Site Plan Review Modification and Adjustment

Submittal Date:	February 2025
Submitted To:	City of Salem Community Planning & Development Department
Project Location:	3470 and 3480 Blossom Drive NE Salem, OR 97302
Applicant(s):	Clutch Industries, Inc.
Applicant's Land Use Consultant:	Britany Randall of BRAND Land Use Britany@brandlanduse.com

BRAND

FEASABILITY | PLANNING | LAND USE

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503.370-8704

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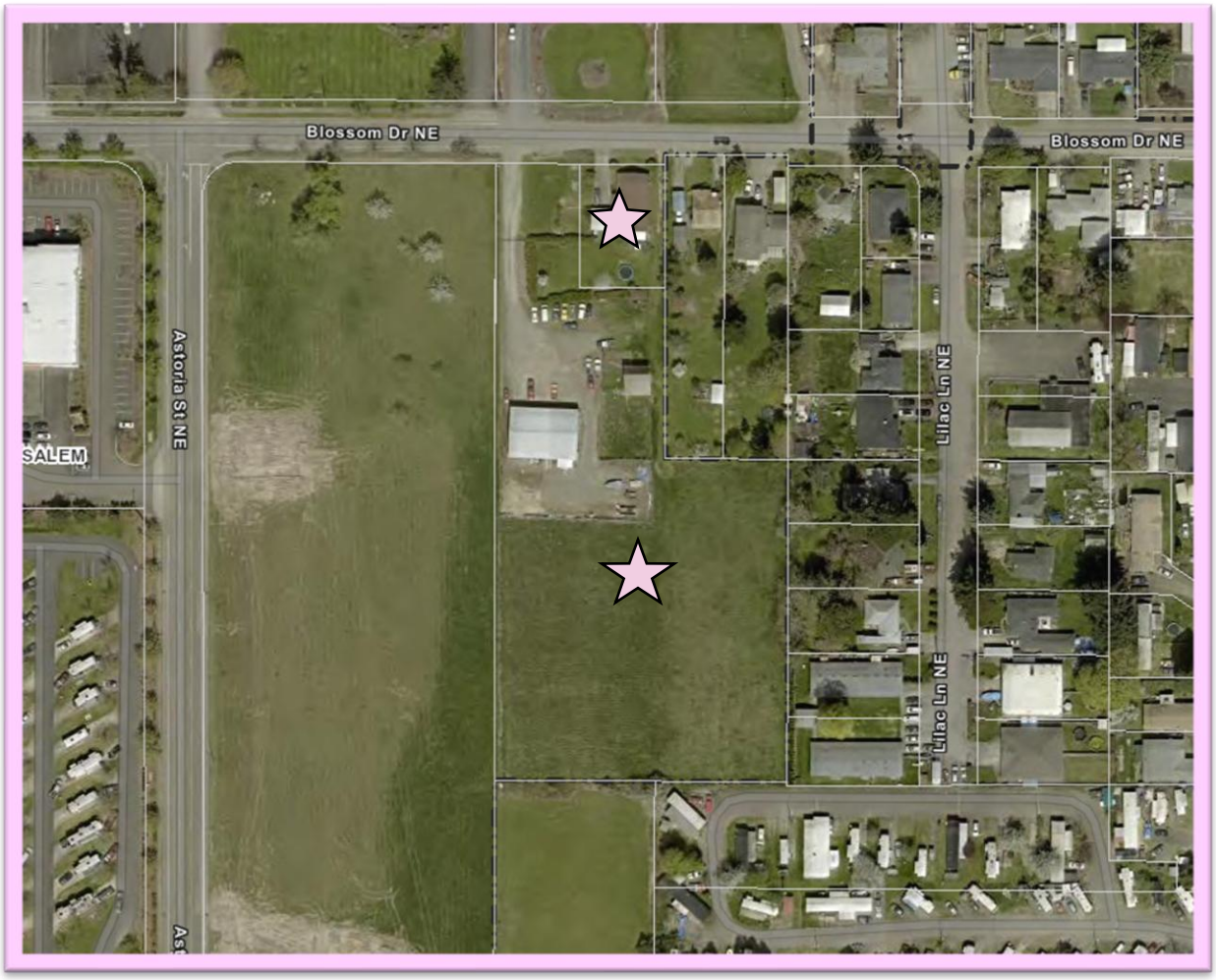
Aerial View of Subject Property and Existing Development



Section 1: Property Background and Request

The applicant, Clutch Industries, Inc. (Clutch), is presenting a modification to a previously approved site plan review application. Previously, the subject property went through a site plan review and design review (22-123981-PLN) for a 90-unit multi-family development as well as a partition, annexation, comprehensive plan amendment and zone change (20-118432-ZO & 21-102322-AN). Additionally, there has been a previous modification to the original site plan review application and a property line adjustment (24-106077-PLN). The previous land use actions were completed with the intention of preparing the site for multiple family development. The first modification was for a dog park area for the residents of the Blossom Garden Apartments. This application is to allow for additional improved open space for the residents of Blossom Garden Apartments to enjoy.

The subject property is located at 3470 and 3480 Blossom Drive NE in Salem. Clutch Industries has also applied for a property line adjustment (24-125369-PLN) to remove the line between 3480 and 3470 Blossom Drive NE to consolidate the two tax lots for the amenity space to exist on the same property as the Blossom Garden Apartments.

Section 2: Existing Conditions

After the property line adjustment (24-125369-PLN), the subject property will be approximately 3.50 acres. The parcels are described as Marion County Assessor Map and Tax Lots 073W01A003301 and 073W01A003300, a Marion County Tax Map is included within the exhibits list identifying the subject properties.

The site is located within corporate City limits of the City of Salem. The Salem Area Comprehensive Plan (SACP) map has designated the properties as “Multifamily Residential”. The properties are located outside of the City’s Urban Service Area (USA). The applicant previously obtained approval of an Urban Growth Area Development Permit.

The Comprehensive Plan designations of surrounding properties include:

North: Across Blossom Drive NE, IND “Industrial”

South: MF “Multi-Family Residential” and CR-LU “Commercial Retail with a limited use overlay” and located in Marion County

East: MF “Multi-Family Residential” located in Marion County

West: MU “Mixed Use”

The subject property is zoned RM2 (Multifamily Residential 2). Surrounding properties are zoned as follows:

North: Across Blossom Drive NE, IG (General Industrial)

South: MF (Multi-Family Residential) and CR-LU (Commercial Retail with a limited use overlay) and Marion County – Outside Corporate City Limits

East: MF (Multi-Family) Marion County – Outside Corporate City Limits

West: MU-II (Mixed Use-II)

Section 3: Findings Applicable to Site Plan Review Modification

Chapter 220 – Site Plan Review

Section 220.010 – Modification of site plan review approval

(a) *Applicability.* A site plan review approval may be modified after its effective date if the proposed modification meets the criteria in this section. Proposed modifications that do not meet the criteria in this section require submittal of a new application for site plan review.

Applicant's Findings: *The proposed modification is for the development of a large amenity space for the residents of the apartments to use. The applicant provides evidence that the proposed modification meets all the applicable criteria below. This criterion is met.*

(b) *Procedure type*.

(1) Modification of a Class 1 or Class 2 site plan review approval is processed as a Type I procedure under SRC chapter 300.

(2) Modification of a Class 3 site plan review approval is processed as a Type II procedure under SRC chapter 300.

Applicant's Findings: *The applicant is proposing to modify a Class 3 site plan review (22-123981-PLN), which requires a Type II review.*

(c) *Submittal requirements*.

