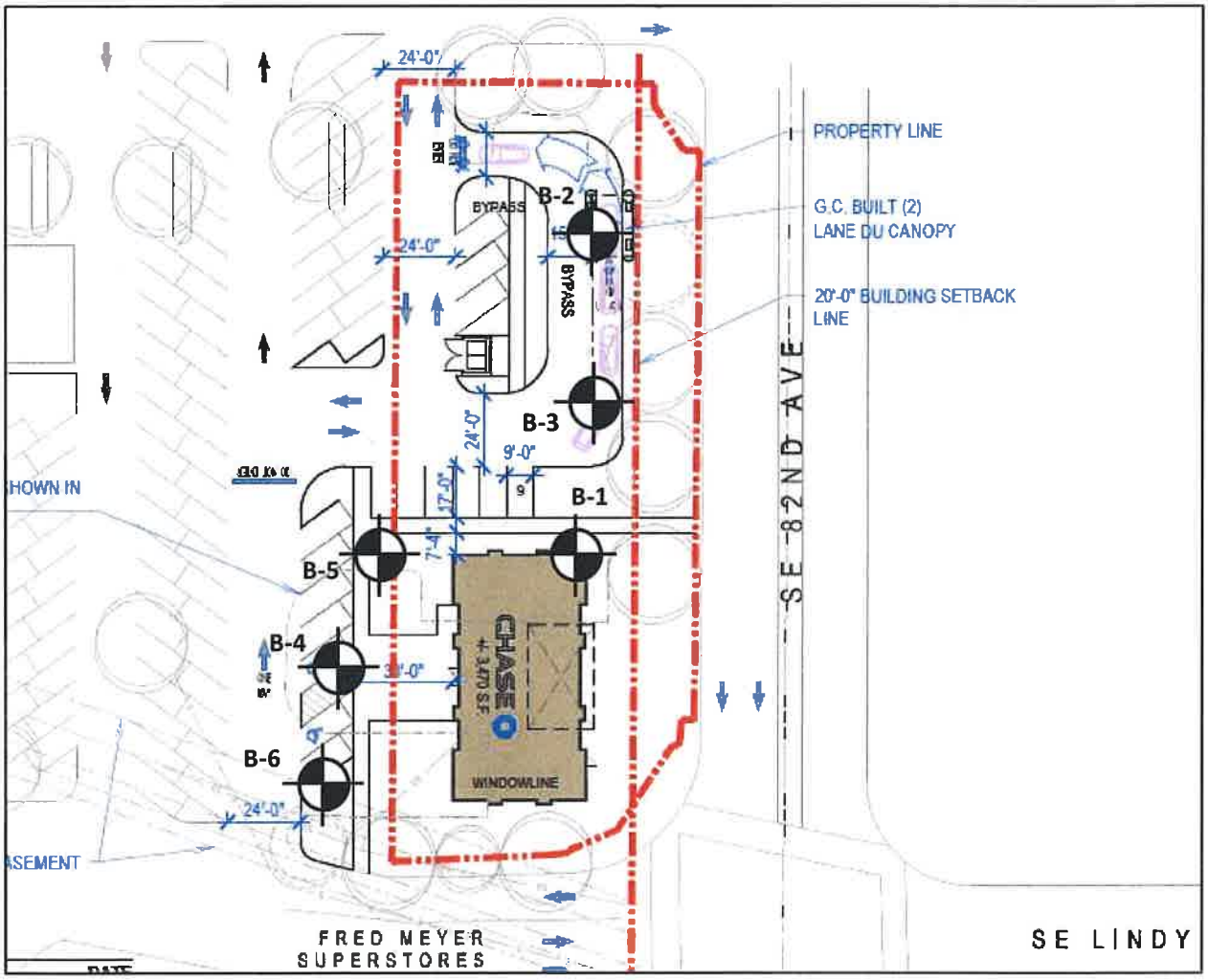

Figure 2-3: Preliminary site plan with exploration locations. (Source: HHPR, dated December 18, 2018)

2.5.3 Lab Testing Results

Geotechnical lab tests were performed on selected samples of the underlying soils encountered in subsurface exploration, including grain size sieve analysis (ASTM C136), washed sieve analysis of material passing the No. 200 sieve (ASTM D1140), and moisture content (ASTM D2216). Sieve analysis of two samples yielded a gravel content of 43% and 44%, and a sand content of 43% and 52%. The grain size of the sand varies from very-fine

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to coarse. Washed sieve testing on the No. 200 screen yielded a silt and clay content of 10%, 14%, 18% and 3%. These test results indicate a soil classification of sandy GRAVEL (GW) with silt to trace silt and gravelly SAND (SW) with trace silt. Moisture content testing of five samples from B-6 yielded a moisture content of 11% near to the ground surface decreasing to 5% at a depth of 25 feet bgs.

The results of the laboratory tests are shown on the boring logs. Detailed lab reports, including percentage plots of each grain size constituent, are presented in Appendix B.

2.6 Groundwater Conditions

A regional study conducted by the USGS shows the groundwater table in the site vicinity to be about 175 feet above mean sea level (NAVD 1988), approximately 33 feet below the ground surface[7]. We did not encounter groundwater in our explorations which were drilled to a maximum depth of 26.5 feet bgs in the middle of the Winter season. We expect that temporary perched groundwater conditions may occur near to the ground surface during the wet-weather season in response to heavy rainfall events.

2.7 Infiltration Testing

We performed three infiltration tests at the site in general accordance with the methodology prescribed in Appendix E of the Clackamas County WES Stormwater Standards publication. The tests were conducted on February 21 and 22, 2019 using the "Encased Falling Head Procedure". The procedure utilizes a 6-inch-diameter casing seated approximately 6 inches into native soil. The goal of this field test is to evaluate the vertical infiltration rate through a 6-inch plug of soil, without allowing lateral infiltration.

Testing was performed at an approximate depth of 5 feet bgs in borings B-3 and B-4, and 13 feet bgs in boring B-2. The tests were performed in a 6-inch I.D., hollow-stem auger casing seated in a 10-inch-diameter drill hole. The approximate test locations are shown in Figure 2-3.

The test procedure consisted of adding water to the test holes and monitoring the water level over time. Water levels were measured at periodic intervals from a fixed reference point. Measurements were made with a standard steel tape measure. The measurements were repeated until consistent falling head rates were obtained. The infiltration test holes were allowed to presoak for approximately 15 hours prior to beginning the final test measurements.

In boring B-3, water rapidly infiltrated through the bottom of the test hole such that direct measurement of the falling water level was not possible. The infiltration rate in B-3 was estimated using the volumetric rate at which water was added and assuming an infiltration wetting front at the bottom of the test hole of one square foot. The test was repeated eight times with 5 gallons of water per test run for a total water volume of 40 gallons during the test period. The high infiltration rate in B-3 is likely the result of a localized seam of open framework gravel, and; therefore, the result is not considered to represent a long-term sustainable infiltration rate.

[7] Snyder, D.T., 2008, Estimated Depth to Ground Water and Configuration of the Water Table in the Portland, Oregon Area: USGS Scientific Investigations Report 2008-5059, approximate map scale 1:50,000.

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Graphic plots of the test measurements are presented in Figures 2-4 and 2-5. The test parameters and a summary of the test results are presented in Table 1-1.

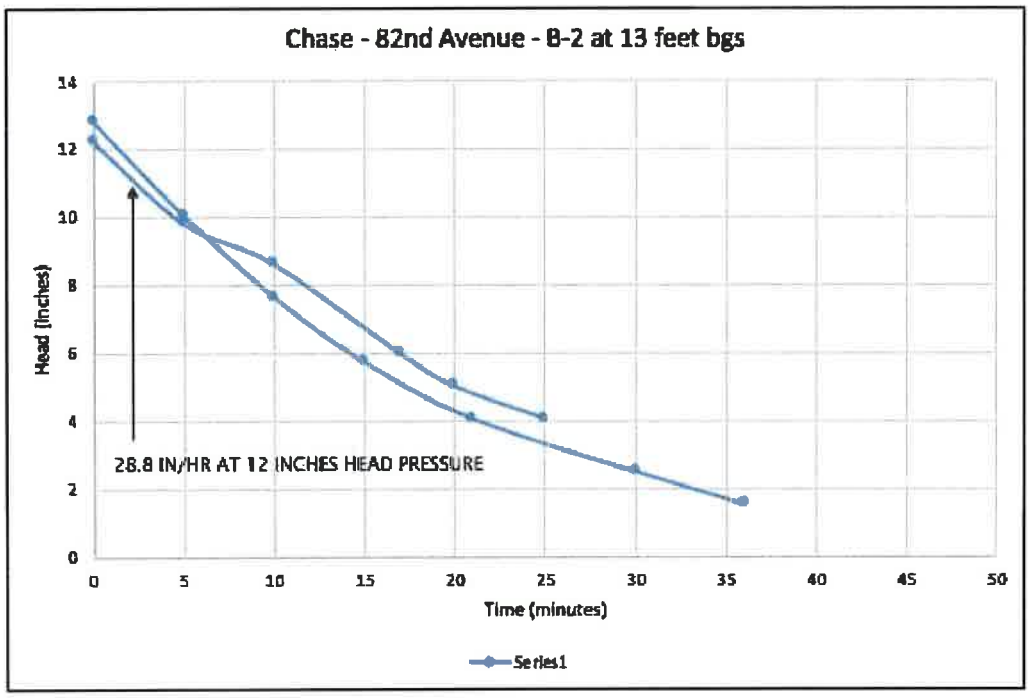

Figure 2-4: Plot of Final Infiltration Test Measurements in Boring B-2 at 13 feet bgs

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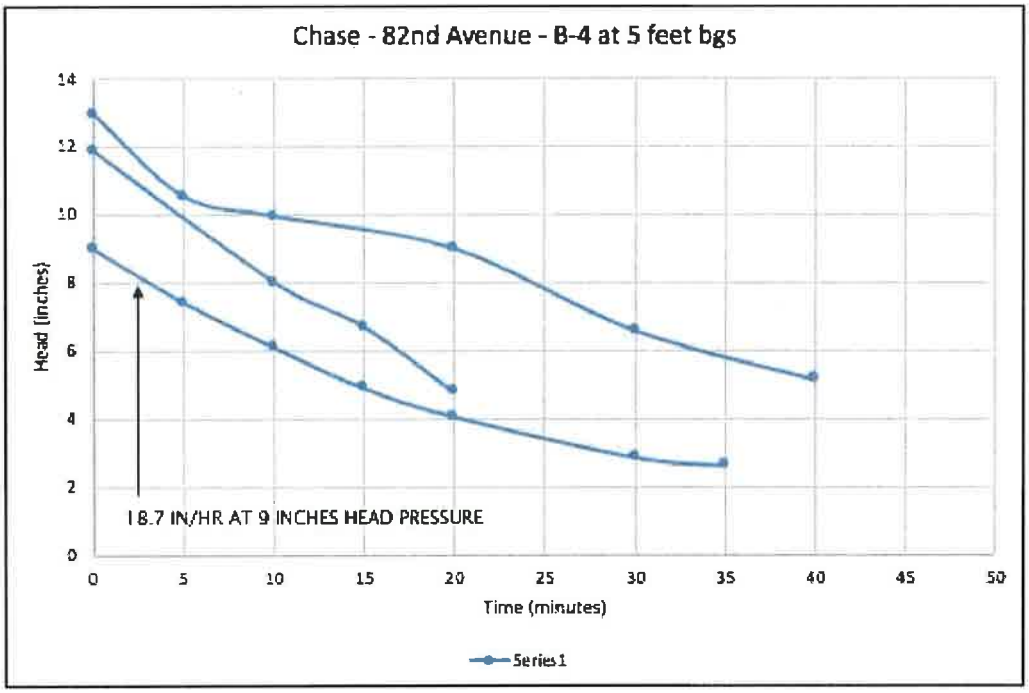

Figure 2-5: Plot of Final Infiltration Test Measurements in Boring B-4 at 5 feet bgs

Table 1-1 - Infiltration Test Parameters and Summary of Test Results

Location	Soil Type	Test Depth (feet)	Pressure Head (inches)	Infiltration Rate (inches/hour)
B-2	Sandy GRAVEL with trace silt	13	12	28
B-3	Sandy GRAVEL with silt	5	12	96
B-4	Sandy GRAVEL with trace silt	5	8	18

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3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our geotechnical investigation, we consider the site to be suitable for redevelopment as proposed. The building may be supported on shallow foundations designed and constructed in accordance with our recommendations. We expect a minimum excavation depth of 12 inches will be necessary to reach subgrade suitable for footing support. Additional depth of excavation may be required to remove unsatisfactory soils or existing uncontrolled fills.

The following sections present our conclusions and recommendations for project design and construction.

3.1 Site Preparation

Existing structures on the site should be demolished and all debris removed from the site. Subsurface structures, such as existing footings and abandoned utilities, should be removed and the excavations backfilled utilizing only an approved granular material, placed and compacted in accordance with *Section 3.4 Engineered Structural Fill*. Removal of undocumented backfill adjacent to demolished and excavated structures is recommended. Excavation should include benching of the side walls so that backfill can be properly placed.

In preparation for construction, the existing asphalt should be removed from future structural areas. In vegetated areas, mulch and the heavily rooted topsoil zone should be stripped and removed from the site in all proposed structural areas and for a minimum 2-foot margin around such areas. Based on our explorations, the minimum depth of stripping will be approximately 4 inches. Greater removal depths may necessary in isolated areas to remove tree stumps, root balls, excessively rooted zones, or undocumented fills. Stripped material should be transported off-site for disposal or stockpiled for use in landscaping areas.

After stripping and the required site cutting have been completed, we recommend the areas be observed by a member of our geotechnical staff who will evaluate the subgrade by probing or other applicable means. Existing compacted fill beneath the asphalt may remain provided that CGS evaluates it to verify adequate compaction. The evaluation should be performed by proof-rolling with a loaded dump truck or similar vehicle, and should be observed by CGS. If soft areas are identified, the material should be excavated and replaced with compacted engineered structural fill.

It is possible that unrecognized areas of undocumented fill may be encountered on the site during construction. It is recommended that all uncontrolled fill soils be removed completely in preparation for foundations or other construction and be replaced with engineered structural fill in accordance with *Section 3.4 Engineered Structural Fill*.

3.2 Temporary Excavations

The stability of temporary excavation slopes is a function of many factors, including soil type, soil density, slope inclination, slope height, the presence of groundwater, and the duration of exposure. The likelihood of slope failure increases as the cut is deepened and as the duration of exposure increases.

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Temporary slope safety should remain the responsibility of the contractor, who is continually present at the site and is able to monitor the performance of the excavation and modify construction practices and shoring methods to reflect varying conditions. All excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and State regulations.

Regardless of inclination, temporary slopes should be protected from surface runoff of storm water. This can typically be accomplished using berms or swales located along the top of the slope, and by placing plastic tarpaulins over the slope.

3.3 Utility Trenches

Utility trench backfill in structural areas should consist of granular fill limited to a maximum particle size of 1½ inches. Granular trench backfill should be compacted to at least 90% of the maximum dry density as determined by ASTM D1557. Excavator-mounted, vibratory-plate compactors are typically the most efficient for compaction of trench backfill. Lift thicknesses should be evaluated based on field density tests; however, care should be taken when operating vibratory compactors to prevent damage to pipes. An initial lift thickness over pipe may need to be up to 4 feet to protect the pipe from damage during compaction. Native materials can be used for trench backfill in non-structural areas where a soft trench and future settlement of the backfill can be tolerated.

Permanent cut and fill slopes for the storm water basin should not exceed a grade of 2H:1V (Horizontal to Vertical). Slopes that will be maintained by mowing should not be constructed steeper than 3H:1V. Structures and paved surfaces should be located at least 5 feet from the slope face.

Finish slope faces should be planted with appropriate vegetation to provide protection against erosion. Surface water runoff should be collected and directed away from slopes steeper than 3H:1V to prevent water from running down the slope face.

3.4 Engineered Structural Fill

Engineered structural fill is any fill material used for support of foundations, retaining walls, slab-on-grade floors, sidewalks, embankments, pavements, and similar features. The on-site soil is suitable for use as structural fill provided it can be separated from unsuitable material, be properly moisture conditioned, and compacted to the specified density as determined by standard testing in a soils lab. The on-site soil used as structural fill should be placed in lifts with a maximum uncompacted thickness of 8 inches.

Imported granular material should be used for engineered structural fill if the on-site material cannot be properly moisture conditioned. Imported granular fill should consist of crushed aggregate that is fairly well-graded between coarse and fine material and have less than 5 percent by weight passing the U.S. Standard No. 200 Sieve. Use of alternative granular fill material such as pit-run or quarry-run rock or sand should be evaluated for suitability by CGS prior to its use. Granular fill should be placed in lifts with a maximum uncompacted thickness of 12 inches.

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All engineered structural fill should be compacted to at least 90% of the maximum dry density determined by the Modified Proctor ASTM D1557 or equivalent. CGS should perform density testing of engineered structural fill to verify that adequate compaction is achieved. Proof-rolling with a loaded dump truck or water truck may be allowed in certain circumstances under the guidance of CGS onsite to evaluate fill compaction.