(1) Modification of a Class 1 or Class 2 site plan review approval shall include, in addition to the submittal requirements for a Type I application under SRC chapter 300, the following:

(A) For modification of a Class 1 site plan review approval, the information required under SRC 220.005(d); and

(B) For modification of a Class 2 site plan review approval, the information required under SRC 220.005(e)(1).

(2) Modification of a Class 3 site plan review approval shall include, in addition to the submittal requirements for a Type II application under SRC chapter 300, the information required under SRC 220.005(e)(2).

Applicant's Findings: *The applicant understands the requirements for the submittal of a class 3 site plan review modification. The applicant has provided the applicable requirements as described above. The planning administrator has the authority to waive any submittal requirements if they determined that the specific requirement would not provide evidence needed to satisfy the applicable criteria. The applicant has provided plans with details necessary to review the proposal. This requirement is met.*

(d) *Criteria*.

(1) Modification of a Class 1 or Class 2 site plan review approval shall be granted if all of the following criteria are met:

(A) The proposed modification does not change the class of site plan review of the original application; and

(B) The proposed modification meets all applicable standards of the UDC.

Applicant's Findings: *The applicant is applying for a modification to a class 3 site plan review; therefore, these criteria are not applicable.*

(2) Modification of a Class 3 site plan review approval shall be granted if all of the following criteria are met:

(A) The proposed modification does not substantially change the original approval; and

(B) The proposed modification will not result in significant changes to the physical appearance of the development, the use of the site, and the impacts on surrounding properties.

Applicant's Findings: *The proposed modification to develop a large amenity area does not substantially change the original approval as it does not change the configuration of the dwelling units or other structures already approved and built on the site. The enhanced amenity area shown on the plan is in the same location as the previously approved common open space, and only enhances the ability to use the common open space and enhances the appearance of the site by providing greater separation between the dwelling units and the street. The property line adjustment, currently under review, is to consolidate the properties as the amenity space is an accessory use to the multi-family development and is unable to exist stand alone on a property. As demonstrated on the submitted plans, the applicant has provided trees lining the access and a robust landscape buffer to the adjacent property to the east. The amenities proposed will enhance the original development approval. The approval criteria are met.*

(e) *Expiration.* The effect of a modification upon the expiration period of the original approval, if any, shall be established in the modification decision.

Applicant's Findings: *The applicant understands that the expiration period of the original approval will now be established in the modification decision. This criterion is met.*

Chapter 702 – Multiple Family Design Review Standards

Section 702.001 – Purpose

The purpose of this chapter is to establish design review standards for multiple family development.

Section 702.005 – Multiple Family Design Review

(a) Except as provided under subsection (b) of this section, and unless otherwise provided in the UDC, design review under SRC chapter 225 is required for all multiple family development.

Applicant's Findings: *The proposal does not include a new multiple family development; however, the proposal changes the configuration of the lot containing a recent multiple family development and proposes adding additional open space to the existing multiple family development.*

Section 702.020 – Design Review Standards for Multiple Family Development with Thirteen or More Units

(a) Open space standards.

(1) To encourage the preservation of natural open qualities that may exist on a site and to provide opportunities for active and passive recreation, all newly constructed multiple family developments shall provide a minimum 30 percent of the gross site area in designated and permanently reserved open space. For the purposes of this subsection, the term "newly constructed multiple family developments" shall not include multiple family developments created through only construction or improvements to the interior of an existing building(s). Indoor or covered recreation space may count toward this open space requirement.

Applicant's Findings: *With the proposed property line adjustment that will consolidate a vacant parcel with the existing multi-family development, the new total site area is 152,460 square feet, which requires 45,738 square feet of designated reserved open space. The original site plan review calculated 47,393 square feet of open space, exceeding the minimum amount of required open space for the original property, and continues to exceed for the new property size, without taking into consideration the calculation of the new improved open space area. This standard is met.*

(A) To ensure usable open space that is of sufficient size, at least one common open space area shall be provided that meets the size and dimension standards set forth in Table 702-3.

Applicant's Findings: *As previously demonstrated within the original site plan review for the multi-family development, this standard was met. Since the proposal includes additional open space, and no additional units that would trigger additional open space, the proposed additional open space exceeds the required amount of open space. This standard is met.*

(B) To ensure the provided open space is usable, a maximum of 15 percent of the common open space shall be located on land with slopes greater than 25 percent.

Applicant's Findings: *As previously demonstrated within the original site plan review the grading plan demonstrates that the site was nearly flat. The additional common open space proposed is also on ground that is nearly flat, ensuring that this improved common open space is usable. This standard is met.*

(C) To allow for a mix of different types of open space areas and flexibility in site design, private open space, meeting the size and dimension standards set forth in Table 702-4, may count toward the open space requirement. All private open space must meet the size and dimension standards set forth in Table 702-4.

Applicant's Findings: *Private open space was reviewed at the time of the original site plan review for the dwelling unit development. This proposal does not include a change to the existing dwelling units on the site and does not propose any new dwelling units. Therefore, this standard is not applicable.*

(D) To ensure a mix of private and common open space in larger developments, private open space, meeting the size and dimension standards set forth in Table 702-4, shall be provided for a minimum of 20 percent of the dwelling units in all newly constructed multiple family developments with 20 or more dwelling units. Private open space shall be located contiguous to the dwelling unit, with direct access to the private open space provided through a doorway.

Applicant's Findings: *It was previously demonstrated within the original site plan review that included the development of the dwelling units, that this standard was met. This proposal does not include a change to the existing dwelling units on the site and does not propose any new dwelling units. Therefore, this standard is not applicable.*

(E) To encourage active recreational opportunities for residents, the square footage of an improved open space area may be counted twice toward the total amount of required open space, provided each such area meets the standards set forth in this subsection. Example: a 750-square-foot improved open space area may count as 1,500 square feet toward the open space requirement.

i. Be a minimum 750 square feet in size with a minimum dimension of 25 feet for all sides; and
ii. Include at least one of the following types of features:
    a. Covered pavilion.
    b. Ornamental or food garden.
    c. Developed and equipped children's play area, with a minimum 30-inch tall fence to separate the children's play area from any parking lot, drive aisle, or street.
    d. Sports area or court (e.g., tennis, handball, volleyball, basketball, soccer).
    e. Swimming pool or wading pool.

Applicant's Findings: *The proposal includes additional improved open space, including a covered pavilion, a children's play area, a basketball court, soccer court that doubles as a volleyball court, and bleachers. The consolidated property already exceeds the open space requirement and recognizes that this improved open space area counts as twice the amount of open space. The proposal exceeds the open space requirements of this chapter.*

(e) *Façade and building design.*

(1) On sites with 75 feet or more of buildable width, a minimum of 40 percent of the buildable width shall be occupied by building placed at the setback line to enhance visual interest and activity along the street. Accessory structures shall not apply towards meeting the required percentage.

Applicant's Findings: *The lot consolidation proposed would increase the buildable width along the street frontage by 87 feet. The applicant is applying for an adjustment to eliminate this standard as the site is developed and no new primary buildings are proposed. The proposal includes the development of an improved open space for the residents of the Blossom Garden Apartments, which enhances the visual interest and activity along the street more than an additional primary building. The use of a primary building on this site would be for residents to arrive and leave their unit, whereas the improved open space encourages more visual interest and activity by providing amenities for residents to use and engage with along the street. Additional details are provided below within the adjustment findings.*

Chapter 250 – Adjustments

Section 250.001 – Purpose

The purpose of this chapter is to provide a process to allow deviations from the development standards of the UDC for developments that, while not meeting the standards of the UDC, will continue to meet the intended purpose of those standards. Adjustments provide for an alternative way to meet the purposes of the Code and provide for flexibility to allow reasonable development of property where special conditions or unusual circumstances exist.