Regardless of material or location, structural fill should be placed over firm, unyielding subgrade prepared in accordance with the "Site Preparation" section of this report. The condition of the subgrade should be verified by a CGS representative before filling or construction begins. Fill compaction should be verified by in-place density tests taken during fill placement to confirm that compaction meets project specifications.

3.5 Foundations

In our opinion, the proposed buildings and associated structures can be supported on shallow, spread footings bearing on engineered structural fill or medium-dense native soil. Foundation design, construction, and setback requirements should conform to the Oregon Structural Specialty Code (OSSC) and other governing codes as applicable.

We recommend an allowable soil bearing pressure of 2,500 pounds per square foot (psf) be used for footing design. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads. The allowable bearing pressure may be increased by a factor of 1.33 for short-term loads such as those resulting from wind or seismic forces.

Total static settlement of footings founded as recommended is expected to be less than 1 inch. Differential settlement is estimated to be less than ¾ inches over a horizontal span of 20 feet. Most of the settlement will occur during construction as the loads are applied. These estimates are based on maximum wall loads of 3,000 pounds per lineal foot and a maximum column load of 50 kips. For heavier loads, CGS should be consulted.

For protection against frost heave and maximizing bearing strength, perimeter footings should be embedded at least 18 inches below exterior finish grade. Interior footings should be embedded at least 12 inches below floor slabs. Minimum footing widths should be determined by the project architect/designer/structural engineer in accordance with applicable design codes. The OSSC specifies a minimum footing width of 12 inches for one-story, 15 inches for two-story, and 18 inches for three-story structures. Excavations adjacent to footings should not extend beneath a 1H:1V plane projected downwards from the bottom edge of the footing.

Footing excavations should be trimmed neat and carefully prepared. Loose, wet or otherwise softened subgrade should be removed from footing areas prior to placing forms and reinforcing steel. In wet weather conditions, we recommend that a several-inch-thick layer of granular material (typically 3/4"-0 crushed aggregate) be placed at the base of footing excavations. The granular material reduces water softening of subgrade soils, reduces subgrade disturbance during placement of forms and reinforcement, and provides a clean environment for reinforcing steel. To be effective, the granular material should be placed on firm, well-drained subgrade and lightly compacted until well-keyed using a small vibratory plate compactor.

We recommended that CGS observe the foundation excavation subgrade prior to placing structural fill, formwork, or reinforcing steel to verify subgrade support conditions are within recommended specifications.

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3.5.1 Lateral Resistance

Lateral loads on the proposed structures imposed by wind or seismic forces can be resisted by a combination of sliding resistance on the base of footings and passive earth pressure on the sides of footings. We recommend an ultimate coefficient of friction of 0.4 for footings bearing on undisturbed, native sand and gravel, and 0.5 for footings bearing on structural granular fill.

Passive earth pressures on the sides of buried footings may be calculated using an allowable equivalent fluid pressure of 300 pcf per foot of embedment. For this value, backfill against the footing should be compacted to at least 90% of the maximum dry density of obtained from ASTM D1557. The upper foot of embedment should be neglected unless protected by pavement or concrete slabs on grade.

3.6 Slab on Grade Floors

Satisfactory subgrade support for lightly-loaded building floor slabs can be obtained on undisturbed native soil or on newly placed structural fill. The modulus of subgrade reaction for design of floor slabs may be taken as 100 pounds per cubic inch.

A minimum 8-inch-thick layer of imported granular material should be placed and compacted over the prepared subgrade to assist as a capillary break and blanket drain. Imported granular material should consist of clean crushed rock or sand that is fairly well-graded between coarse and fine, contains no deleterious materials, has a maximum particle size of 1½ inches, and less than 5 percent by weight passing the U.S. Standard No. 200 Sieve. The imported granular material may be placed in one lift and should be compacted until well-keyed, about 85 percent of the maximum dry density as determined by ASTM D 1557. An underslab drainage pipe system is recommended for human occupancy areas with concrete slab floors.

A vapor retarder manufactured for use beneath floor slabs should be installed above the base rock and according to the manufacturer's recommendations. Careful attention should be made during construction to prevent perforating the retarder, and to seal edges and utility penetrations. We recommend following ACI 302.1, Chapter 3 with regard to installing a vapor retarder.

3.7 Retaining Walls

The preliminary plans do not show any retaining walls for the project. Because the project is in the preliminary design phase, it is unclear whether structural retaining walls will be included. Lateral pressures presented in this report are to be considered as general guidelines, should retaining walls be included. CGS should be consulted for feature-specific recommendations.

Lateral pressures are determined from measured or assumed soil parameters of the soils found onsite. The design engineer of retaining walls must take into consideration the state at which the soil retention walls will be placed, whether under active, passive, or at-rest pressures. The possibility of additional non-seismic surcharge loading should also be considered.

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Our recommended lateral earth pressures for design of retaining walls are presented below. The design parameters shown below are to be used for well-drained backfill conditions with no hydrostatic pressures. Walls that may deflect by at least 0.01 times their height are to be designed with active earth pressures. Walls that may not deflect are to be designed with at-rest pressures.

With assumed granular backfill, a wet density of retained soils at 135 pounds per cubic foot, a friction angle of 35 degrees and a level slope condition above the wall, the at-rest, active, and passive equivalent fluid pressures may be taken as 50, 35, and 300 pounds per cubic foot, respectively. The seismic surcharge may be taken as 12 pounds per cubic foot.

A layer of compacted aggregate that is a minimum of one-foot-thick should be placed behind all retaining walls to be constructed on the site to allow for proper drainage, and placed utilizing the compaction recommendations as described in this report. All structural retaining walls should be backfilled with an imported, free-draining granular material such as ¾"-0 crushed rock with no more than 5% passing the No. 200 sieve.

Near the base of the layer of aggregate, a 3- or 4-inch-diameter, perforated gravity drain pipe wrapped in clean, angular drainrock, and contained within geotextile fabric should be installed to divert water from retaining structures. Consideration should be given to additional drainage placed at both the "inside corner" of the cantilevered portion of the wall and at the innermost base of the retaining wall to assure the best possible drainage scenarios.

3.8 Pavement Profiles

We do not have specific information on the frequency and type of vehicles that will use the facility. For design purposes, we have assumed that post-construction traffic conditions will average no more than five heavy trucks per day. Our pavement recommendations are based on a typical subgrade density for sandy gravel using a California Bearing Ratio value of 10.

We recommend the minimum pavement section profiles presented in Table 3-1 to support the anticipated traffic loads over a design life of 20 years. The AC pavement thickness should be increased to 4 inches in the area where garbage trucks back and turn.

Table 3-1 - Recommended Minimum Dry-Weather Pavement Section

Material	Driveway Areas Thickness (in)	Parking Areas Thickness (in)	Compaction Standard
Asphaltic Concrete (AC)	3	2.5	91% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2	2	95% of Modified Proctor

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Crushed Aggregate Base 1½ "-0	6	4	95% of Modified Proctor

These thicknesses are intended to be the minimum acceptable for construction completed during an extended period of dry weather. If pavement areas are constructed during wet weather, CGS should review the subgrade and proposed construction methods immediately prior to the placement of base course so that specific recommendations can be provided. Wet-weather pavement construction may require cement amendment or an additional 6 inches of crushed aggregate base.

AC pavement should conform to Section 0074 of the Standard Specification for Highway Construction, Oregon Highway Specifications, and City of Happy Valley requirements. We recommend graded half-inch or three-quarter-inch, Dense Hot Mix Asphalt Concrete for Design Level 2 using Performance Grade Asphalt PG-64-22 which is appropriate for low to moderate volume pavements in Western Oregon. The aggregate base should conform to Section 02630 of the 2018 ODOT Oregon Standard Specifications for Construction with the addition that no more than 5 percent of the material by dry weight passes the U.S. Standard No. 200 Sieve. Aggregate base contaminated with soil during construction should be removed and replaced before paving.

As a matter of good construction practice, we recommend placing a woven separation fabric between the soil subgrade and the aggregate such as Contech C200 or US200. The fabric should conform to the minimum property values presented in Table 02320-4 – Subgrade Geotextile (Separation), in Section 02320 of the 2018 ODOT Oregon Standard Specifications for Construction.

We recommend that CGS conduct density testing and/or a proof roll performance test of the pavement subgrade prior to placement. Subgrade and base rock should be compacted to at least 95% of the maximum dry density obtained from ASTM D1557. Subgrade strength should be verified visually by proof-rolling directly on the subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas which rut, pump, or weave by more than ¼ inch should be stabilized prior to paving.

3.9 Drainage Considerations

Site drainage should include foundation drainage, surface runoff collection, and conveyance to a properly designed and permitted storm water drainage facility. As a matter of good construction practice, we recommend that perimeter footing subdrains be installed for all buildings. Perimeter subdrains should consist of perforated drainpipe enveloped in a zone of drain rock that is wrapped in a non-woven geotextile filter fabric. The subdrain should be connected to a non-perforated drainpipe conveyance to storm drain facilities. A diagram of typical footing subdrain is presented in Appendix C as a recommended guideline for construction.

Water should not be allowed to pond beneath floor slabs or within crawl spaces. Floor slab and crawl space subgrade should be sloped to drain to a suitable low point drain outlet or sump. The drain location and routing should be carefully considered to ensure drainage occurs as intended. It might be necessary to install underslab drainage and provide for sump pumps, depending on the below grade depth of floor slabs.

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We recommend that all roof drains be connected to a non-perforated drainpipe leading to storm drain outlet facilities. Pavement surfaces and open space areas should be sloped such that surface water runoff is collected and routed to suitable discharge points. Ground surfaces adjacent to buildings should be sloped to drain away from the buildings.

3.10 Storm Water Infiltration Facilities

Based on the results of infiltration testing, we consider the project site to be suitable for subsurface disposal of storm water from a geotechnical perspective. Permeable sandy GRAVEL and gravelly SAND with trace silt was encountered at depths of 5 feet below the ground surface. Table 1 summarizes our infiltration test parameters, measurements and results.

We recommend an infiltration rate of 18 and 28 inches per hour be used for design of infiltration facilities constructed at depths of 5 feet and 13 feet below the ground surface, respectively. An appropriate factor of safety should be applied to the measured rate by the system designer, typically a factor of safety of 2 or greater. Incorporation of silt traps and pre-filter elements will extend the service life of the system. All systems should include overflow outlets that discharge potential overflow to a suitable dispersal area.

It should be noted that infiltration rates of in-situ soils may vary across the site, and as such testing is generally required by the permitting agency at the actual location and depth of the facility to be constructed. We recommend that CGS observe the facility excavation at the time of construction to verify that suitable permeability soil is present.

Existing storm water disposal drywells may be present on the site. Continued use of existing drywells is acceptable from a geotechnical standpoint. Field testing is recommended to verify that the existing wells are functioning and to determine their effective infiltration rate.

3.11 Seismic Design Considerations

Structures may be designed to resist earthquake loading in accordance with the ASCE 7 standard methodology. Based on the results of our geotechnical investigation and seismic velocity measurements from nearby drillholes, we recommend that Site Class C be used for seismic design. Site coefficients and spectral response acceleration parameters determined for the site using USGS data and the Applied Technology Council Seismic Hazards Software Application are presented in Table 3-2. These values are the lessor of deterministic and probabilistic estimates (2% chance of exceedance in 50 years at 5% critical dampening) of ground motion based on USGS hazard map data available in 2008. We have assumed that a fundamental period of less than 0.5 seconds and a damping ratio of 5% are appropriate to characterize the planned structure.

In our opinion, based on the depth of the groundwater table and the relative density of the underlying deposits at the site, we concur with the conclusion of regional assessments that the potential for damaging liquefaction and associated ground deformation at the site is relatively low.

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The fault surface rupture hazard at the site is considered to be low based on the distance of the site from known fault traces and the lack of documented fault surface rupture in the last 10,000 years. There is no tsunami or sciche inundation hazard at the site due its distance from bodies of water.

Table 3-2 - Seismic Design Parameters (ASCE7-16)

Parameter	Value
Location (Lat., Lon. in degrees)	45.4592, -122.5793
Mapped Maximum Considered Earthquake Spectral Response Acceleration (USGS Mapping Standardized to Site Class B)	
Short Period, Ss	0.89 g
1 Second Period, S_1	0.385 g
Design Site Coefficients (Site Class C)	
F_a	1.2
F_v	1.5
Design Spectral Response Acceleration Parameter (Site Class C)	
S_{DS} ($2/3 \times F_a \times S_s$)	0.712 g
S_{D1} ($2/3 \times F_v \times S_1$)	0.385 g
Seismic Design Category	D
Peak Ground Acceleration (PGA_M)	0.486 g

3.12 Additional Geotechnical Services

Because the future performance and integrity of the structural elements will depend largely on proper site preparation, drainage, fill placement, and construction procedures, construction monitoring and testing (geotechnical special inspection) by experienced geotechnical personnel should be considered an integral part of the design and construction process. Consequently, we recommend that CGS be retained to provide the following post-investigation services:

- Review construction plans and specifications to verify that our design criteria presented in this report have been properly integrated into the design.
- Attend pre-construction meetings and conferences with the design team and contractor to discuss geotechnical related construction issues.

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- Observe fill areas and footing subgrade both before fill material or base rock is placed and before footings are constructed in order to verify the soil conditions.
- Prepare a post-construction letter-of-compliance summarizing our field observations, inspections, and test results.

4.0 LIMITATIONS OF REPORT

We have prepared this report for the exclusive use of Ankrom Moisan, and members of the design team, for this specific project only. The report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, CGS should be notified for review of the recommendations of this report, and revision of such if necessary.

We recommend that CGS be retained to review the plans and specifications and verify that our recommendations have been interpreted and implemented as intended. Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated.

Within the limitations of scope, schedule and budget, the analysis, conclusions and recommendations presented in this report were prepared in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology in this area at the time the report was prepared. No warranty, express or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

5.0 SIGNATURES

Thank you very much for the opportunity to work with you. If you feel obliged, we welcome referrals from our previous clients and would enjoy the opportunity to work with others in your professional and personal networks.

Central Geotechnical Services, LLC

REGISTERED PROFESSIONAL ENGINEER
81148PE
OREGON
MAY 22, 2015
STEPHEN J. EAGAR
EXPIRES: 12-31-19

CERTIFIED
OREGON
PAUL A. CRENNA
E1766
ENGINEER GEOLOGIST

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EXPIRES 11/1/19

Stephen Eagar, PE
Principal Engineer

Paul Crenna, CEG
Principal Engineering Geologist

Kyle Warren
Staff Geologist

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APPENDIX A:

FIELD EXPLORATION PROCEDURES

BORING LOGS

SOIL CLASSIFICATION DESCRIPTION AND GUIDELINES

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FIELD EXPLORATION PROCEDURES

Exploratory Borings

CGS explored subsurface conditions at the site in six borings (B-1 through B-6) drilled with a truck-mounted CME drill rig operated by Western States Soil Conservation of Hubbard, Oregon on February 21 and 22, 2019. The borings were advanced to depths of 10.5 to 26.5 feet below the ground surface (bgs) using hollow-stem auger techniques. A member of CGS's geotechnical staff directed the exploration, recorded the observed soil and groundwater conditions, and obtained soil samples for laboratory testing.

Disturbed soil samples were obtained at selected depths by driving a standard, 2-inch-diameter split-spoon sampler. The samples were examined in the field, saved in sealed plastic bags and transported to our office for further evaluation. Due to the granular nature of the soil, 3-inch-O.D. Shelby tube sampling was not feasible. Grab samples of the drillhole cuttings were collected at selected depths. Representative samples were selected for soil laboratory testing.

During drilling, in-situ soil strength was evaluated with Standard Penetration Testing (SPT). SPT tests utilize a 2-inch-diameter split-spoon sampler driven with a 140-pound hammer over a 30-inch free fall. The number of blows to drive the sampler 6 inches is recorded in three successive trials. The sum of the number of blows required to advance the sampler the second and third intervals is the "Standard Penetration Resistance" or "N-value". The N-value provides a measure of the relative density of granular soils and relative consistency (or stiffness) of fine-grained soils.

Summary logs of the borings are presented in this Appendix.

Soil Classification and Description

Soil samples were classified in the field in general accordance with the Unified Soil Classification System and guidelines presented in ASTM D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. The physical characteristics of the samples noted in the field were modified based on laboratory test results, where appropriate, in accordance with ASTM terminology, though certain terminology that incorporates current local engineering practice may be used. The term which best described the major portion of the sample is used to describe the soil type. A one-page summary chart of Soil Classification Description and Guidelines is included in this Appendix.

BORING LOGS

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BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-1**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					2.5 inches of asphalt (DRIVEWAY PAVEMENT)	
2	3/3/4		1-SS		6 inches of ¾"-0 angular gravel (BASEROCK)	
4	9/20/31		2-SS		Very-dense, sandy GRAVEL (GW), grey, gravel is subrounded, geotextile fabric at 6 feet, loose in upper foot, damp (FILL)	
6	27/35/43		3-SS			
8	13/11/11		4-SS		Medium-dense to very-dense, sandy GRAVEL (GW) with trace silt, sand is fine to coarse, light grey, gravel is subrounded, damp (MISSOULA FLOOD DEPOSIT)	
10	8/17/22		5-SS		Includes apparent cobbles and boulders below 6 feet	
12	21/26/23		6-SS 7-GS			
14						
16	25/30/23		8-SS			
18	24/30/35		9-SS			
20	20/48/36		10-SS			
22	18/35/35		11-SS			
24	22/32/34		12-SS			
26					Boring Terminated at 26.5 feet	
28					No groundwater encountered	
30						

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-21-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 208 FT

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BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-2**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					2.5 inches of asphalt (DRIVEWAY PAVEMENT)	
					6 inches of crushed ¾" - 0 gravel (BASEROCK)	
2						
	6/6/8		1-SS		Medium-dense to very-dense, sandy GRAVEL (GW) with trace silt, sand is fine to coarse, light grey, gravel is subrounded, includes silt and clay in upper foot, damp (MISSOULA FLOOD DEPOSIT)	
4						
	16/17/18		2-SS		Includes apparent cobbles and boulders below 5 feet	
6						
	21/27/31		3-SS			
8						
	9/26/42		4-SS			Gravel = 43%, Sand = 43%, Passing No. 200 sieve = 14%
10						
			5-GS			
12						
					Practical refusal on hard (R4) boulders at 13 feet	
14						
					No groundwater encountered	
16						
18						
20						
22						
24						
26						
28						
30						

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-21-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 207 FT

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BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-3**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					2.5 inches of asphalt (DRIVEWAY PAVEMENT)	
					6 inches of crushed ¾" - 0 gravel, geogrid at 8.5 inches (BASEROCK)	
2						
	3/2/2		1-SS			
4					Medium-dense to dense, sandy GRAVEL (GW) with trace silt, sand is fine to coarse, brown transitioning to light grey, gravel is subrounded, loose at 2.5 feet, damp (MISSOULA FLOOD DEPOSIT)	
	6/14/24		2-SS			Passing No. 200 sieve = 17.6%
6						
	8/21/25		3-SS			
8						
	8/9/10		4-SS			
10						
12					Boring terminated at 11.5 feet	
14					No groundwater encountered	
16						
18						
20						
22						
24						
26						
28						
30						

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-21-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 207 FT

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BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-4**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					Stiff SILT (ML) with sand and gravel, brown, trace organics in upper 18 inches, heavily rooted in upper 3 inches, damp (FILL AND DISTURBED NATIVE)	
2						
	4/4/12		1-SS			
4						
	4/5/8		2-SS		Medium-dense to dense, sandy GRAVEL (GW) with trace silt, sand is fine to coarse, brown transitioning to light gray below 7 feet, gravel is subrounded, damp (MISSOULA FLOOD DEPOSIT)	Passing No. 200 sieve = 10.5%
6						
	5/5/10		3-SS			
8						
	13/28/19		4-SS			
10						
12					Boring terminated at 11.5 feet	
14					No groundwater encountered	
16						
18						
20						
22						
24						
26						
28						
30						

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-21-19 and 2-22-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 208 FT

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WWW.CENTRALGEOTECH.COM

BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-5**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					3 inches of asphalt (DRIVEWAY PAVEMENT)	
2	5/3/5		1-SS		6 inches of crushed ¾" - 0 gravel, geogrid at 9 inches (BASEROCK)	
4	7/10/9		2-SS			
6	3/7/11		3-SS	11%	Medium-dense to very-dense, sandy GRAVEL (GW) with trace silt, sand is fine to coarse, light grey, gravel is subrounded, with silt in upper foot, damp (MISSOULA FLOOD DEPOSIT)	
8	18/22/19		4-SS		Includes apparent cobbles and boulders below 4 feet	
10	14/18/24		5-SS	7%		
12			6-GS			
14						
16	6/13/22		7-SS	9%		
18			8-GS			
20	16/32/33		9-SS	6%		
22			10-GS			
24						
26	26/42/22		11-SS	5%		
28					Boring Terminated at 26.5 feet	
30					No groundwater encountered	

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-22-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 208 FT

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BORING LOG

PROJECT: JOHNSON CREEK BOULEVARD AND SE 82ND AVENUE HAPPY VALLEY, OREGON

ANKROM MOISAN

BORING NO. **B-6**

DEPTH (FT)	SPT BLOW COUNT	WELL CONSTRUCTION	SAMPLE NO.-TYPE	MOISTURE/ GROUND WATER	MATERIAL DESCRIPTION	LAB TEST RESULT
					3 inches of asphalt (DRIVEWAY PAVEMENT)	
	12/12/13		1-SS		15 inches of crushed ¾"- 0 gravel, geogrid at 18 inches (BASEROCK)	
2						
	11/12/13		2-SS		Medium-dense to dense, sandy GRAVEL (GW), light grey, gravel and sand is subangular, damp (FILL)	
4						
	12/11/8		3-SS			
6						
	7/6/8		4-SS			
8						
					Encountered green PVC pipe at about 10 feet, apparent diameter is 6 inches based on curvature of recovered pipe fragments	
10	5/7/6		5-SS			
12						
			6-GS		Very-dense, sandy GRAVEL (GW) to gravelly SAND (SW) with subrounded cobbles, trace silt, sand is fine to coarse, grey, gravel is subrounded, damp (MISSOULA FLOOD DEPOSIT)	
14						
			7-DM			
16						
					At 15 feet used Dames and Moore sampler to obtain larger sample (32/65 for 3")	
18						
20	16/32/33		8-SS			Gravel = 44%, Sand = 52%, Passing No. 200 sieve = 3%
22						
24						
26	26/42/22		9-SS			
					Boring Terminated at 26.5 feet	
28						
					No groundwater encountered	
30						

LEGEND

20% SOIL MOISTURE CONTENT

STATIC GROUND WATER LEVEL WITH DATE OF MEASUREMENT

GROUND WATER LEVEL AT END OF DRILLING

GROUND WATER SEEPAGE ZONE

DATE DRILLED: 2-22-19
LOGGED BY: K. Warren
SURFACE ELEVATION: ≈ 208 FT

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SOIL CLASSIFICATION DESCRIPTION AND GUIDELINES

VISUAL MANUAL METHOD (ASTM D2488)

Major Divisions			Symbol	Typical Descriptions
Coarse Grained More Than 50% Retained By No. 200 Sieve	Gravel	Clean Gravels	GW	Well-Graded Gravels And Gravel/Sand Mixture, Little Or No Fines
			GP	Poorly-Graded Gravels, Gravel/Sand Mixtures, Little Or No Fines
		Gravels With Fines	GM	Silty Gravels, Gravel/Sand/Silt Mixture
			GC	Clayey Gravels, Gravel/Sand/Clay Mixture
	Sand	Clean Sands	SW	Well-Graded Sand And Gravelly Sands, Little Or No Fines
			SP	Poorly-Graded Sand And Gravelly Sands, Little Or No Fines
		Sands With Fines	SM	Silty Sands, Sand/Silt Mixture
			SC	Clayey Sands, Sand/Clay Mixtures
Fine Grained More Than 50% Passing No.200 Sieve	Silts And Clays	Liquid Limit Less Than 50	ML	Inorganic Silts Silt With Slight Plasticity
			CL	Inorganic Clay, Clay With Low To Medium Plasticity
			OL	Organic Silts, Organic Silty Clays With Low Plasticity
		Liquid Limit More Than 50	MH	Inorganic Silts, Clayey Silts
			CH	Inorganic Clays Of High Plasticity Fat Clays
			OH	Organinc Clays Of Medium To High Plasticity
Highly Organic Soils			PT	Peat, Humus, And Other High Organc Soils

SOIL CHARACTERISTICS

Granular Soil		Cohesive Soil		
Relative Density	**Standard Penetration Test**	**Consistency**	**Standard Penetration Test**	**Unconfined Strength (Tsf)**
Very-Loose	0 - 4	Very-Soft	< 2	< 0.25
Loose	4 - 10	Soft	2 - 4	0.25 - 0.5
Medium-Dense	10 - 30	Medium-Stiff	4 - 8	0.5 - 1.0
Dense	30 - 50	Stiff	8 - 16	1.0 - 2.0
Very-Dense	> 50	Very-Stiff	16 - 32	2.0 - 4.0
Standard Penetration Tests Record The Number Of Blows Required To Drive A Split-Spoon Sampler 12 Inches (N-Value)		Hard	30 - 50	> 4.0
		Very-Hard	> 50	

ADDITIONAL SOIL CLASSIFICATION TERMS

Moisture Content		Structure	
Dry	Absence Of Moisture, Dusty, Dry To The Touch	Stratified	Alternating Layers Of Material Or Color > 6 Mm
Damp	Some Moisture But Leaves No Moisture On Hand	Laminated	Alternating Layers Of Material Or Color < 6 Mm
Moist	Leaves Moisture On Hand	Fissured	Breaks Along Definite Fracture Planes
Wet	Visible Free Water, Likely From Below Water Table	Slickenslided	Striated, Polished, Or Glossy Fracture Planes
Groundwater Seepage		Blocky	Cohesive Soil That Can Be Broken Down Into Angular Lumps Which Resist Further Breakdown
Slow	< 1.0 gpm		
Moderate	1.1 - 3.0 gpm	Lenses	Small Pockets Of Different Soils, Note Thickness
Rapid	> 3.0 gpm	Homogeneous	Same Color And Appearance Througout

Minor Fractions in Fine Grained Soil		Caving	
Trace (Clay, Silt, Sand, or Gravel)	< 15 percent	Minor	Isolated Spalling
With (Clay, Silt, Sand, or Gravel)	16 to 30 percent	Moderate	Common Spalling
Clayey, Silty, Sandy, Gravelly	31 to 49 percent	Severe	Will not stand vertical

Plasticity		Dilatancy	
Nonplastic	Cannot Be Rolled At Any Water Content	None	No Visible Changes in the Specimen
Low	3 mm Thread Can Barely Be Rolled But Not Under The Plastic Limit	Slow	Water Slowly Appears and Dissapears
Medium	Can Be Rolled To 3 mm Thread , Crumbles When Drier Than Plastic Limit	Rapid	Water Quickly Appears and Dissapears
High	Can Easily Be Rolled To 3 mm Thread. Can Be Rerolled Several Times		

ODOT ROCK HARDNESS CLASSIFICATION CHART

Hardness Designation	Field Identification/Excavation Methods	Approx. Strength (Unconfined Compressive Strength)
Extremely-Soft (R0)	Can Be Indented With Thumbnail. May Be Moldable Of Friable With Finger Pressure	< 100 Psi
Very-Soft (R1)	Crumbles Under Firm Blows With Geology Pick. Scratched With Finger Nail	100 - 1,000 psi
Soft (R2)	Can Be Peeled By Knife Or Pick. Shallow Indentation Made By Frim Blow Of Geology Pick.	1,000 - 4,000 psi
Medium-Hard (R3)	Can Be Scratched By Knife Or Pick, Specimen Can Be Fractured With A Single Blow Of Hamer Or Geology Pick / Excavation Often Requires Medium To Large Equipment With Ripper Teeth	4,000 - 8,000 psi
Hard (R4)	Can Be Scratched With Knife Or Pick Only With Difficulty. Several Hammer Blows Required To Fracture Specimen / Excavation Requires Large Equipment, Rock Chipper Or Blasting	8,000 - 16,000 psi
Very-Hard (R5)	Cannont Be Scratched By Knife Or Sharp Pick. Specimen Requires Many Blows Of Hammer To Fracture Or Chip. Hammer Rebounds After Impact /Blasting Required To Excavate	> 16,000 psi

Information From Oregon Department Of Transportation Soil/Rock Classification Manual. Modified To Include Typical Excavation Methods

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APPENDIX B:

LABORATORY TEST RESULTS

LABORATORY TEST RESULTS

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Chase Bank 8869 SE 82nd Avenue Happy Valley, OR	Ankrom Moisan		B-2 10 feet
		REPORT DATE 4-Mar-19	FIELD ID B-2 10 feet
		DATE SAMPLED 21-Feb-19	SAMPLED BY KW

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Native	Split-spoon sampler	Sandy GRAVEL (GW) with trace silt
SPECIFICATIONS		AASHTO SOIL TYPE

LABORATORY TEST DATA

LABORATORY EQUIPMENT
Humboldt Standard Sieves - Manual Shaker

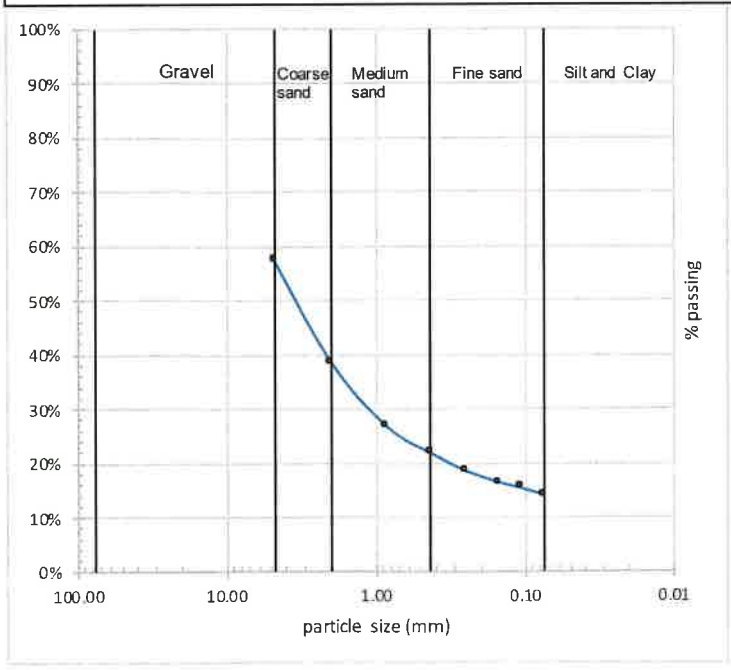
TEST PROCEDURE
ASTM C136 AND D1140

ADDITIONAL DATA

initial dry mass (g) =	561.00		
as-received moisture content =	8.20%	coefficient of curvature, C_c =	
liquid limit =	0	coefficient of uniformity, C_u =	
plastic limit =	0	effective size, $D_{(10)}$ =	
plasticity index =	0	$D_{(30)}$ =	
fineness modulus =		$D_{(60)}$ =	

SIEVE DATA

% gravel = 43%
% sand = 43%
% silt and clay = 14%



	SIEVE SIZE US	SIEVE SIZE mm	PERCENT PASSING mass (g)	Indiv %	Cumul %	% Pass
GRAVEL	6.00"	150.0		0%	0%	100%
	4.00"	100.0		0%	0%	100%
	3.00"	75.0		0%	0%	100%
	2.50"	63.0		0%	0%	100%
	2.00"	50.0		0%	0%	100%
	1.75"	45.0		0%	0%	100%
	1.50"	37.5		0%	0%	100%
	1.25"	31.5		0%	0%	100%
	1.00"	25.0		0%	0%	100%
	7/8"	22.4		0%	0%	100%
	3/4"	19.0		0%	0%	100%
	5/8"	16.0		0%	0%	100%
	1/2"	12.5		0%	0%	100%
	3/8"	9.50		0%	0%	100%
	1/4"	6.30		0%	0%	100%
	#4	4.75	240.00	43%	43%	57%
SAND	#8	2.36				
	#10	2.00	104.70	19%	61%	39%
	#16	1.18				
	#20	0.850	66.20	12%	73%	27%
	#30	0.600				
	#40	0.425	28.10	5%	78%	22%
	#50	0.300				
	#60	0.250	18.00	3%	81%	19%
	#80	0.180				
	#100	0.150	11.70	2%	84%	16%
	#140	0.106	6.10	1%	85%	15%
	#170	0.900				
	#200	0.075	6.90	1%	86%	14%

DATE TESTED	TESTED BY
3-Mar-19	LMB

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Chase Bank 8869 SE 82nd Avenue Happy Valley, OR	Ankrom Moisan		B-6 20 feet
		REPORT DATE 4-Mar-19	FIELD ID B-6 20 feet
		DATE SAMPLED 22-Feb-19	SAMPLED BY KW

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Native	Split-spoon sampler	Gravelly SAND (SW) with trace silt
SPECIFICATIONS		AASHTO SOIL TYPE

LABORATORY TEST DATA

LABORATORY EQUIPMENT
Humboldt Standard Sieves - Manual Shaker

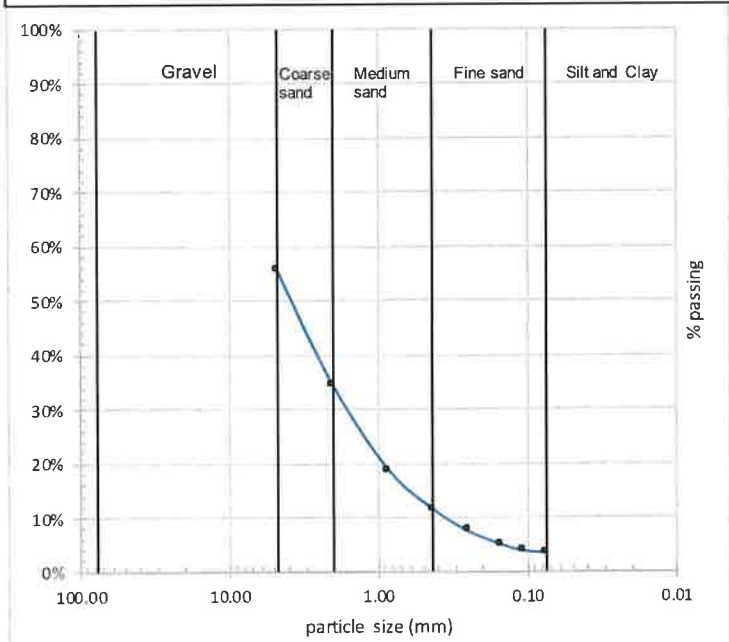
TEST PROCEDURE
ASTM C136 AND D1140

ADDITIONAL DATA

initial dry mass (g) =	571.00		
as-received moisture content =	6.83%	coefficient of curvature, C_c =	
liquid limit =	0	coefficient of uniformity, C_u =	
plastic limit =	0	effective size, $D_{(10)}$ =	
plasticity index =	0	$D_{(30)}$ =	
fineness modulus =		$D_{(60)}$ =	