Section 250.005 – Adjustments

(a) *Applicability*.

(1) *Classes*.

(A) A Class 1 adjustment is an adjustment to any numerical development standard in the UDC that increases or decreases the standard by not more than 20 percent.

(B) A Class 2 adjustment is an adjustment to any development standard in the UDC other than a Class 1 adjustment, including an adjustment to any numerical development standard in the UDC that increases or decreases the standard by more than 20 percent.

Applicant's Findings: *The applicant is applying to eliminate a standard completely. Therefore, triggering the applicability of a class 2 adjustment.*

(2) *Prohibition.* Notwithstanding subsection (a)(1) of this section, an adjustment shall not be granted to:

(A) Allow a use or activity not allowed under the UDC;

(B) Change the status of a use or activity under the UDC;

(C) Modify a definition or use classification;

(D) Modify a use standard;

(E) Modify the applicability of any requirement under the UDC;

(F) Modify a development standard specifically identified as non-adjustable;

(G) Modify a development standard that contains the word "prohibited";

(H) Modify a procedural requirement under the UDC;

(I) Modify a condition of approval placed on property through a previous planning action;

(J) A design review guideline or design review standard, except Multiple Family Design Review Standards in SRC Chapter 702, which may be adjusted; or

(K) The required landscaping in the Industrial Business Campus (IBC) Zone.

Applicant's Findings: *The proposed adjustment is not prohibited as outlined above.*

(b) *Procedure type*. Class 1 and Class 2 adjustments are processed as a Type II Procedure under SRC chapter 300.

Applicant's Findings: *The applicant understands the processing procedure for the applications requested.*

(c) *Submittal requirements.* In addition to the submittal requirements for a Type II application under SRC chapter 300, an application for a Class 1 or Class 2 adjustment shall include the following:

(1) A site plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing all information necessary to establish satisfaction with the approval criteria. By way of example, but not of limitation, such information may include the following:

(A) The total site area, dimensions, and orientation relative to north;

(B) The location of all proposed primary and accessory structures and other improvements, including fences, walls, and driveway locations, indicating distance to such structures from all property lines and adjacent on-site structures;

(C) All proposed landscape areas on the site, with an indication of square footage and as a percentage of site area;

(D) The location, height, and material of fences, berms, walls, and other proposed screening as they relate to landscaping and screening required by SRC chapter 807;

(E) The location of all trees and vegetation required to be protected pursuant to SRC chapter 808; and

(F) Identification of vehicle, pedestrian, and bicycle parking and circulation areas, including handicapped parking stalls, disembarking areas, accessible routes of travel, and proposed ramps.

Applicant's Findings: *A site plan has been submitted including the applicable information above. This requirement is met.*

(2) An existing conditions plan, of a size and form and in the number of copies meeting the standards established by the Planning Administrator, containing the following information:

(A) The total site area, dimensions, and orientation relative to north;

(B) The location of existing structures and other improvements on the site, including accessory structures, fences, walls, and driveways, noting their distance from property lines;

(C) The location of the 100-year floodplain, if applicable; and

(D) The location of drainage patterns and drainage courses, if applicable.

Applicant's Findings: *An existing conditions plan has been submitted including the applicable information above. This requirement is met.*

(d) *Criteria.*

(1) An application for a Class 1 adjustment shall be granted if all of the following criteria are met:

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or

(ii) Clearly satisfied by the proposed development.

(B) The proposed adjustment will not unreasonably impact surrounding existing or potential uses or development.

Applicant's Findings: *The applicant is applying for a class 2 adjustment. Therefore, the approval criteria for a class 1 adjustment are not applicable.*

(2) An application for a Class 2 adjustment shall be granted if all of the following criteria are met:

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or

(ii) Equally or better met by the proposed development.

Applicant's Findings: *The applicant is proposing an adjustment to eliminate the below standard:*

<u>702.020(e)(4) On sites with 75 feet or more of buildable width, a minimum of 40 percent of the buildable width shall be occupied by building placed at the setback line to enhance visual interest and activity along the street. Accessory structures shall not apply towards meeting the required percentage.</u> The purpose of this standard is to activate the street by placing buildings at the setback line. At the time the complex was developed, this standard did not apply as the buildable width was less than 75 feet, with the property consolidation the buildable width is increased and triggers this standard. With the elimination of the property line, the applicant has an opportunity to greatly enhance the recreational space of the existing development for residents by providing a robust improved open space area that includes a covered pavilion, a children's play area, a basketball court, a soccer court that doubles as a volleyball court, and bleachers. The proposal, as modified, more closely meets the intent of this standard because the robust pedestrian connections will be further enhanced with this additional recreation area. Landscaping along the Blossom Drive NE will also be greatly enhanced over the previously dilapidated single-family use that existed on the property proposed for consolidation. Because the modification is proposing an active and lively use that enhances the landscaping and visual interest, the requested adjustment equally meets the intent of this provision. Therefore, this criterion is met.

(B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

Applicant's Findings: *The proposal is within a residential zone and does not detract from the livability or appearance of the residential area as the proposal includes the consolidation of an adjacent property to the existing multi-family development site to provide an improved open space area that allows the apartment residents to use and enjoy. Residential areas typically include a neighborhood park that would be used in a similar manner, and single-family homes have front and back yards that provide space for outdoor activities. The proposed improved open space provides the same as the residents living within this multi-family apartment complex will have a greater outdoor area for recreation. This criterion is met.*

(C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant's Findings: *The proposal includes one adjustment. Therefore, this criterion is not applicable.*

(e) *Transfer of adjustments.* Unless otherwise provided in the final decision granting the adjustment, an adjustment shall run with the land.

Applicant's Findings: *The applicant understands the adjustment shall run with the land unless otherwise provided in the final decision.*

Section 4: Conclusion

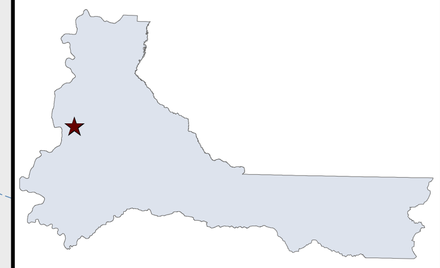
Based on the facts and findings presented by the applicant within this detailed written narrative, the applicant believes they have satisfied the burden of proof required by the Unified Development Code and demonstrated how the proposed modification not only satisfies all applicable criteria but would also be a benefit to the community by providing a robust improved amenity area for those living in the Blossom Garden apartments.