SIEVE DATA

% gravel = 44%
% sand = 52%
% silt and clay = 3%



	SIEVE SIZE US	SIEVE SIZE mm	mass (g)	Indiv %	Cumul %	% Pass
GRAVEL	6.00"	150.0		0%	0%	100%
	4.00"	100.0		0%	0%	100%
	3.00"	75.0		0%	0%	100%
	2.50"	63.0		0%	0%	100%
	2.00"	50.0		0%	0%	100%
	1.75"	45.0		0%	0%	100%
	1.50"	37.5		0%	0%	100%
	1.25"	31.5		0%	0%	100%
	1.00"	25.0		0%	0%	100%
	7/8"	22.4		0%	0%	100%
	3/4"	19.0		0%	0%	100%
	5/8"	16.0		0%	0%	100%
	1/2"	12.5		0%	0%	100%
	3/8"	9.50		0%	0%	100%
	1/4"	6.30		0%	0%	100%
	#4	4.75	254.00	44%	44%	56%
SAND	#8	2.36				
	#10	2.00	121.34	21%	66%	34%
	#16	1.18				
	#20	0.850	88.85	16%	81%	19%
	#30	0.600				
	#40	0.425	41.68	7%	89%	11%
	#50	0.300				
	#60	0.250	22.53	4%	93%	7%
	#80	0.180				
	#100	0.150	13.83	2%	95%	5%
	#140	0.106	6.68	1%	96%	4%
	#170	0.900				
	#200	0.075	2.11	0%	97%	3%

DATE TESTED	TESTED BY
4-Mar-19	LMB

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APPENDIX C:

TYPICAL PERIMETER FOOTING SUBDRAIN DETAIL

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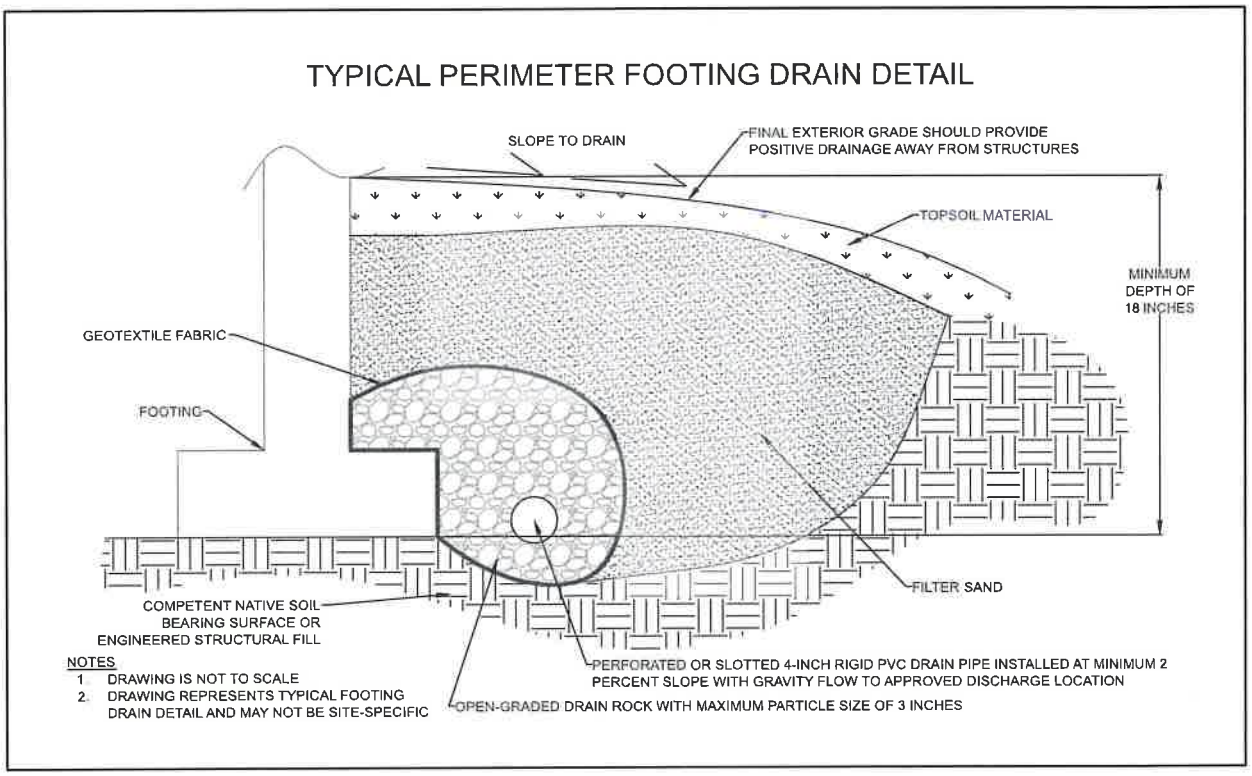
TYPICAL PERIMETER FOOTING SUBDRAIN CONSTRUCTION DETAIL



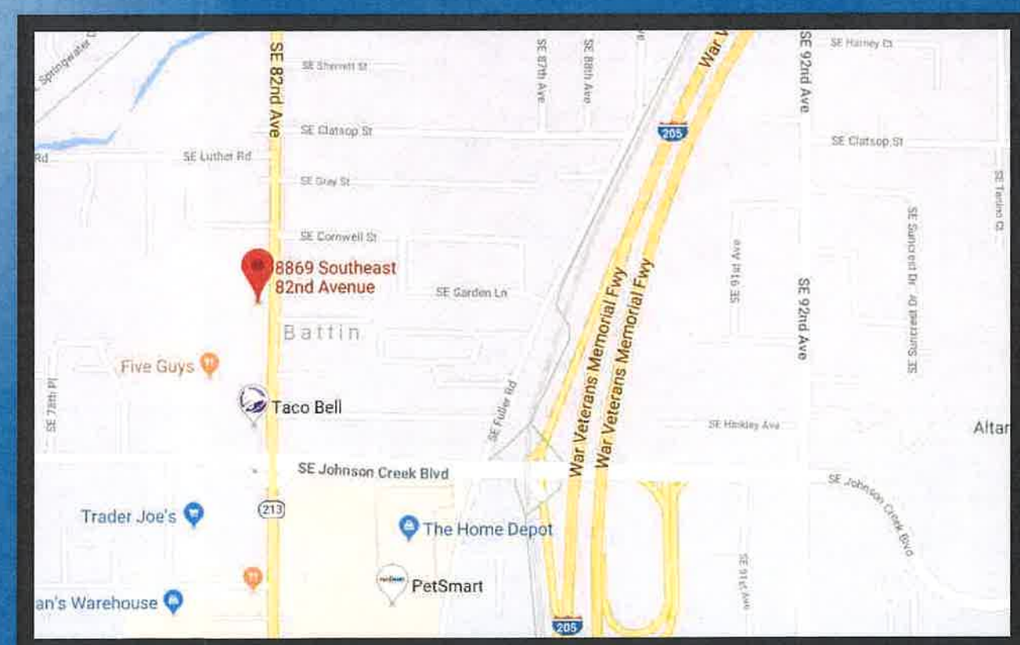
Guideline drawing for reference only

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
61A	Multnomah silt loam, 0 to 3 percent slopes	1.0	100.0%
Totals for Area of Interest		**1.0**	**100.0%**

CHASE

#38200P319763
Johnson Creek & SE 82nd Ave.
8869 SE 82nd Ave.
Portland, OR 97086



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JP Morgan Chase Bank
#38200P319763

Johnson Creek & SE 82nd Ave.
8869 SE 82nd Ave.
Portland, OR 97086

Initial Date: 05/22/19
Salesperson: Arthur Navarro
Coordinator: Randi Zeigler
Designer: bjones
Scale: As noted

CUSTOMER APPROVAL

Customer Signature _____ Date _____

COPY, COLORS & SIZES

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Customer Signature _____ Date _____

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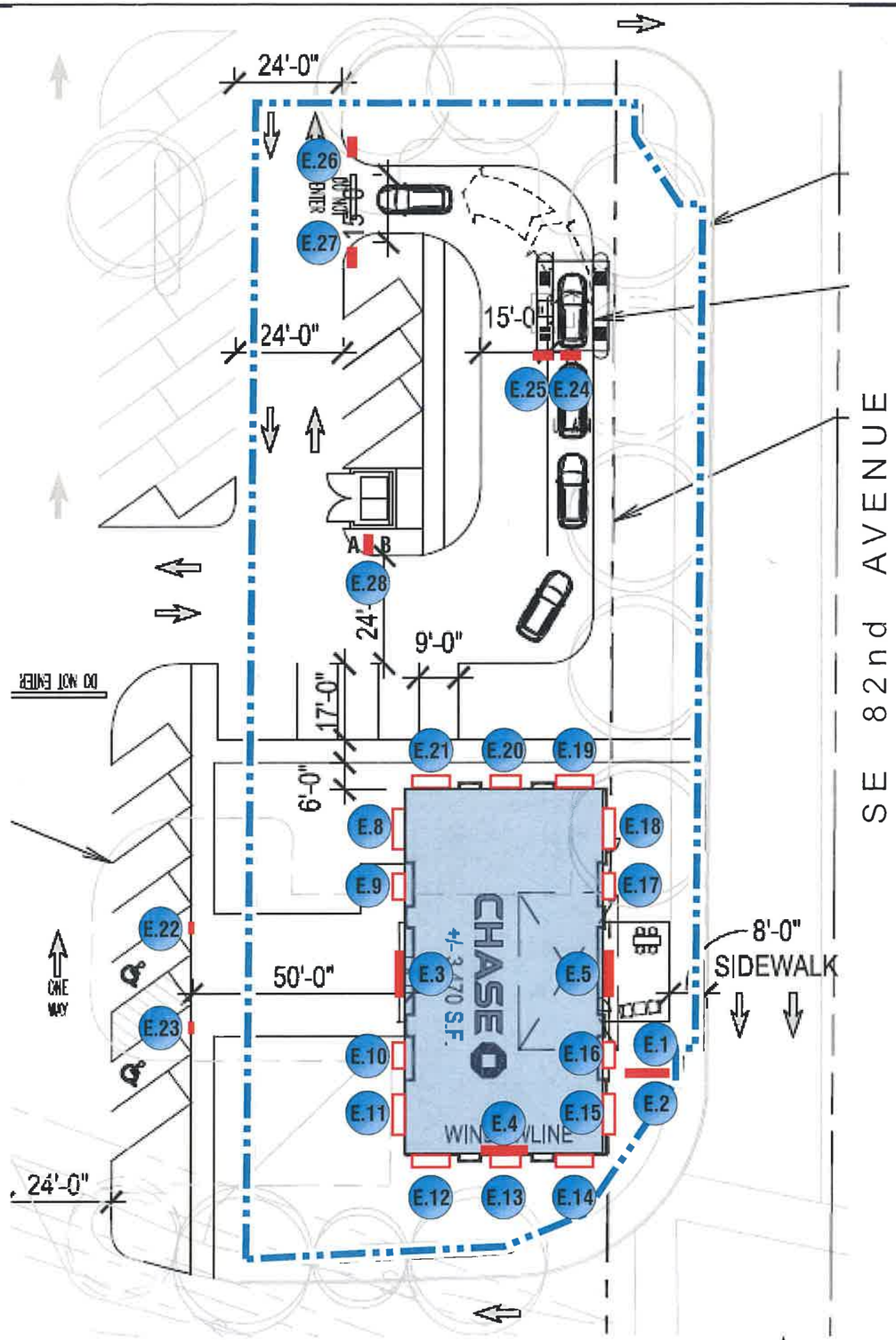
Drawing Number:	19-01160
Project ID:	CHASE_38200P319763_1
Revision:	R1 - 6.5.19

EXTERIOR SIGN LEGEND - ALLOWED

*** ALL SIGNAGE SUBJECT TO DESIGN REVIEW ***

Elevation	Sign No.	Sign Type	Description	Sq.Ft.
	E.1	PYLON REFACE	Refinish/Reface Existing D/F Tenant Pole Sign	
	E.2	PYLON REFACE	Refinish/Reface Existing D/F Tenant Pole Sign	
West	E.3	LIF-WBO-18	18" White Channel Letters and Logo	20.6
South	E.4	LIF-WBO-18	18" White Channel Letters and Logo	20.6
East	E.5	LIF-WBO-18	18" White Channel Letters and Logo	20.6
North	E.6	REQUIRES ADDITIONAL APPROVAL		
East D/U	E.7	REQUIRES ADDITIONAL APPROVAL		
West	E.8	AWN-WU-M	Illuminated Metal Awning(s)	
West	E.9	AWN-WU-M	Illuminated Metal Awning	
West	E.10	AWN-WU-M	Illuminated Metal Awning	
West	E.11	AWN-WU-M	Illuminated Metal Awning	
South	E.12	AWN-WU-M	Illuminated Metal Awning	
South	E.13	AWN-WU-M	Illuminated Metal Awning	
South	E.14	AWN-WU-M	Illuminated Metal Awning	
East	E.15	AWN-WU-M	Illuminated Metal Awning	
East	E.16	AWN-WU-M	Illuminated Metal Awning	
East	E.17	AWN-WU-M	Illuminated Metal Awning	
East	E.18	AWN-WU-M	Illuminated Metal Awning	
North	E.19	AWN-WU-M	Illuminated Metal Awning	
North	E.20	AWN-WU-M	Illuminated Metal Awning	
North	E.21	AWN-WU-M	Illuminated Metal Awning	
	E.22	TC-P-ADA-OR-V-RE	Post Mount Handicap Stall Sign - Van Accessible	
	E.23	TC-P-ADA-OR-RE	Post Mount Handicap Stall Sign	
	E.24	DU-C	ATM Lane Designator Sign	
	E.25	TC-CL-W	Clearance Sign	
	E.26	TC-P-H-RE	Post Mount Do Not Enter Sign	
	E.27	TC-P-H-RE	Post Mount Do Not Enter Sign	
	E.28	D-2-RE	Non-Illuminated Directional Sign	

Total Proposed Sq Ft	61.8
Total Allowable Sq Ft	64
Difference	2.2



SITE PLAN **SCALE: 1"= 30' (1:360)**

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JP Morgan Chase Bank
#38200P319763

Johnson Creek & SE 82nd Ave.
8869 SE 82nd Ave.
Portland, OR 97086

Initial Date: 05/22/19
Salesperson: Arthur Navarro
Coordinator: Randi Zeigler
Designer: bjones
Scale: As noted