Section 5: Exhibits

Exhibit A – Marion County Tax Map

07 3W 01A

07 3W 01A
SALEM



MARION COUNTY, OREGON
NE1/4 SEC1 T7S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

- Taxlot Boundary
- Historical Boundary
- Road Right-of-Way
- Easement
- Railroad Right-of-Way
- Railroad Centerline
- Private Road ROW
- Taxcode Line
- Subdivision/Plat Bndry
- Map Boundary
- Waterline - Taxlot Bndry
- Waterline - Non Bndry

CORNER TYPES

- 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- Section Corner

NUMBERS

Tax Code Number
00 00 0

Acreage
0.25 AC

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

200.00
175.00

CANCELLED NUMBERS

301	2202A7		
401	2202A8		
500	2300A1		
600	2300A2		
700	2300A3		
800	2300L1		
900	2500		
1000	2600U2		
1100	2700U2		
1500	2901		
2200	3000		
2202	3100		
2202A1			
2202A2			
2202A3			
2202A5			
2202A6			

DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Marion County OREGON — Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.marion.or.us

PLOT DATE: 10/10/2022

SALEM
07 3W 01A

Exhibit B – Deeds

Marion County Parcel Information

TICOR TITLE™

Parcel Information

Parcel #:	**524729**
Tax Lot:	**073W01A003300**
Site Address:	3480 Blossom Dr NE
	Salem OR 97305 - 1714
Owner:	Blossom Gardens Apartments LLC
Owner2:	
Owner Address:	360 Belmont St NE
	Salem OR 97301
Twn/Range/Section:	07S / 03W / 01 / NE
Parcel Size:	0.03 Acres (1,357 SqFt)
Plat/Subdivision:	
Lot:	1
Block:	1
Census Tract/Block:	001601 / 1012
Waterfront:	

Tax Information

Levy Code Area:	24013
Levy Rate:	19.6343
Tax Year:	2024
Annual Tax:	$98.38
Exempt Desc:	N/A

Legal

PP 2021-064 LOT 1 ACRES 0.22

Assessment Information

Market Value Land:	$9,220.00
Market Value Impr:	$0.00
Market Value Total:	$9,220.00
Assessed Value:	$5,010.00

Land

Zoning:	Salem-RM2 - Multiple Family Residential 2	**Cnty Bldg Use:**	Residential
Cnty Land Use:	101 - Residential improved, 1 acre and under, inside city or urban growth boundary	**Neighborhood:**	
Std Land Use:	1001 - Single Family Residential	**Recreation:**	
School District:	24J - Salem-Keizer	**Primary School:**	Forest Ridge Elementary School
Middle School:	Whiteaker Middle School	**High School:**	McNary High School

Improvement

Year Built:	1950	**Stories:**		**Finished Area:**	1,664
Bedrooms:		**Bathrooms:**	2	**Garage:**	
Basement Fin:					

Transfer Information

Rec. Date:	08/31/2020	**Sale Price:**	$725,000.00	**Doc Num:**	2020-8199 (43790166)
Doc Type:	Deed				
Owner:	Blossom Gardens Apartments LLC			**Grantor:**	DARRAS TR & DARRAS, JEROME D TRE
Orig. Loan Amt:				**Title Co:**	
Finance Type:		**Loan Type:**		**Lender:**	

Sentry Dynamics, Inc. and its customers make no representations, warranties or conditions, express or implied, as to the accuracy or completeness of information contained in this report.

Marion County Parcel Information

TICOR TITLE™

Parcel Information

Parcel #:	**605181**
Tax Lot:	**073W01A003301**
Site Address:	3470 Blossom Dr NE
	Salem OR 97305 - 1714
Owner:	Blossom Gardens Apartments LLC
Owner2:	
Owner Address:	360 Belmont St NE
	Salem OR 97301
Twn/Range/Section:	07S / 03W / 01 / NE
Parcel Size:	1.09 Acres (47,480 SqFt)
Plat/Subdivision:	
Lot:	2
Block:	
Census Tract/Block:	001601 / 1012
Waterfront:	

Tax Information

Levy Code Area:	24013
Levy Rate:	19.6343
Tax Year:	2024
Annual Tax:	$1,318.26
Exempt Desc:	N/A

Legal

PP 2021-064 LOT 2 ACRES 2.16

Assessment Information

Market Value Land:	$213,660.00
Market Value Impr:	$0.00
Market Value Total:	$213,660.00
Assessed Value:	$67,140.00

Land

Zoning:	Salem-RM2 - Multiple Family Residential 2	**Cnty Bldg Use:**	Market Aptcw Apartment County-Wide
Cnty Land Use:	700 - Multiple family land only	**Neighborhood:**	
Std Land Use:	8007 - Multi-Family-Vacant Land	**Recreation:**	
School District:	24J - Salem-Keizer	**Primary School:**	Forest Ridge Elementary School
Middle School:	Whiteaker Middle School	**High School:**	McNary High School

Improvement

Year Built:	1990	**Stories:**		**Finished Area:**	3,600
Bedrooms:		**Bathrooms:**		**Garage:**	
Basement Fin:					

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Fidelity National Title# 60222005208

GRANTOR'S NAME:
Jerome D Darras Trust

GRANTEE'S NAME:
Blossom Gardens Apartments LLC

AFTER RECORDING RETURN TO:
Order No.: 60222005208-KM
Blossom Gardens Apartments LLC, an Oregon limited liability company
3480 Blossom Drive NE
Salem, OR 97305

SEND TAX STATEMENTS TO:
Blossom Gardens Apartments LLC
3480 Blossom Drive NE
Salem, OR 97305

APN: R24728
R24729
Map: 073W01A 03300
073W01A 03300
3480 Blossom Drive NE, Salem, OR 97305

REEL 4379 PAGE 166
MARION COUNTY
BILL BURGESS, COUNTY CLERK
08-31-2020 03:32 pm.
Control Number 615857 $ 91.00
Instrument 2020 00047548

SPACE ABOVE THIS LINE FOR RECORDER'S USE

STATUTORY WARRANTY DEED

Mikel D. Darras, Successor Trustee of the Darras Trust dated June 3, 1993, Grantor, conveys and warrants to **Blossom Gardens Apartments LLC, an Oregon limited liability company**, Grantee, the following described real property, free and clear of encumbrances except as specifically set forth below, situated in the County of Marion, State of Oregon:

TRACT A: Beginning at the Southeast corner of the Janet Pugh Donation Land Claim No. 50 in Township 7 South, Range 2 West of the Willamette Meridian in Marion County, Oregon; thence North, along the East line of said Janet Pugh Donation Land Claim, 20.02 chains, more or less, to the center of Blossom Drive; thence Westerly, along the centerline of Blossom Drive, 685.46 feet; thence South 00°05'02" West 330.00 feet to the TRUE POINT OF BEGINNING; thence South 00°05'02" West 330.00 feet; thence North 89°34' West 66.00 feet; thence North 00°05'02" East 330.00 feet; thence South 89°34' East 66.00 feet to the TRUE POINT OF BEGINNING.

TRACT B: Beginning at the Southeast corner of the Janet Pugh Donation Land Claim No. 50 in Township 7 South, Range 2 West of the Willamette Meridian in Marion County, Oregon; thence North, along the East line of said Janet Pugh Donation Land Claim, 20.02 chains, more or less, to the center of Blossom Drive; thence Westerly, along the centerline of Blossom Drive, 751.62 feet; thence South 00°05'02" West 330.00 feet to the TRUE POINT OF BEGINNING; thence South 00°05'02" West 330.00 feet; thence North 89°34' West 72.00 feet; thence North 00°05'02" East 300.00 feet; thence South 89°34' East 72.00 feet to the TRUE POINT OF BEGINNING.

TRACT C: Beginning in the center of Blossom Drive at a point which is 20.020 chains North 00°08' East and 809.70 feet North 89°34' West from the Southeast corner of the Janet Pugh Donation Land Claim No. 50 in Township 7 South, Range 2 West of the Willamette Meridian in Marion County, Oregon; thence South 00°08' West, parallel with the East line of said claim, 330.00 feet; thence North 89°34' West, parallel with the center of said Blossom Drive, 12.00 feet; thence South 00°08' West, parallel with the East line of said claim, 330.00 feet; thence North 89°34' West, parallel with the center of said Blossom Drive, 164.34 feet; thence North 00°08' East, parallel with the East line of said claim, 660.00 feet to a point in the center of said Blossom Drive; thence South 89°34' East 176.34 feet to the place of beginning.