CUSTOMER APPROVAL

Customer Signature Date

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Customer Signature Date

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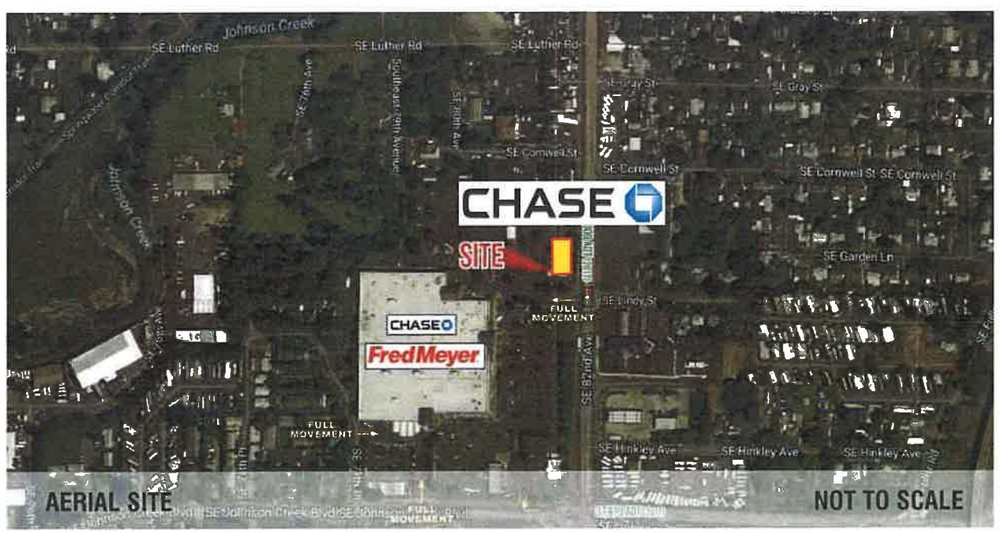
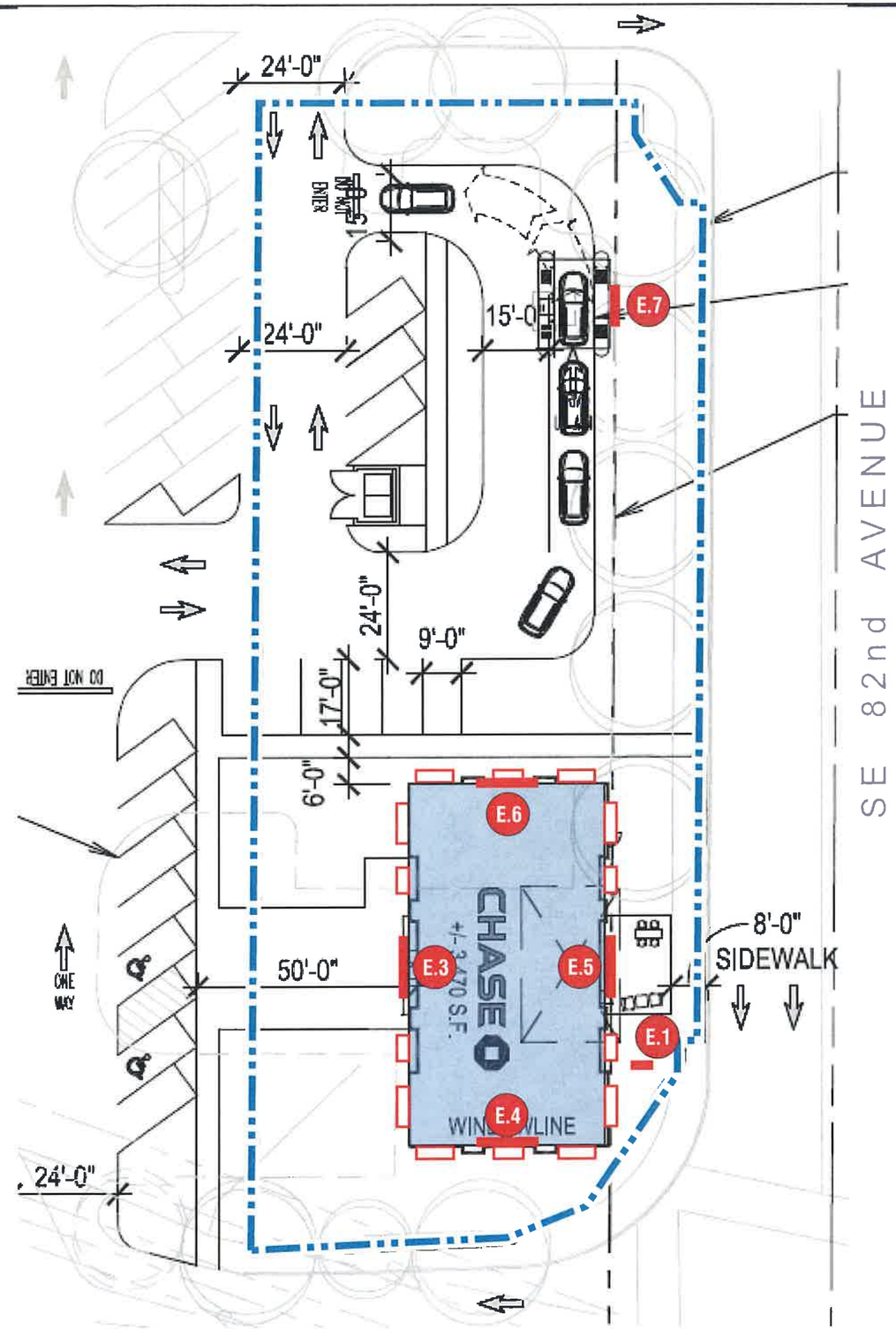
Drawing Number: 19-01160
Project ID: CHASE_38200P319763_1
Revision: R1 - 6.5.19

Sign Legend / Site Plan

EXTERIOR SIGN LEGEND - REQUIRES ADDITIONAL APPROVAL

Elevation	Sign No.	Sign Type	Description	Sq.Ft.
	E.1	P-32	Illuminated Double-Sided Pylon Sign	32
West	E.3	LIF-WBO-24	24" White Channel Letters and Logo	36.9
South	E.4	LIF-WBO-24	24" White Channel Letters and Logo	36.9
East	E.5	LIF-WBO-24	24" White Channel Letters and Logo	36.9
North	E.6	LIF-WBO-24	24" White Channel Letters and Logo	36.9
East D/U	E.7	LIF-WBO-16	16" White Channel Letters and Logo	16.3
			Total Proposed Sq Ft	195.9
			Total Allowable Sq Ft	64
			Difference	-131.9





SITE PLAN SCALE: 1"= 30' (1:360)

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Designer: bjones
Scale: As noted

CUSTOMER APPROVAL

Customer Signature Date

COPY, COLORS & SIZES

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Customer Signature Date

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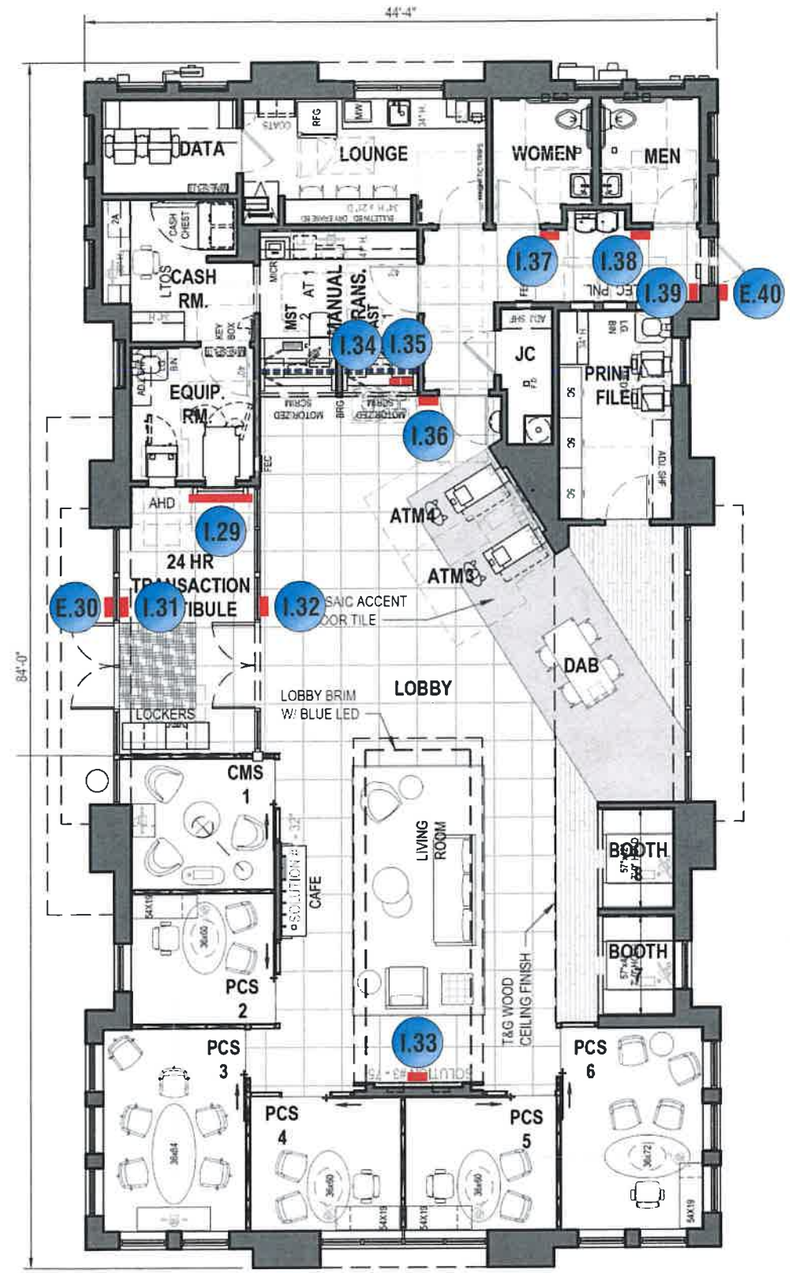
Drawing Number: 19-01160
Project ID: CHASE_38200P319763_1
Revision: R1 - 6.5.19

Sign Legend / Site Plan

INTERIOR SIGN LEGEND

Elevation	Sign No.	Sign Type	Description	Sq.Ft.
	I.29	SUR-TTW-U-4-TP	Universal Thin-Profile ATM Surround	
	E.30	ADA-EP	ADA Accessible Entrance Plaque	
	I.31	ADA-EX	ADA Exit Plaque	
	I.32	ADA-EX	ADA Exit Plaque	
	I.33	AFF-SS-OCT-21	Halo-Illuminated Stainless Steel Octagon	
	I.34	ADA-TW	ADA Accessible Teller Window Plaque	
	I.35	ADA-TW-ALS	ADA Assisted Listening System Plaque	
	I.36	ADA-ER	ADA Exit Route Plaque	
	I.37	ADA-RRM-A-G	ADA Accessible Men's Restroom Plaque	
	I.38	ADA-RRW-A-G	ADA Accessible Women's Restroom Plaque	
	I.39	ADA-EEX	ADA Emergency Exit Plaque	
	E.40	ADA-EO	ADA Exit Only Plaque	



FLOOR PLAN **SCALE: 3/32"=1'-0"**

DATE	DESIGNER
1/3/19	JB

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JP Morgan Chase Bank
#38200P319763

Johnson Creek & SE 82nd Ave.
8869 SE 82nd Ave.
Portland, OR 97086

Initial Date: 05/22/19
Salesperson: Arthur Navarro
Coordinator: Randi Zeigler
Designer: bjones
Scale: As noted

CUSTOMER APPROVAL

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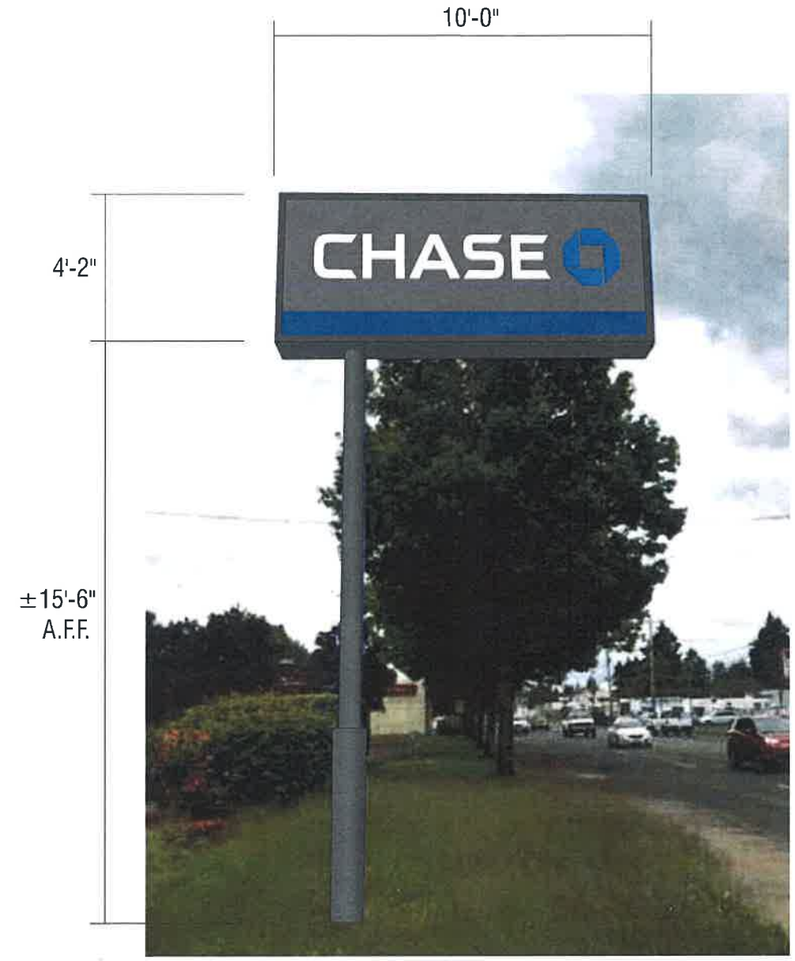
Revision: R1 - 6.5.19

Sign Legend / Floor Plan

SIGNAGE OVERVIEW

SIGN IS REQUIRED TO BE LEASED BY RAMSAY SIGNS

EXISTING TENANT POLE SIGN SCALE: 1/4"=1'-0"



PROPOSED TENANT POLE SIGN SCALE: 1/4"=1'-0"

SIMILAR LAYOUT ON OPPOSITE SIDE

E.1 | E.2 | SIGN TYPE | TENANT PANEL REFACE

MANUFACTURE AND INSTALL TWO (2) TENANT PANEL REFACES w/ ROUTED OUT ALUMINUM FACES & PUSH-THRU LETTERS/LOGO

- CUT EXPOSED TOP END OF POLE / RE-ALIGN ELECTRICAL FEED DIRECTLY TO CABINET / ADD NEW POLE CAP
- PATCH/RESTORE/REPAINT REFURBISHED POLE & TOP CABINET & RETAINERS (BOTH SIDES) USING SPRAY-LAT FIELDMASTER TO MATCH #MP-18248 DARK NICKEL.
- ADD NEW SLOAN PRISM-BEAM LED ILLUMINATION.
- REFACE w/ ALUMINUM PANELS w/ ROUT-OUT & PUSH-THRU COPY

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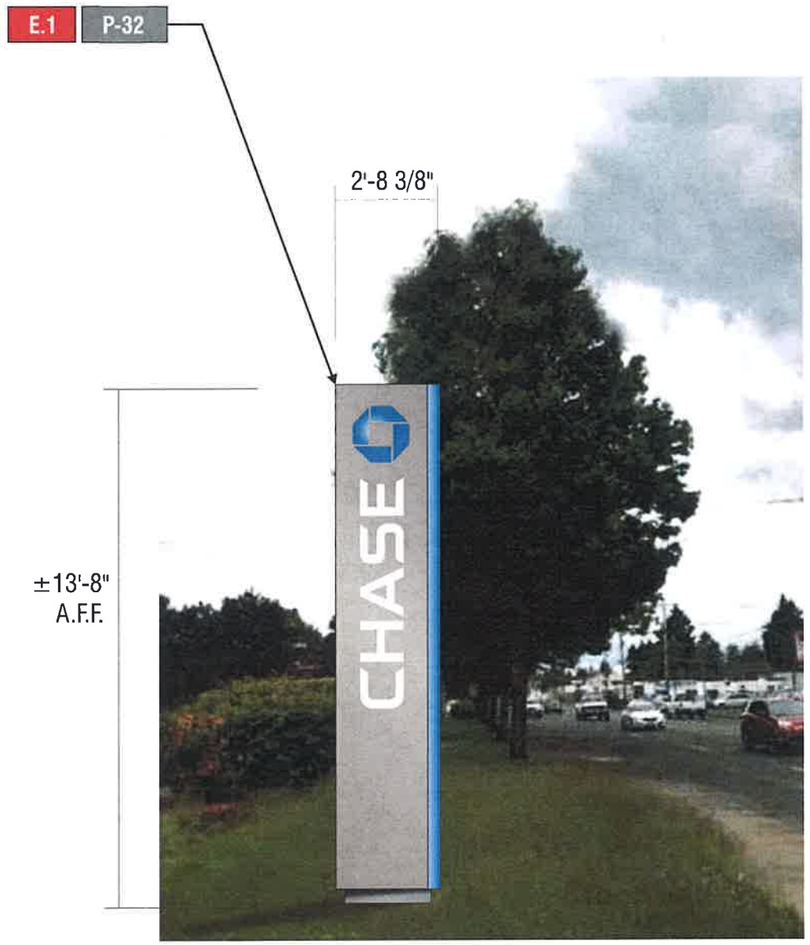
Revision: R1 - 6.5.19

SIGNAGE OVERVIEW - ADDITIONAL APPROVAL REQUIRED

EXISTING TENANT POLE SIGN **SCALE: 1/4"=1'-0"**



PROPOSED PYLON SIGN **SCALE: 1/4"=1'-0"**

E.1 SIGN TYPE P-32

MANUFACTURE AND INSTALL ONE (1) ILLUMINATED D/F PYLON SIGN

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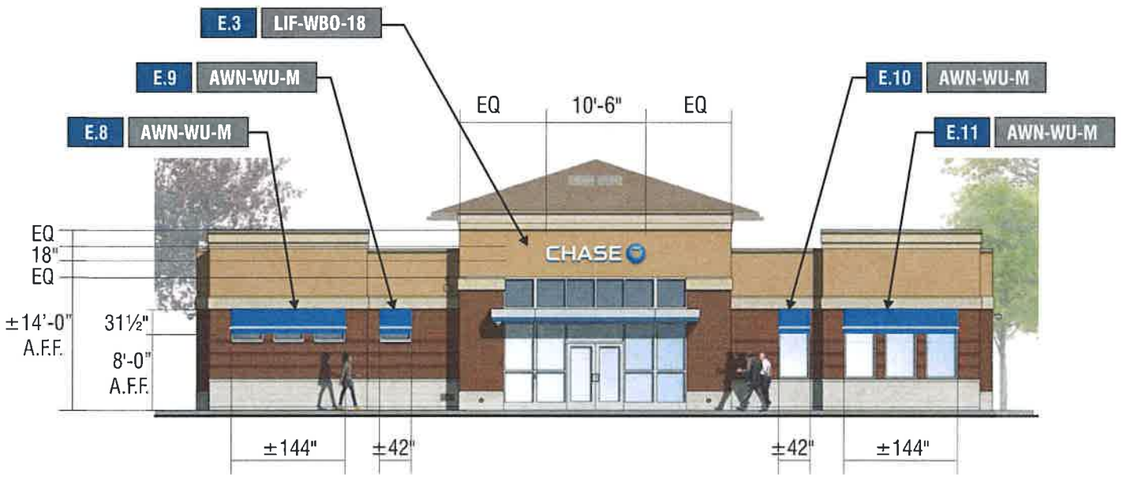
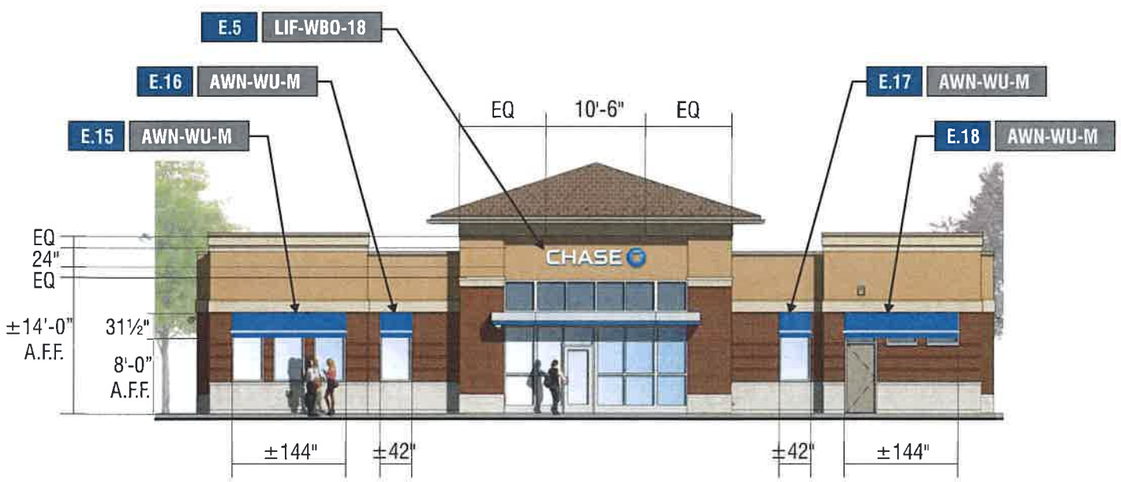
SIGNAGE OVERVIEW - ALLOWED



WEST ELEVATION SCALE: 1/16"=1'-0"

SOUTH ELEVATION SCALE: 1/16"=1'-0"



EAST ELEVATION SCALE: 1/16"=1'-0"

NORTH ELEVATION SCALE: 1/16"=1'-0"

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JP Morgan Chase Bank #38200P319763

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Exterior Elevations

Code Allowances - Completed by Sign Vendor

General Info	
Zoning Designation, Planner name, phone number, email address	CC Community Commercial - Ben Blessing 503-742-4500 zoninginfo@clackamas.us
Temporary Signs	
Is the 8' x 4' Coming Soon Ground Sign Allowed? If so, how	Yes, but on case by case
Are temporary banners allowed? If so, for how long?	Yes, allowed 60 days per year and cannot exceed size allowed for permanent signs.
Primary Ground Sign	
Will code allow our standard pylon or monument? If yes, which one (ex: P-100, P-75, M-50, M-25, refer to reference guide for all standard options). Is more than 1 primary ground sign allowed?	Possible
If not, what are the pylon / monument restrictions? (include illumination restrictions/overall allowable sf / custom design requirements)	Existing pylon sign can be refurbished. Due to the existing Fred Meyer sign that is at corner, we would not have the required separation.
List the set back requirements.	5' from property lines
Building Sign	
Prototypical FS branch - Will code allow our standard illuminated bldg. sign package (30" letterset on front & sides, 24" letterset on the rear)? Please list size and locations of signs allowed.	N/A
If not, what are the variables/restrictions (include illumination and sf restrictions, as well as custom sign requirements)?	N/A
In-line / Urban branch - what are the exterior wall sign restrictions (sign type, including max. sf and illumination).	Limited to 1sf per ft of frontage since there is a freestanding sign. Total primary building frontage gives us 64sf. Recommend (3) 18". However if we exceed 60sf, design review required.
Interior Window Signs- List all interior window signs restrictions, including storefront set back requirements.	Window signs cannot exceed 10% of the window area if neon, otherwise allowed 30% of window and max size of 12sf.
ATM Topper- does this count against our overall allowable sf ? Is illumination allowed?	Yes allowed, counts towards area.
Are decorative logos allowed (EFIS octagon)? Does it count against overall SF?	Counts as a sign.
Are entrance wall plaques allowed (CPC plaque)?	Yes
Directional / Regulatory Signs	
Is our standard directional and regulatory sign package allowed?	No.
If not, what are the variables/restrictions?	Needs to be under 3sf.
Awnings / ATM Sunscreens	
Are branded awnings allowed?	Yes, but counts towards area.
What if any restrictions are there (Illumination, color/materials, min & max projection)?	Illumination subject to planning commission review. Min 8ft clearance. Max branding of 24sf.
Are ATM sunscreens allowed? Do they count against overall SF?	Would need to submit to planning.
Is a signature canopy allowed? What are the restrictions if any?	Would need to submit to planning.
Other Governing Agencies	
Identify other governing agencies that could override code (ARB, HRB, PUD, etc) and list the known restrictions.	
Permitting / Variance Process	
What is the application process and timing for variance approval ? What are the variance application fees?	Planning Commission meets 2nd and 4th Tuesdays. Allow for 90 days. $900
What is the likelihood of being granted a variance with this municipality?	Must prove hardship, 50/50
Architectural Lighting	
Is Architectural lighting allowed? Does it count against overall SF? List provisions.	No.
Additional Comments	
Please list any additional comments	The size, materials, design, color, lighting, and location of signs and supporting structures for all permanent signs greater than 60 square feet in area, shall be subject to design review

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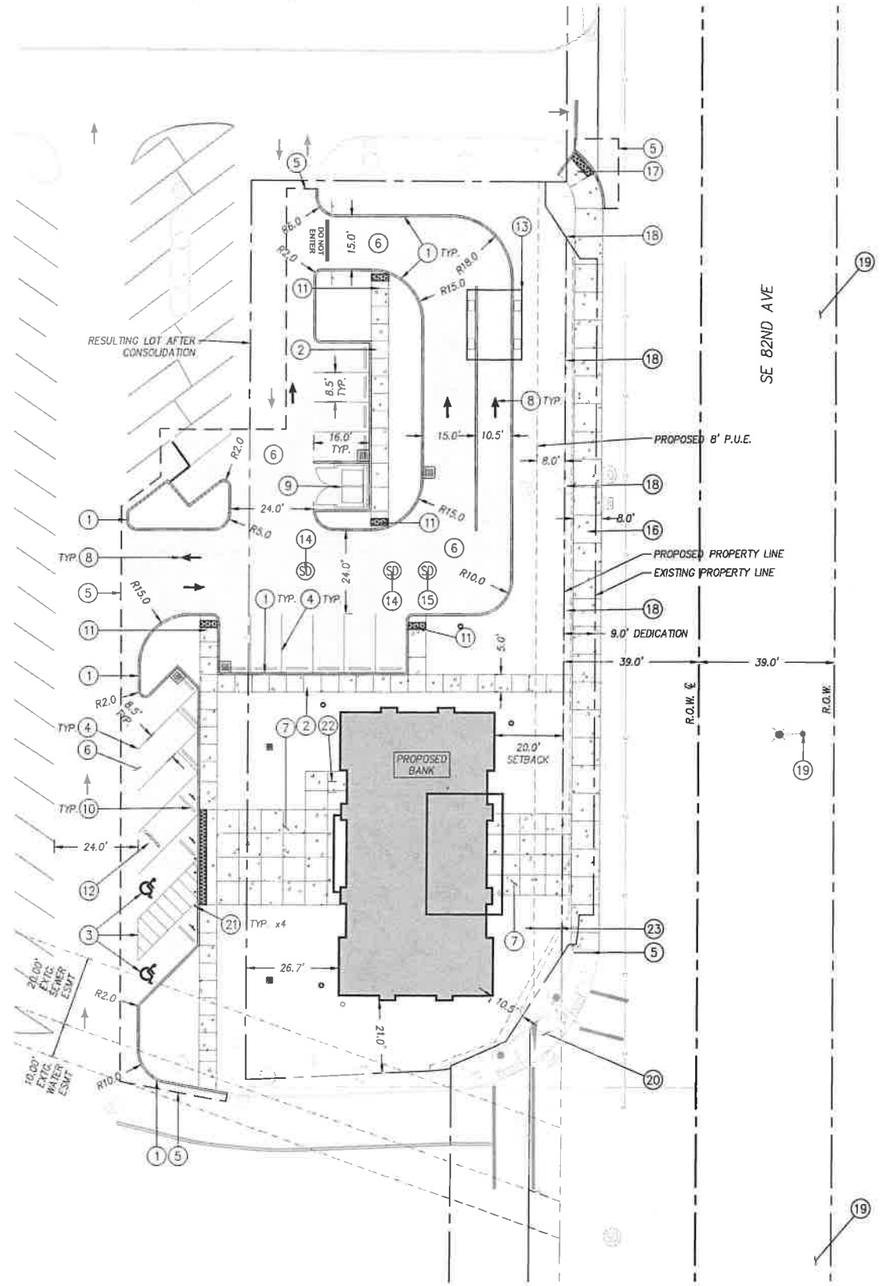
Due Diligence



PLAN VIEW

CONSTRUCTION NOTES:

1. CONSTRUCT CONCRETE CURB WITH 6" EXPOSURE PER DETAIL ON SHEET C4.0.
2. CONSTRUCT CONCRETE PEDESTRIAN WALK PER DETAIL ON SHEET C4.0.
3. ADA PARKING STALL, SIGNAGE AND STRIPING PER DETAIL ON SHEET C4.0.
4. 4" WIDE WHITE TRAFFIC-RATED PAINT PARKING STALL STRIPING.
5. SAWCUT EXISTING ASPHALT SECTION, MATCH EXISTING ELEVATIONS.
6. CONSTRUCT ASPHALT PAVEMENT SECTION PER DETAIL ON SHEET C4.0.
7. CONCRETE PEDESTRIAN PLAZA PAVING.
8. INSTALL THERMOPLASTIC ARROW PER DETAIL ON SHEET C4.0.
9. TRASH ENCLOSURE AREA, SEE ARCHITECTURAL FOR ADDITIONAL INFORMATION.
10. INSTALL WHEEL STOP PER DETAIL ON SHEET C4.0.
11. CONSTRUCT ADA RAMP PER GRADING DETAIL ON SHEET C2.1 AND DETAIL SHEET C4.0.
12. CARPOOL PARKING STALL, SIGNAGE AND STRIPING PER DETAIL ON SHEET C4.0.
13. DRIVE-THROUGH CANOPY. SEE ARCHITECTURAL FOR ADDITIONAL INFORMATION
14. STORMWATER INFILTRATION DRYWELL. SEE UTILITY PLAN.
15. STORMWATER TREATMENT MANHOLE. SEE UTILITY PLAN.
16. CONSTRUCT 8' WIDE CONCRETE PUBLIC SIDEWALK. EXISTING CURB TO REMAIN.
17. CONSTRUCT PUBLIC ADA CURB RAMP.
18. EXISTING STREET TREE TO REMAIN.
19. EXISTING STREET LIGHT TO REMAIN.
20. EXISTING ADA CURB RAMP AND TRAFFIC SIGNAL TO REMAIN.
21. CONSTRUCT SITE BOLLARD.
22. BIKE RACK (2).
23. PROPOSED MONUMENT SIGN.

ZONING SUMMARY:

Proposed Use: 3,470 SF Bank with drive-through

Zoning: Corridor Commercial (CC) Financial Institutions are listed as permitted uses within the zone

DIMENSIONAL REQUIREMENTS FOR THE CC ZONING DESIGNATION			
Standard	Required Minimum	Maximum	Proposed
Minimum Lot Size	None		22,835 SF
Minimum Street Frontage	None		~254 feet
Maximum Front Setback		20 feet	20 feet
Minimum Front Setback	15 feet		20 feet
Minimum Rear Setback	0		26.7 feet
Minimum Side Setback	0		10.5 feet to the south
Maximum Bldg. Height	None		
Minimum FAR	None		
PARKING REQUIREMENTS			
Standard	Required Minimum	Maximum	Proposed
Automobile Parking per ZDO 1015-1 (4.3/1000)	15	19	16
Bicycle Parking Per ZDO 1015.03.B.7	2	N/A	2
Accessible Parking (Table 1106.1 of the OSSC)	1		2
Carpool Parking	1		1
Loading per ZDO 1015-3	None		None
LANDSCAPING REQUIREMENTS			
Standard	Required Minimum	Maximum	Proposed
Required Landscaping	15%		52% (11,846 SF)
Surface Parking Landscaping ZDO 1009.04.A	25 SF/Space -400SF		2,012 SF
Perimeter Landscaping ZDO 1009.04.B	5 feet		< 5 feet

0 10 20 40

SCALE: 1" = 20'

Ankrom Moisan

HHPR Harper Houf Peterson Righellis Inc.

ENGINEERS • ARCHITECTS • PLANNERS • LANDSCAPE ARCHITECTS • SURVEYORS

205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED PROFESSIONAL ENGINEER — ALEXANDER J. SIMPSON

NOT FOR CONSTRUCTION

EXPIRES: 06/30/2020

ISSUE	DATE	DESCRIPTION
--	07/16/2019	ISSUED FOR DESIGN REVIEW

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

CONTENTS

CIVIL SITE PLAN

07.12.2019

SHEET

C1.0

Ankrom Moisan

November 19, 2019

Clackamas County Planning Division

150 Beavercreek Road
Oregon City, Oregon 97045

Attn: Anthony Riederer

Re:

Design Review Zoning Modification Request for 8869 SE 82nd Avenue, Happy Valley, OR
File # Z0332-19-D

Dear Mr. Riederer:

On behalf of Ankrom Moisan Architects and our client JP Morgan Chase Bank, I would like the opportunity to recommend that our project at 8869 SE 82nd Avenue in Happy Valley be considered for a modification of zoning ordinance 1005.3.E which states "*Inside the UGB, except for industrial developments, a minimum of 50% of the street frontage of the development site shall have buildings located at the minimum front yard depth line*".

I believe that our project qualifies for this modification under ordinance 1005.07 "Modifications" which states "*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.*"

Our proposed design fulfills the design intent of ordinance 1005.01 in the following methods:

1) We have *"efficiently utilized the land used in development, particularly urban land in centers, corridors, station communities and employment areas"* by repurposing previously vacant exterior areas. The corner lot that the building is situated on is underutilized and overgrown with excessively oversized plantings that obscured the existing building entrance and diminished pedestrian access. Our proposed building would have a large prominent entrance and patio space that opens up to the pedestrian traffic and encourages occupation of a previously wasted open space.

   In addition, our proposed design extends beyond the existing building with improvements to the adjacent parcels to the North of our building. A diversified and multi-dimensional landscaping update to the street frontage of the development beautifies the site and allows further opportunities for branding and architectural interventions. This remote portion of the site is occupied by a drive-thru ATM with a canopy structure. Extending from our canopy structure, we have designed a low landscaping wall with column capitals to add an extra architectural feature into the site. The design and materials of this wall mimic the exterior elevations of the canopy and adjacent main building. This portion of the site is currently being used exclusively for overflow parking for adjacent businesses. Our landscaping will integrate with the wall structure and provide screening between the parking lot and the street.

2) Our site development *"creates lively, safe, attractive and walkable centers, corridors, station communities, employment areas and neighborhoods"* by encouraging pedestrian circulation and passage through our site. A new large, paved patio will house outdoor tables and chairs that will be open to use by the public. Introducing

ARCHITECTURE
INTERIORS
URBAN DESIGN
BRANDING

Ankrom Moisan Architects

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38 NW Davis Street
Suite 300
Portland, OR 97209
503.245.7100

SEATTLE
1505 5th Avenue
Suite 300
Seattle, WA 98101
206.576.1600

SAN FRANCISCO
1014 Howard Street
San Francisco, CA 94103
415.252.7063

ankrommoisan.com

new landscaping and preserving the existing, mature trees will make this space enjoyable to occupy. This amenity is also street facing on a fairly prominent intersection which will create a more vibrant use to the rest of the development. In addition, we are increasing the safety of pedestrians in our design by widening the existing sidewalk to 8 feet. Our added site lighting, canopy lighting, and landscaping lighting will also increase the safety of people accessing and passing through our site while maintaining dark sky requirements. The areas described above also *"support community interaction by creating lively, safe and attractive public use spaces within developments and on the street."*

3) The usage and function of our project may necessitate a drive-thru ATM, but we have taken every opportunity we can to *"support the use of non-auto modes of transportation."* Our developed site accentuates the existing pedestrian pathway through our site and to the rest of the shopping center beyond. In addition, we are providing bike racks to encourage alternative modes of transportation. Creating the drive-thru also extends our developed site which has the added bonus of opening up the opportunity to extend our landscaping refresh to the entire street front. This canopy presence is extended by the addition of our landscaping wall that intermingles with the plantings.