THE TRUE AND ACTUAL CONSIDERATION FOR THIS CONVEYANCE IS SEVEN HUNDRED TWENTY-FIVE THOUSAND AND NO/100 DOLLARS **($725,000.00)**. (See ORS 93.030).

Subject to:

Property taxes in an undetermined amount, which are a lien but not yet payable, including any assessments collected with taxes to be levied for the fiscal year 2020-2021.

Rights of the public to any portion of the Land lying within the area commonly known as streets, roads and/or highways.

Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Portland General Electric Company
Purpose:	Anchors and guy wires
Recording Date:	December 13, 1996
Recording No:	Reel 1359, page 750
Affects:	Reference is hereby made to said document for full particulars

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS

STATUTORY WARRANTY DEED
(continued)

INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Dated: 8-28-2020

~~Jerome D~~ Darras Trust

BY: _____
Mikel D Darras, Successor Trustee

State of Oregon
County of Marion

This instrument was acknowledged before me on August 26, 2020 by Mikel D Darras, as Successor Trustee for ~~Jerome D Darras Trust~~ Darras Trust.

_____
Notary Public - State of Oregon

My Commission Expires: 2/22/21

OFFICIAL STAMP
KELLY J MILLER
NOTARY PUBLIC-OREGON
COMMISSION NO. 959129
MY COMMISSION EXPIRES: FEBRUARY 22, 2021

REEL: 4379 PAGE: 166

August 31, 2020, 03:32 pm.

CONTROL #: 615857

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 91.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.

Exhibit C – Articles of Organization

DocuSign Envelope ID: 939B28E1-5198-4958-98AC-DA1BB4256C0D

Articles of Amendment/Dissolution - Limited Liability Company

Secretary of State - Corporation Division - 255 Capitol St. NE, Suite 151 - Salem, OR 97310-1327 - sos.oregon.gov/business - Phone: (503) 986-2200

(●) ARTICLES OF AMENDMENT (Complete only 1, 2, 3, 4, 5, 8)

( ) ARTICLES OF DISSOLUTION (Complete 6,7, 8)

FILED: AUG 1, 2023
OREGON SECRETARY OF STATE

170546296-25119277

REGISTRY NUMBER: 1705462-96

In accordance with Oregon Revised Statute 192.410-192.490, the information on this application is public i
We must release this information to all parties upon request and it will be posted on our website.

BLOSSOM GARDENS APARTMENTS... **AMDART**

Please Type or Print Legibly in **Black** Ink. Attach Additional Sheet if Necessary.

ARTICLES OF AMENDMENT ONLY

1. **ENTITY NAME:** BLOSSOM GARDENS APARTMENTS LLC

2. **THE FOLLOWING AMENDMENT(S) TO THE ARTICLES OF ORGANIZATION IS MADE HEREBY:** (State the article number(s) and set forth the article(s) as it is amended to read.)

The Member is changed from Clutch Multifamily LLC (1492119-97) to multi member individuals:

Terence C Blackburn - 360 Belmont St NE Salem OR 97301 and Sean A Blackburn

360 Belmont St NE Salem OR 97301

3. **PLEASE CHECK THE APPROPRIATE STATEMENT:**

(●) This amendment was adopted by the manager(s) without member action. Member action was not required.

Date of adoption of each amendment: July 31, 2023

( ) This amendment(s) was approved by the members. _____ percent of the members approved the amendment(s).

Date of adoption of each amendment: _____

4. **PRINCIPAL PLACE OF BUSINESS** (Physical Street Address)

360 Belmont St NE
Salem OR 97301

5. **INDIVIDUAL WITH DIRECT KNOWLEDGE** (Name and Address)
List the name and address of at least one individual who is a member or manager of the LLC or an authorized representative with direct knowledge of the operations and business activities of the LLC.

Terence C Blackburn
360 Belmont St NE
Salem OR 97301

ARTICLES OF DISSOLUTION ONLY

6. **NAME OF LIMITED LIABILITY COMPANY:** _____

7. **DATE DISSOLUTION OCCURRED:** _____
Future date not allowed.

8. **EXECUTION:** I declare, under penalty of perjury, that this document does not fraudulently conceal, fraudulently obscure, fraudulently alter or otherwise misrepresent the identity of the person or any members, managers, employees or agents of the limited liability company. This filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment or both.

Signature:	Printed Name:	Title:
DocuSigned by: Chris Blackburn 92F5296FE38F455...	Terence C Blackburn	Managing Member

CONTACT NAME: (To resolve questions with this filing)

Tyrene Bielenberg

PHONE NUMBER: (Include area code)

503-931-9356

FEES

Required Processing Fee $100

Processing Fees are nonrefundable. Please make check payable to "Corporation Division".

Free copies are available at sos.oregon.gov/business using the Business Name Search program.

Exhibit D – HCRPZ Acknowledgement

BRAND

Historic and Cultural Resources Protection Zone Acknowledgement

The applicant is aware the subject site is identified on the City of Salem's Historic and Cultural Resources Protection Zone map. The applicant's consultant has discussed properties within these areas with the city's Historic Preservation Officer, Kimberli Fitzgerald. No public funding will be utilized to develop the subject site. At the time the site is developed, the applicant's contractors will have an inadvertent discovery plan on file with the city.

Exhibit E – TGE Form

CITY OF Salem AT YOUR SERVICE

Traffic Engineering Section
Public Works Department
555 Liberty Street SE, Room 325 Telephone: 503-588-6211
Salem, Oregon 97301-3513 TTY: 503-588-6292

Trip Generation Estimate

Street _____

Bin # _____ TGE # _____

Date Received _____

Section 1 (To be completed by applicant.)

Applicant Name: BRAND Land Use Telephone: 503-370-8704

Applicant Mailing Address: 1720 Liberty St SE

Location of New Development: 3470 Blossom Drive NE
(Please provide street address. If unknown, provide approximate address and geographical description/nearest cross streets.)

Description and Size of New Development: New amenity space for Blossom Garden Apartments
(e.g., 150 single-family homes, 20,000 sq. ft. office addition, 12-pump gas station, 50-student day care, additional parking, etc.)

Description and Size of Existing/Past Development, if any (note whether to remain or be removed): Existing multi-family development to remain

Planning Action Involved, if any: _____
(e.g., zone change, subdivision, partition, conditional use, PUD, mobile home park, etc.)

Building Permit Involved:
Yes ☐ No ☐

Section 2 (To be completed by City staff.)

Proposed Use	**Existing Use**
Development Quantity: _____	Development Quantity: _____
ITE Land Use Code: _____	ITE Land Use Code: _____
Trip Generation Rate/Equation: _____	Trip Generation Rate or Equation: _____
Average Daily Trips: _____	Average Daily Trips: _____
ELNDT Adjustment Factors	**ELNDT Adjustment Factors**
Trip Length: _____ Linked Trip: _____	Trip Length: _____ Linked Trip: _____
TSDC Trips: _____	TSDC Trips: _____

Section 3 (To be completed by City staff.)

Transportation Impact Analysis (TIA)

Net Increase in Average Daily Trips: _____
(Proposed use minus existing use.)

☐ A TIA **will** be required:
- ☐ Arterial/Collector—1000 Trip/day Threshold
- ☐ Local Street/Alley—200 Trip/day Threshold
- ☐ Other: _____

☐ A TIA **will not** be required.

Transportation Systems Development Charge

Net Increase in TSDC Trips: _____
(Proposed use minus existing use.)

☐ A TSDC **will** be required.
(Fee determined by Development Services.)

☐ A TSDC **will not** be required.

(For additional information, refer to the back of this application.)

Section 4 (To be completed by City staff.)

Remarks:

Date: _____

cc: ☐ Chief Development Services Engineer
☐ Community Development
☐ Building Permit Application
☐ _____

By: _____

Information Required to Assess the Need for a Traffic Impact Analysis and Transportation Systems Development Charge

The following information is required in order to assess the need for a Traffic Impact Analysis (TIA) and to calculate the Transportation Systems Development Charge (TSDC) to be levied on a proposed new development.

TIA Determination:

The City of Salem may require that a TIA be prepared as part of the approval process for major new development. The purpose of a TIA is to estimate the traffic impacts created by a new development on the surrounding street system. Any significantly adverse traffic impacts identified in the TIA must be mitigated by the applicant.

The estimated daily traffic generation of a new development is used as the criteria for determining whether a TIA is needed. If the new development access is located on an arterial or collector and the estimated daily traffic generation is more than 1000 trips, a TIA may be required. If access is located on a local street or alley and the generated trips exceed 200, a TIA may be required. Other criteria such as site access issues, driveway restrictions, and existing facilities deficiencies may also be used, if recommended by City Traffic Engineering staff.

The City Traffic Engineer makes the determination as to whether a TIA is required. (For more information on TIA criteria, see Development Bulletin No. 19 dated January 20, 1995.) When the determination has been made, copies of the Trip Generation Estimate form are sent to Public Works Development Services Division and the applicant. If a planning action is required, a copy is also forwarded to the Community Development Department.

TSDC Analysis:

The City of Salem charges a TSDC on all new development that creates a net increase in traffic on the surrounding street system. The total charge is assessed on a per trip fee times the TSDC trips calculated for the development. For more information on the TSDC, see Council Staff Report dated October 9, 1995.

To assist in estimating the daily trips generated by a new development, please answer the questions in Section 1 of this sheet and return it to Room 325 of the Civic Center. If you have any questions, Traffic Engineering staff are available at 503-588-6211. A copy of the completed trip generation estimate will be returned to you at the address provided in Section 1.

No Land Use, Planning, or Development Approval applications requiring Trip Generation Estimates will be processed until this information has been provided and the TIA/TSDC assessment has been made by City Traffic Engineering staff.

Exhibit F – HOA Statement

BRAND

Homeowners Association Information

The applicant is submitting this statement to confirm there is no homeowners association (HOA) which is active or registered with the Oregon Secretary of State which impacts the subject property.

Exhibit G – Civil Drawings

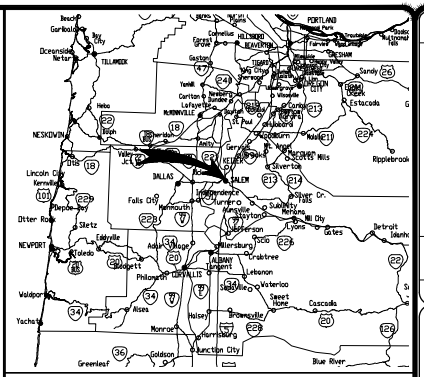
DRAWINGS FOR:

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS
3480 BLOSSOM DR NE
SALEM, OR 97305

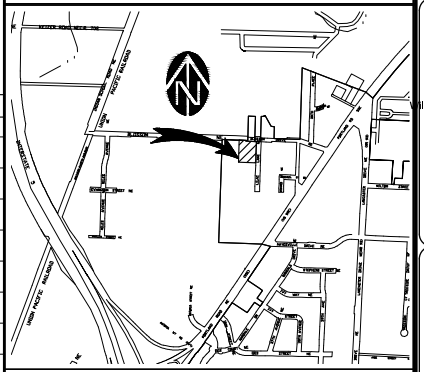
FOR:

MR. CHRIS ANDERSON
BLOSSOM GARDENS APARTMENTS LLC
360 BELMONT ST NE
SALEM, OR 97301
503.932.3179
chrisa@clutchindustries.com

PROJECT LOCATION
TAX LOT #073W01A003301
SEC1, T7S, R3W., W.M.



VICINITY MAP



LOCATION MAP

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

BENCHMARK UTILIZED:
CITY OF SALEM #6060

ELEV: 184.08' NGVD 29

ALUMINUM DISK SET S OF ADA RAMP AT TOP OF BEGIN DROP, 14' SW OF MH, 10' SE OF TRAFFIC SIGNAL POLE, 20' N OF GAS VALVE, 32' E OF FHYD, SW CORNER OF INTERSECTION OF HAYESVILLE & PORTLAND

SHEET INDEX

ABBREVIATIONS

ASPH	ASPHALT	IRR	IRRIGATION
AD	AREA DRAIN	IE	INVERT ELEVATION
ASSY	ASSEMBLY	JB	JUNCTION BOX
BLDG, BLD	BUILDING	LP	LIGHT POLE
BW	BOTTOM OF WALL	M	METER, MAIN
CATV	CABLE TELEVISION	MB	MAILBOX
CB	CATCH BASIN	MH	MANHOLE
CO	CLEAN-OUT	OH	OVER-HEAD
CONC	CONCRETE	P/L, ℄	PROPERTY LINE
CL, ℄	CENTERLINE	PP	POWER POLE
DIP	DUCTILE IRON PIPE	PVC	POLYVINYL CHLORIDE
EG	EDGE OF GRAVEL	PWR	POWER
EOP, EP	EDGE OF PAVEMENT	R, RAD	RADIUS
ELEV	ELEVATION	R	RIM
EX, EXIST	EXISTING	ROW, R/W	RIGHT-OF-WAY
FDC	FIRE DEPT. CONNECTOR	SS	SANITARY SEWER
FT	FEET	SD	STORM DRAIN
FF	FINISH FLOOR	SVC	SERVICE
FG	FINISH GRADE	SWK, S/W	SIDEWALK
FH	FIRE HYDRANT	TC	TOP OF CURB
FI	FIELD INLET	TEL	TELEPHONE
FM	FORCE MAIN	TR	TRANSFORMER
GRAV	GRAVEL	TS	TRAFFIC SIGNAL
GM	GAS METER	TW	TOP OF WALL
GP	GATE POST	TYP	TYPICAL
GS	GROUND SHOT	UG, U/G	UNDER GROUND
GV	GAS VALVE	UTIL	UTILITY
HC	HANDICAP	VLT	VAULT
HDPE	HIGH-DENSITY POLYETHYLENE	W/	WITH
HYD	HYDRANT	WM	WATER METER
IR	IRON ROD	WLM	WETLANDS MARKER
IP	IRON PIPE	YPC	YELLOW PLASTIC CAP

SYMBOLS

- AD — AREA DRAIN
- CB or — CATCH BASIN
- CO — CLEANOUT
- FIRE HYDRANT
- GV — GAS VALVE
- WV — WATER VALVE
- GPW — GAS/POWER/WATER METER
- DSO — DOWN SPOUT
- MANHOLE TELEPHONE
- MANHOLE STORM DRAIN
- MANHOLE SANITARY SEWER
- SIGN POST
- PED — PEDESTAL
- MAIL BOX
- IV — IRRIGATION VALVE
- LIGHT POLE
- UTILITY/POWER POLES
- TEST PIT
- MONUMENT FOUND