4) We have also taken steps to *"reduce impacts of development on natural features and vegetation."* Our site has some of the only fully grown, healthy trees in the general vicinity of our project. This is a stark contrast to the wide empty expanse of paving on the other side of the highway. Despite widening the sidewalk around the trees, we are able to maintain and highlight them with up lighting and additional landscaping.

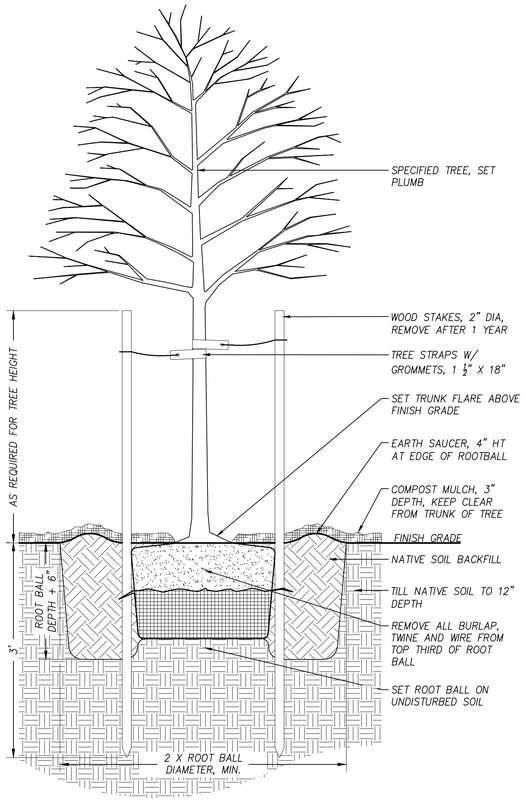
In conclusion, while our building may not occupy 50% of our developed street frontage, the interventions we are providing on our site exceed the design intent of 1005.01 in ways a 150' long building facade never could. We have enhanced pedestrian circulation and safety, provided public use amenity space, opened up our storefront to the street, and prioritized maintaining natural vegetation throughout the property. We believe that the combination of these efforts elevates our proposed building design along the entirety of our street frontage, not just 50% of it. It is our sincere hope that you review our discussion points above and conclude that we do indeed qualify for a modification of zoning ordinance 1005.3.E. To better illustrate our design intent, please see the revised submission materials attached. These drawings include revised L1.0 Landscaping Plan, L2.0 Landscape Lighting Plan, C1.0 Site Plan, and A 5.0 Drive-Thru Canopy Elevations. We have also included the specification sheets for the proposed new landscape lighting. Please let us know if you have any questions or clarifications. We appreciate your time and attention in this matter. Thank you.

ARCHITECTURE
INTERIORS
URBAN DESIGN
BRANDING

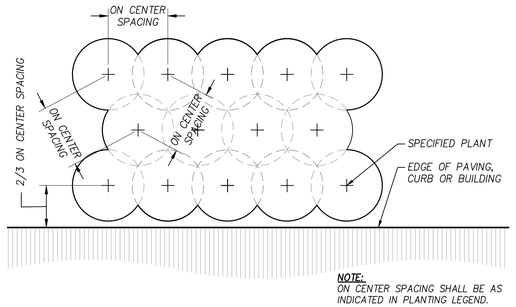
Sincerely,
Ankrom Moisan Architects, Inc.

Monika Grinbergs,

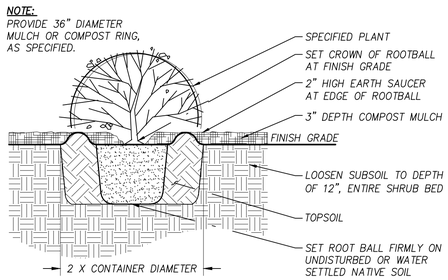
Architect



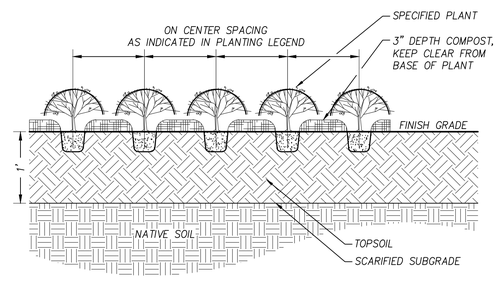
1 TREE PLANTING
Section
NOT TO SCALE



4 TRIANGULAR SPACING
Section
NOT TO SCALE



2 SHRUB PLANTING
Section
NOT TO SCALE



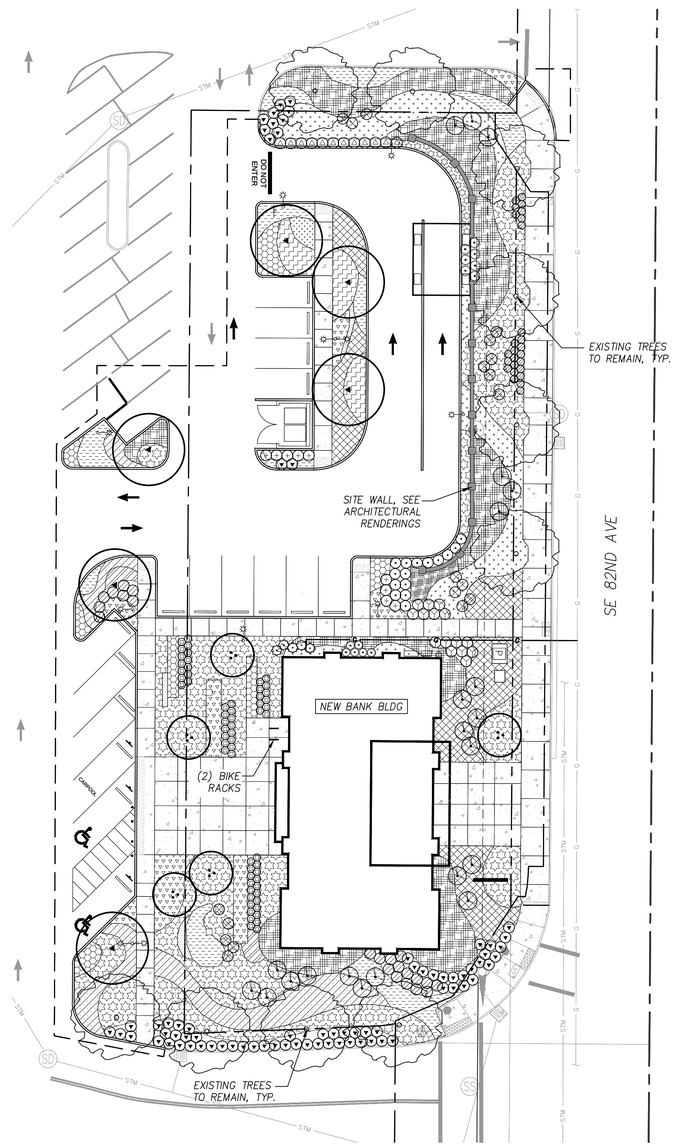
3 GROUNDCOVER PLANTING
Section
NOT TO SCALE

GENERAL NOTES:

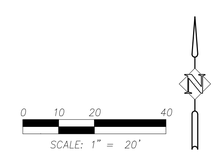
1. PROVIDE MINIMUM 3' CLEARANCE BETWEEN BIKE RACKS AND BUILDING FACE.
2. INSTALL BIKE RACKS 3' CLEARANCE BETWEEN RACKS. USE STAINLESS STEEL TAMPERPROOF FASTENERS.
3. REMOVE EXISTING TOP SOILS AND STOCKPILE PER SPECIFICATIONS.
4. REMOVE EXISTING IRRIGATION SYSTEM TO POINT OF CONNECTION FOR NEW PLANTING AREAS. LOW VOLUME FITTINGS AND AUTOMATIC CONTROLLER TO BE INSTALLED AS NEEDED TO PROVIDE FULL COVERAGE. SOIL MOISTURE SENSOR AND FLOW METER SHALL BE INSTALLED WITH CONTROLLER.
5. LANDSCAPE MATERIAL SHALL BE MAINTAINED UNDER CONTRACT AND GUARANTEED FOR A 1-YEAR PERIOD FROM DATE OF INSTALLATION PER SECTION 1.311 CLACKAMAS COUNTY ZONING AND DEVELOPMENT ORDINANCE.

PLANTING NOTES:

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT CLACKAMAS COUNTY STANDARDS AND THE OREGON UNIFORM BUILDING CODES.
2. INSTALL EROSION CONTROL SYSTEMS IN ACCORDANCE WITH CLACKAMAS COUNTY STANDARDS PRIOR TO SITE WORK AND LANDSCAPE INSTALLATION.
3. MARK AND PROTECT ALL UTILITIES, SITE FEATURES, AND VEGETATION TO REMAIN IN PLACE.
4. REMOVE EXISTING TOP SOILS AND STOCKPILE PER SPECIFICATIONS. AMEND TOP SOILS IN ACCORDANCE WITH SOILS REPORT RECOMMENDATIONS AND PROJECT SPECIFICATIONS PRIOR TO PLACEMENT IN PLANTING AREAS..
5. ALL PLANTING BEDS TO RECEIVE 8" DEPTH TOP SOIL.
6. PLANT MATERIAL INSTALLED SHALL CONFORM IN SIZE AND GRADE TO THE "AMERICAN STANDARD FOR NURSERY STOCK" CURRENT EDITION.
7. THE QUANTITIES OF PLANT MATERIALS SHALL BE AS DETERMINED BY THE CONTRACTOR IN ACCORDANCE WITH THE SPECIFIED SPACING OR LOCATION ON THE PLAN. MATERIAL QUANTITIES SHOWN ON PLAN ARE FOR CONTRACTOR CONVENIENCE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INSTALLATION. SURPLUS OR SHORTAGES OF PLANT QUANTITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
8. LANDSCAPE CONTRACTOR SHALL MAINTAIN PLANTINGS FOR THE DURATION OF THE 1 YEAR WARRANTY PERIOD AFTER SUBSTANTIAL COMPLETION AND GUARANTEE ALL PLANTINGS TO BE IN SATISFACTORY AND VIGOROUS HEALTH. PROVIDE MAINTENANCE SCHEDULE PER SPECIFICATIONS.



PLAN VIEW



PLANTING SCHEDULE

TREES (1 L1.0)

6	Gleditsia triocanthos v. inermis 'Sunburst' – Honeylocust	2" CAL. B&B, WELL BRANCHED, LIMBED TO 8'
5	Cercidiphyllum japonicum – Katsura Tree	8' HT. B&B, MULTI-STEM

SHRUBS (2 L1.0) (4 L1.0)

15	Choisya ternata 'Sundance' – Mexican Orange Blossom	2 GAL CONT., FULL PLANTS, SPACING AS SHOWN
5	Mahonia aquifolium – Tall Oregon Grape	1 GAL CONT., FULL PLANTS, 36" O.C.
22	Hydrangea quercifolia – Oakleaf Hydrangea	5 GAL CONT., FULL PLANTS, AS SHOWN
9	Escallonia x exoniensis 'Fradesii' – Pink Princess Escallonia	3 GAL CONT., FULL PLANTS, 30" O.C.
12	Vaccinium ovatum – Evergreen Huckleberry	1 GAL CONT., FULL PLANTS, 30" O.C.
7	Sarcococca confusa – Christmas Box	1 GAL CONT., FULL PLANTS, SPACING AS SHOWN
19	Ribes sanguineum 'King Edward VII' – King Edward Flowering Currant	1 GAL CONT., FULL PLANTS, 24" O.C.
68	Spirea betulifolia 'Tor' – Birch-leaf Spirea	1 GAL CONT., FULL PLANTS, 24" O.C.

PERENNIALS (2 L1.0) (4 L1.0)

30	Crocosmia 'Lucifer' – Montbretia	1 GAL CONT., FULL PLANTS, 18" O.C.
21	Echinacea purpurea 'Magnus' – Purple Coneflower	1 GAL CONT., FULL PLANTS, 24" O.C.

GROUNDCOVER (3 L1.0) (4 L1.0)

292	Escallonia x 'Newport Dwarf' – Compact Escallonia	1 GAL CONT., FULL PLANTS, 36" O.C.
513	Epimedium pubigerum – Bishop's Hat	1 GAL CONT., FULL PLANTS, 18" O.C.
550	Arctostaphylos uva-ursi – Kinnikinnick	1 GAL CONT., FULL PLANTS, 30" O.C.

GRASSES (2 L1.0) (4 L1.0)

57	Hakonechloa macra 'Albovariegata' – Japanese Forest Grass	1 GAL CONT., FULL PLANTS, 30" O.C.
103	Helictotrichon sempervirens – Blue Oat Grass	1 GAL CONT., FULL PLANTS, 30" O.C.
363	Carex tumulicola – Foothill Sedge	1 GAL CONT., FULL PLANTS, 24" O.C.
383	Festuca glauca 'Elijah Blue' – Blue Fescue	1 GAL CONT., FULL PLANTS, 12" O.C.
408	Carex flacca – Blue Sedge	1 GAL CONT., FULL PLANTS, 18" O.C.
216	Deschampsia cespitosa – Tufted Hair Grass	1 GAL CONT., FULL PLANTS, 24" O.C.
61	Calamagrostis acutiflora 'Karl Forster' – Feather Reed Grass	3 GAL CONT., FULL PLANTS, 24" O.C.
15	Miscanthus sinensis 'Gracillimus' – Maidenhair Grass	5 GAL CONT., FULL PLANTS, SPACING AS SHOWN
75	Pennisetum alopecuroides 'Karley Rose' – Fountain Grass	2 GAL CONT., FULL PLANTS, 36" O.C.

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HHPR Harper Houf Peterson Righellis Inc.
ENGINEERS • PLANNERS
LANDSCAPE ARCHITECTS • SURVEYORS
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED 788 Daniel C. Chin OREGON 02/08/13 LANDSCAPE ARCHITECT
PRELIMINARY

ISSUE	DATE	DESCRIPTION
—	11/11/2019	ISSUED FOR DESIGN REVIEW

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

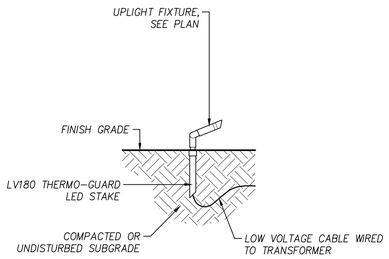
CONTENTS

PRELIMINARY
LANDSCAPE PLAN

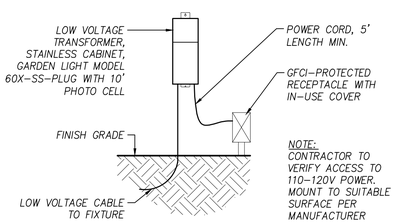
08.23.2019

SHEET

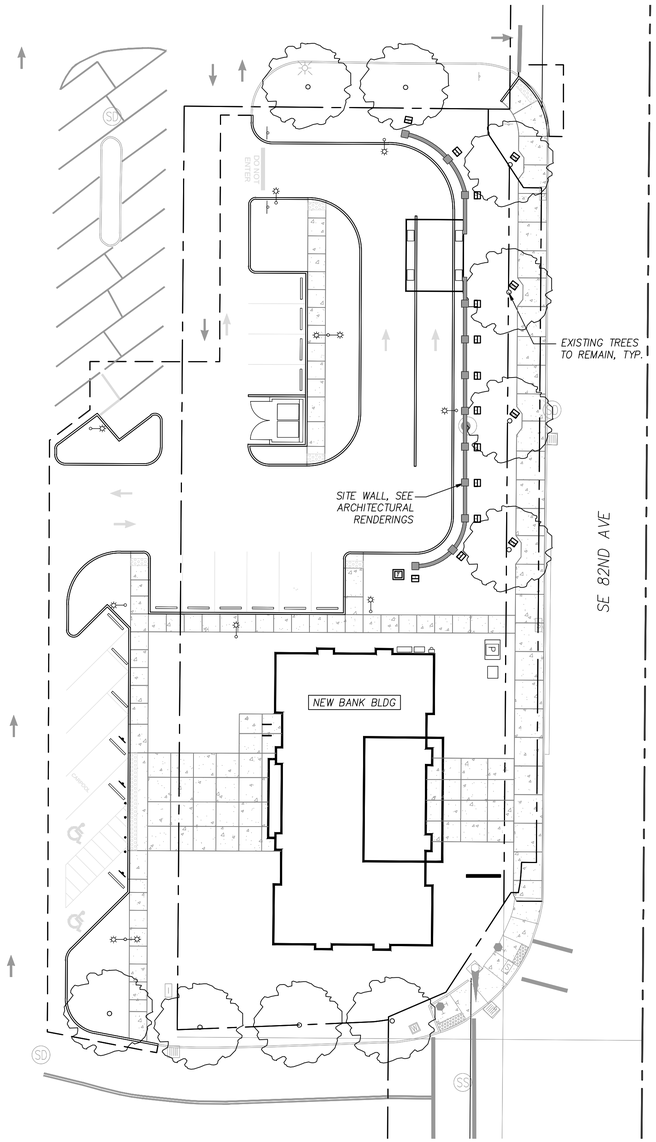
L1.0



1 LED UPLIGHT
Section
0 3" 6" 12"



2 LED TRANSFORMER
Section
0 3" 6" 12"



PLAN VIEW

LIGHTING SCHEDULE

EQUIPMENT

SYMBOL	DESCRIPTION
	TRANSFORMER, GARDEN LIGHT LED, LOW-VOLTAGE, 150 VA
	UPLIGHT FIXTURE, GARDEN LIGHT LED, MODEL V3504-AB
	MINI WALL WASHER, GARDEN LIGHT LED, MODEL MMW20F-AB

GENERAL NOTES:

1. CONTRACTOR TO ENSURE 120 V RECEPTACLE IS WITHIN RANGE OF TRANSFORMER TO ALLOW FOR CONNECTION WITHOUT STRESS OR KINK OF POWER CORD.
2. RECEPTACLE SHALL BE OUTDOOR RATED.
3. LOCATE PHOTOCELL PER MANUFACTURER'S INSTRUCTIONS.
4. ENSURE TRANSFORMER LOCATION IS NOT IN SPRAY PATTERN OF IRRIGATION SYSTEM. ADJUST IRRIGATION SPRAY PATTERN AS NECESSARY.
5. PROVISION OF 120 V POWER SHALL BE PERFORMED BY LICENSED ELECTRICIAN.