TREES – *TREENAME* DIAMETER (INCHES)/DRIP RADIUS (FEET)
NOTE: DIAMETER MEASURED AT BREAST HEIGHT

LINE TYPES

CATV LINE — COMMUNICATION LINE — EASEMENT LINE — FENCE LINE — FIBER OPTIC LINE — GAS LINE — EDGE OF GRAVEL LINE — OVERHEAD LINE — PHONE LINE — POWER LINE — SANITARY SEWER LINE — STORM DRAIN LINE — WATER LINE

ITEM	PROPOSED	EXISTING
SANITARY SEWER		SS
STORM DRAIN		SD
WATER		W
GAS		G
TELEPHONE		T
POWER		P
TELEVISION		TV
FENCE	X X	X X
RAILROAD		
CURB, DRIVEWAY, P.C.C. SIDEWALK		
HEDGE OR BRUSH		
TREES		
STREET OR ALLEY RIGHT OF WAY	R/W	
PLATTED LOT LINE		
PLATTED LOT LINE (ABANDONED)		
OWNERSHIP LINE		
EASEMENT OR TEMPORARY RIGHT OF WAY		
IMPROVEMENT DISTRICT BOUNDARY		
PROJECT CENTERLINE AND STATIONING	2 3 4 5+00	
CITY LIMITS LINE		

BARRICADE
FLOW DIRECTION
TELEPHONE MANHOLE
TELEPHONE PEDESTAL
SANITARY SEWER MANHOLE
STORM DRAIN MANHOLE
CATCH BASIN
JUNCTION BOX
FIRE HYDRANT AND VALVE
WATER METER
WATER VALVE
POWER POLE
POWER POLE W/ANCHOR
POLE W/LUMINARE
LIGHT POLE
SIGN POST
MAILBOX
TRAFFIC SIGNAL
X-WALK SIGNAL

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

DSN. JW
DRN. IH
CKD. JW
DATE: 01/2025

William J. Wells 2025.01.14 12:13:05-08'00'

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2024
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
E-mail: westech@westech-eng.com

BLOSSOM GARDENS APARTMENTS LLC
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

COVER, INDEX, AND VICINITY MAPS

DRAWING
C0.0

JOB NUMBER
3366.1000.0

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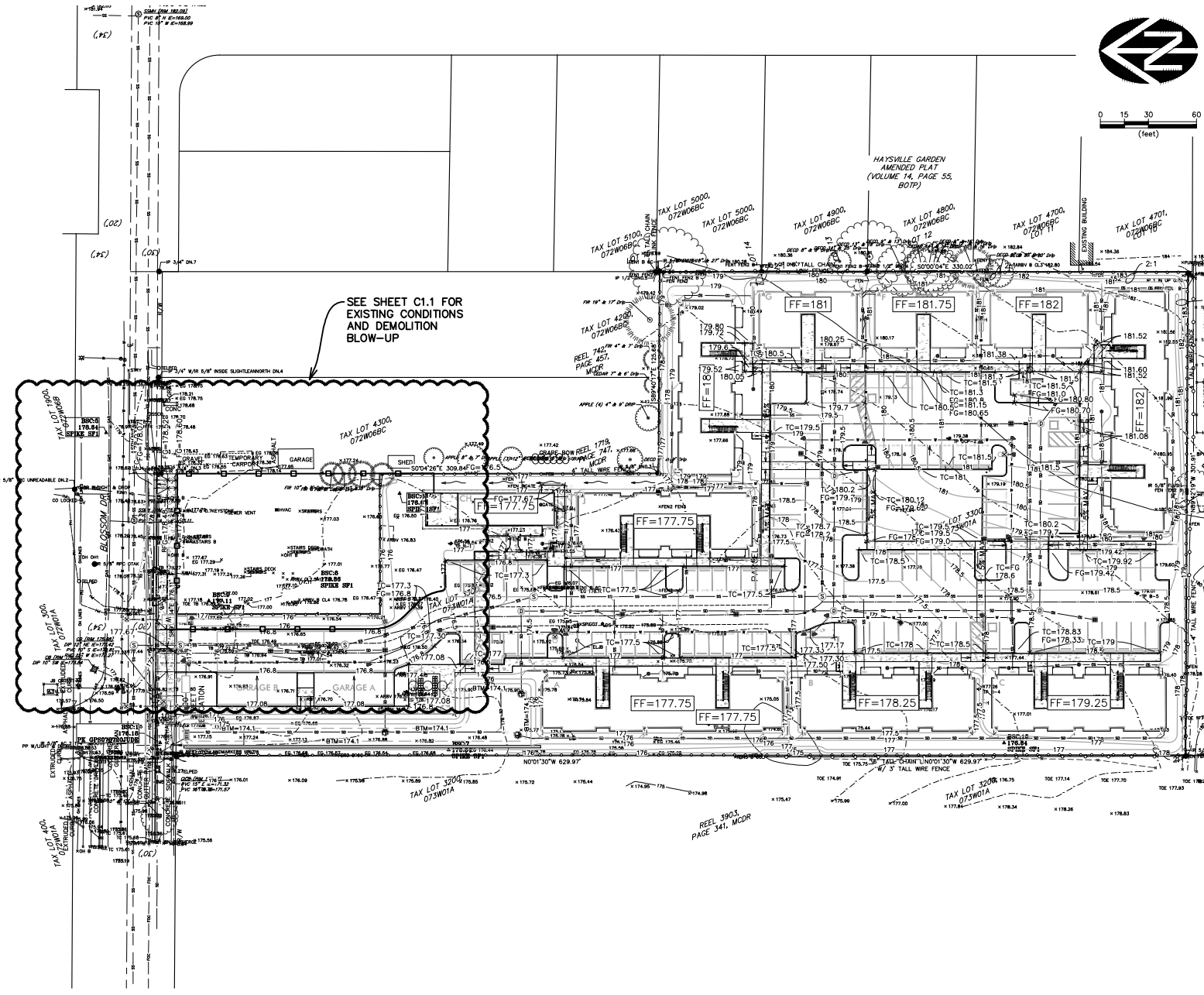

REVISIONS			
DESCRIPTION	DATE	NO.	BY

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DRN. IH
CK'D. JW
DATE: 01/2025

William J. Wells 2025.01.14 12:13:10-08'00'

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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EXISTING CONDITIONS AND DEMOLITION PLAN