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JOHNSON CREEK
FRED MEYER RELOCATION

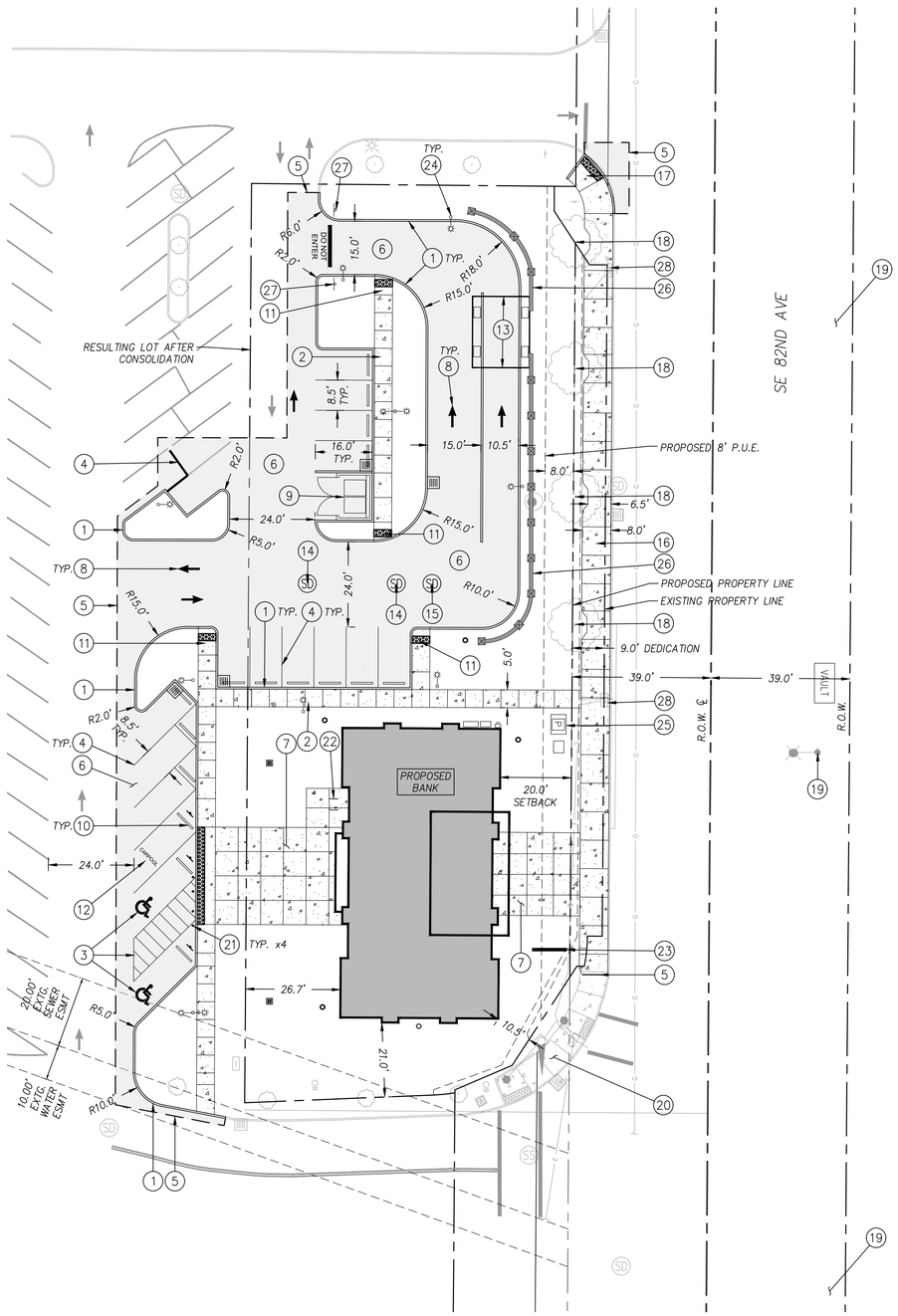
CONTENTS

PRELIMINARY
LANDSCAPE LIGHTING
PLAN

08.23.2019

SHEET

L2.0



PLAN VIEW

CONSTRUCTION NOTES:

1. CONSTRUCT CONCRETE CURB WITH 6" EXPOSURE PER DETAIL ON SHEET C4.0.
2. CONSTRUCT CONCRETE PEDESTRIAN WALK PER DETAIL ON SHEET C4.0.
3. ADA PARKING STALL, SIGNAGE AND STRIPING PER DETAIL ON SHEET C4.0.
4. 4" WIDE WHITE TRAFFIC-RATED PAINT PARKING STALL STRIPING.
5. SAWCUT EXISTING ASPHALT SECTION, MATCH EXISTING ELEVATIONS.
6. CONSTRUCT ASPHALT PAVEMENT SECTION PER DETAIL ON SHEET C4.0.
7. CONCRETE PEDESTRIAN PLAZA PAVING.
8. INSTALL THERMOPLASTIC ARROW PER DETAIL ON SHEET C4.0.
9. TRASH ENCLOSURE AREA, SEE ARCHITECTURAL FOR ADDITIONAL INFORMATION.
10. INSTALL WHEEL STOP PER DETAIL ON SHEET C4.0.
11. CONSTRUCT ADA RAMP PER GRADING DETAIL ON SHEET C2.1 AND DETAIL SHEET C4.0.
12. CARPOOL PARKING STALL, SIGNAGE AND STRIPING PER DETAIL ON SHEET C4.0.
13. DRIVE-THROUGH CANOPY. SEE ARCHITECTURAL FOR ADDITIONAL INFORMATION
14. STORMWATER INFILTRATION DRYWELL. SEE UTILITY PLAN.
15. STORMWATER TREATMENT MANHOLE. SEE UTILITY PLAN.
16. CONSTRUCT 8' WIDE CONCRETE PUBLIC SIDEWALK. EXISTING CURB TO REMAIN.
17. CONSTRUCT PUBLIC ADA CURB RAMP.
18. EXISTING STREET TREE TO REMAIN.
19. EXISTING STREET LIGHT TO REMAIN.
20. EXISTING ADA CURB RAMP AND TRAFFIC SIGNAL TO REMAIN.
21. CONSTRUCT SITE BOLLARD.
22. BIKE RACK (2).
23. PROPOSED MONUMENT SIGN, PER SIGNTECH SIGNAGE PLANS.
24. PROPOSED PARKING LOT LIGHT FIXTURE, PER ELECTRICAL PLANS.
25. PROPOSED TRANSFORMER, PER ELECTRICAL PLANS.
26. PROPOSED SITE WALL, SEE ARCHITECTURAL RENDERINGS.
27. PROPOSED "DO NOT ENTER" SIGN, PER SIGNTECH SIGNAGE PLANS.
28. PROTECT EXISTING SIGNAL POWER VAULT, SET LID TO FINISHED GRADE.

ZONING SUMMARY:

Proposed Use: **3,470 SF Bank with drive-through**

Zoning: **Corridor Commercial (CC) Financial Institutions are listed as permitted uses within the zone**

DIMENSIONAL REQUIREMENTS FOR THE CC ZONING DESIGNATION			
Standard	Required Minimum	Maximum	Proposed
Minimum Lot Size	None		22,835 SF
Minimum Street Frontage	None		~254 feet
Maximum Front Setback		20 feet	20 feet
Minimum Front Setback	15 feet		20 feet
Minimum Rear Setback	0		26.7 feet
Minimum Side Setback	0		10.5 feet to the south
Maximum Bldg. Height	None		
Minimum FAR	None		
PARKING REQUIREMENTS			
Standard	Required Minimum	Maximum	Proposed
Automobile Parking per ZDO 1015-1 (4.3/1000)	15	19	16
Bicycle Parking Per ZDO 1015.03.B.7	2	N/A	2
Accessible Parking (Table 1106.1 of the OSSC)	1		2
Carpool Parking	1		1
Loading per ZDO 1015-3	None		None
LANDSCAPING REQUIREMENTS			
Standard	Required Minimum	Maximum	Proposed
Required Landscaping	15%		52% (11,846 SF)
Surface Parking Landscaping ZDO 1009.04.A	25 SF/Space -400SF		2,012 SF
Perimeter Landscaping ZDO 1009.04.B	5 feet		< 5 feet

0 10 20 40

SCALE: 1" = 20'

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phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED PROFESSIONAL ENGINEER
OREGON
OCT. 13, 2017
ALEXANDER J. SIMPSON

NOT FOR CONSTRUCTION

EXPIRES: 06/30/2020

ISSUE	DATE	DESCRIPTION
---	11/11/2019	ISSUED FOR DESIGN REVIEW

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

CONTENTS

CIVIL SITE PLAN

08.23.2019

SHEET

C1.0

4 WEST ELEVATION - PARKING LOT SIDE
SCALE: 1/4" = 1'-0"
0 2 4 8 FT

3 NORTH ELEVATION - EXIT
SCALE: 1/4" = 1'-0"
0 2 4 8 FT

REYNOBOND 'SILVER'

REYNOBOND 'PROGRAM BLUE'

SW 7045 'INTELLECTUAL GRAY'

SW 6108 'LATTE'

4" BRICK VENEER 'RED SUNSET'

HARVEY CEMENT 'SAVANNA STONE'

Ankrom Moisan

2 EAST ELEVATION - ROAD SIDE
SCALE: 1/4" = 1'-0"
0 2 4 8 FT

1 SOUTH ELEVATION - ENTRY
SCALE: 1/4" = 1'-0"
0 2 4 8 FT

ISSUE	DATE	DESCRIPTION
---	XX/XX/2019	PERMIT ISSUE

CHASE

JOHNSON CREEK
FRED MEYER RELOCATION

CONTENTS

XX.XX.2019

SHEET

MINI WALL WASHER

MWW | WALL WASHER

A FIXTURE FOR LIFE

SSA

CATEGORY

LED Wall Washer

LED LIFE EXPECTANCY | WARRANTY

TM-21 data: Greater than **80,000 hours** (20+ years at 8 hours a day)
20 Year Warranty
We run our fixtures **40%** cooler than LM-80 testing standards

AB

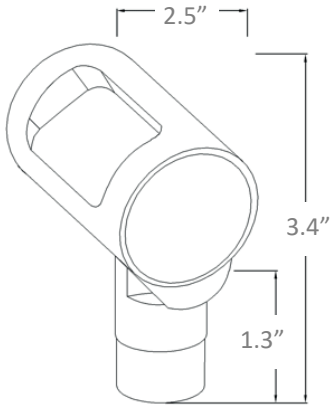
BLK

BR

SPECIFICATIONS

APPLICATION	CONSTRUCTION	DRIVER SYSTEM	INPUT POWER	INSTALLATION	LEAD WIRES	CRI	CERTIFICATION
Up Light Shadowing Wall Wash Silhouette Architectural Accents	6061 Aluminum C360 Solid Brass	External Driver	10.5-18 VAC	LV180 Ground Stake Included	ULECC 18 AWG Tinned Copper Wire 46 Inch Length	80	UL1838 Low Voltage Landscape Lighting

PRODUCT DIMENSIONS



EQ / WATTS / VA / LUMENS

EQ / W / VA / LM
20 - 2W/5VA - 160lm

BEAM SPREAD & FINISH

BEAM SPREAD	FINISH
Flood	Architectural Bronze (AB) Black (BLK) C360 Solid Brass (BR) Stainless Aluminum (SSA)

POWER CONSUMPTION

COLOR TEMPERATURE	VA
3000K	5
2700K	5
5000K	5
AMB*	6
BLU	5
RBL	5
GRN	5
RED*	4

INDICATES STOCKED ITEMS

PHOTOMETRICS

*Complete IES files furnished upon request.

FEATURES

- Overdesigned heat sink and thermal management for longevity and consistency
- Dedicated LED fixtures
- Machined Metal Ingot, not Cast Material
- Proprietary design-enhanced and robust driver technology
- Remarkably tight binning process. 2-step MacAdam ellipse to ensure consistent light output and no variant light
- Surge protection built into every driver

ADDITIONAL INFO

- Built in USA | Tampa, FL
- For custom light output, contact your sales associate
- *Color Temperature Amber and Red are not Turtle Friendly; see our Turtle Friendly fixtures for more information

VISIONARY SERIES
V3 | SPOT LIGHT

A FIXTURE FOR LIFE

AB BR SSA

CATEGORY

LED Spot Light

LED LIFE EXPECTANCY | WARRANTY

TM-21 data: Greater than **80,000 hours** (20+ years at 8 hours a day)
20 Year Warranty
We run our fixtures **40%** cooler than LM-80 testing standards

SPECIFICATIONS

APPLICATION	CONSTRUCTION	DRIVER SYSTEM	INPUT POWER	INSTALLATION	LEAD WIRES	CRI	CERTIFICATION
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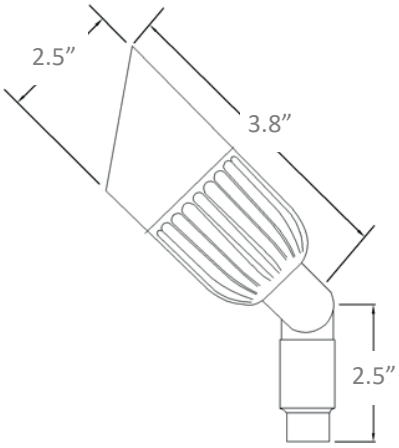
PRODUCT DIMENSIONS



EQ / WATTS / VA / LUMENS

EQ / W / VA / LM
20 - 2W/4VA - 190lm
35 - 4W/7VA - 330lm
50 - 6W/10VA - 460lm
75 - 9W/15VA - 620lm

BEAM SPREAD & FINISH

BEAM SPREAD	FINISH
12° 25° 40° 60°	Architectural Bronze (AB) C360 Solid Brass (BR) Stainless Aluminum (SSA)

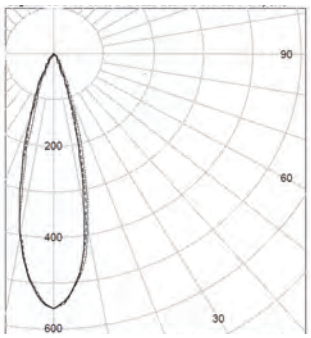
POWER CONSUMPTION

COLOR TEMPERATURE	VA	VA	VA	VA
3000K	4	7	10	15
2700K	4	7	10	15
5000K	4	7	10	15
AMB*	6	10	11	17
BLU	6	11	11	17
RBL	6	10	11	17
GRN	6	11	11	17
RED*	4	8	7	13
FSA**	N/A	N/A	9	15
LVR**	N/A	N/A	10	16

INDICATES STOCKED ITEMS

PHOTOMETRICS

*Complete IES files furnished upon request.



FEATURES

- Compression lens technology; no glue
- Overdesigned heat sink and thermal management for longevity and consistency
- Dedicated LED fixtures
- Machined Metal Ingot, not Cast Material
- Proprietary design-enhanced and robust driver technology
- Remarkably tight binning process. 2-step MacAdam ellipse to ensure consistent light output and no variant light
- Surge protection built into every driver
- Lumen levels- fixtures tested with shrouds

ADDITIONAL INFO

- Built in USA | Tampa, FL
- For custom light output, contact your sales associate
- **Fuchsia and Lavender require additional lead time
- *Color Temperature Amber and Red are not Turtle Friendly; see our Turtle Friendly fixtures for more information