DRAWING
C1.0

JOB NUMBER
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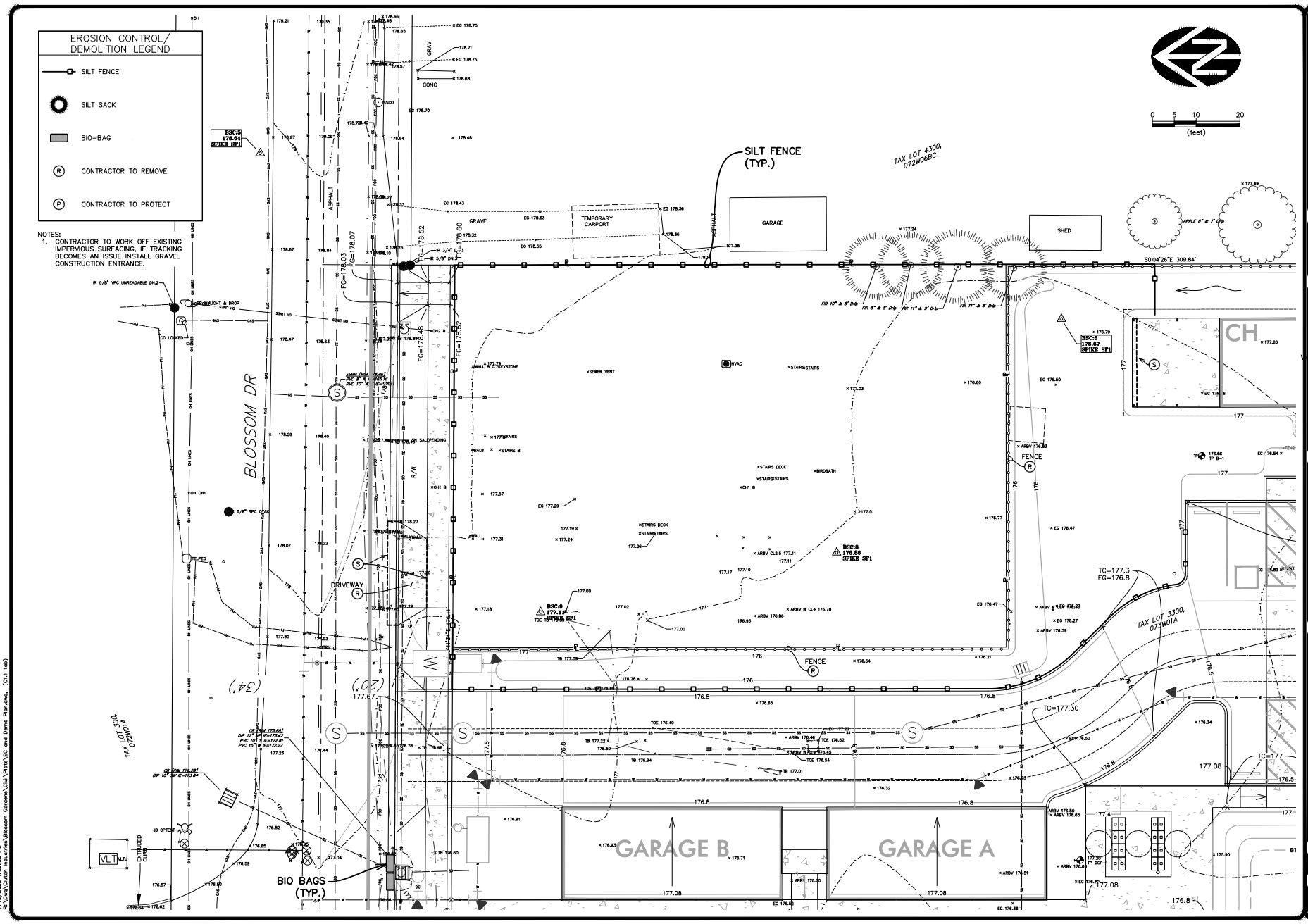

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		REVISIONS	

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DRN. IH
CKD. JW
DATE: 01/2025

William J. Wells 2025.01.14 12:13:14-08'00'

REGISTERED PROFESSIONAL ENGINEER
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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EXISTING CONDITIONS AND DEMOLITION BLOW-UP PLAN

DRAWING
C1.1

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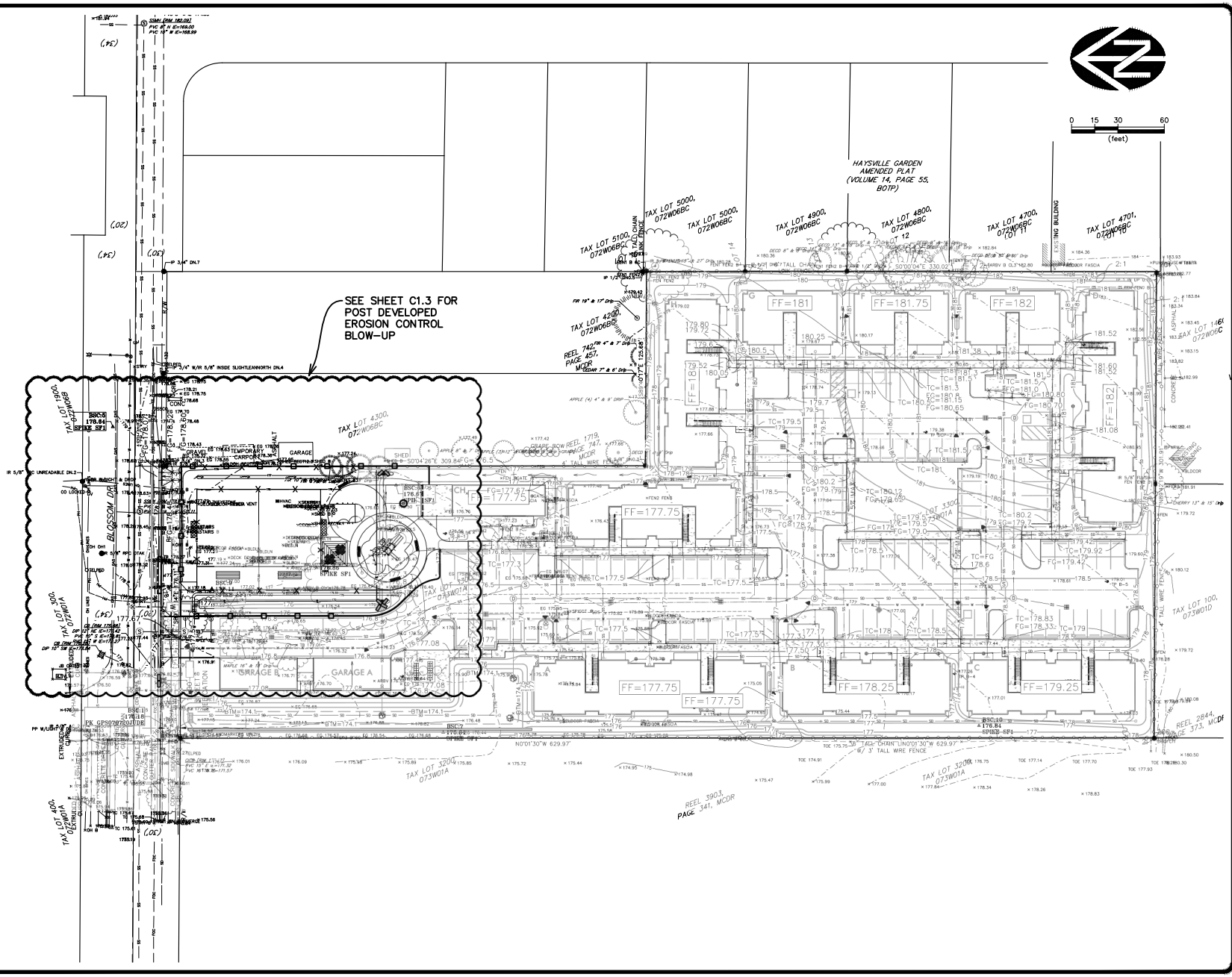

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		REVISIONS	

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IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY
1"

DSN. JW
DRN. IH
CKD. JW
DATE: 01/2025

William J. Wells 2025.01.14 12:13:18-08'00

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2024
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

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Phone: (503) 585-2474, Fax: (503) 585-3986
E-mail: westech@westech-eng.com

BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

POST-DEVELOPED EROSION CONTROL PLAN

DRAWING
C1.2

JOB NUMBER
3366.1000.0

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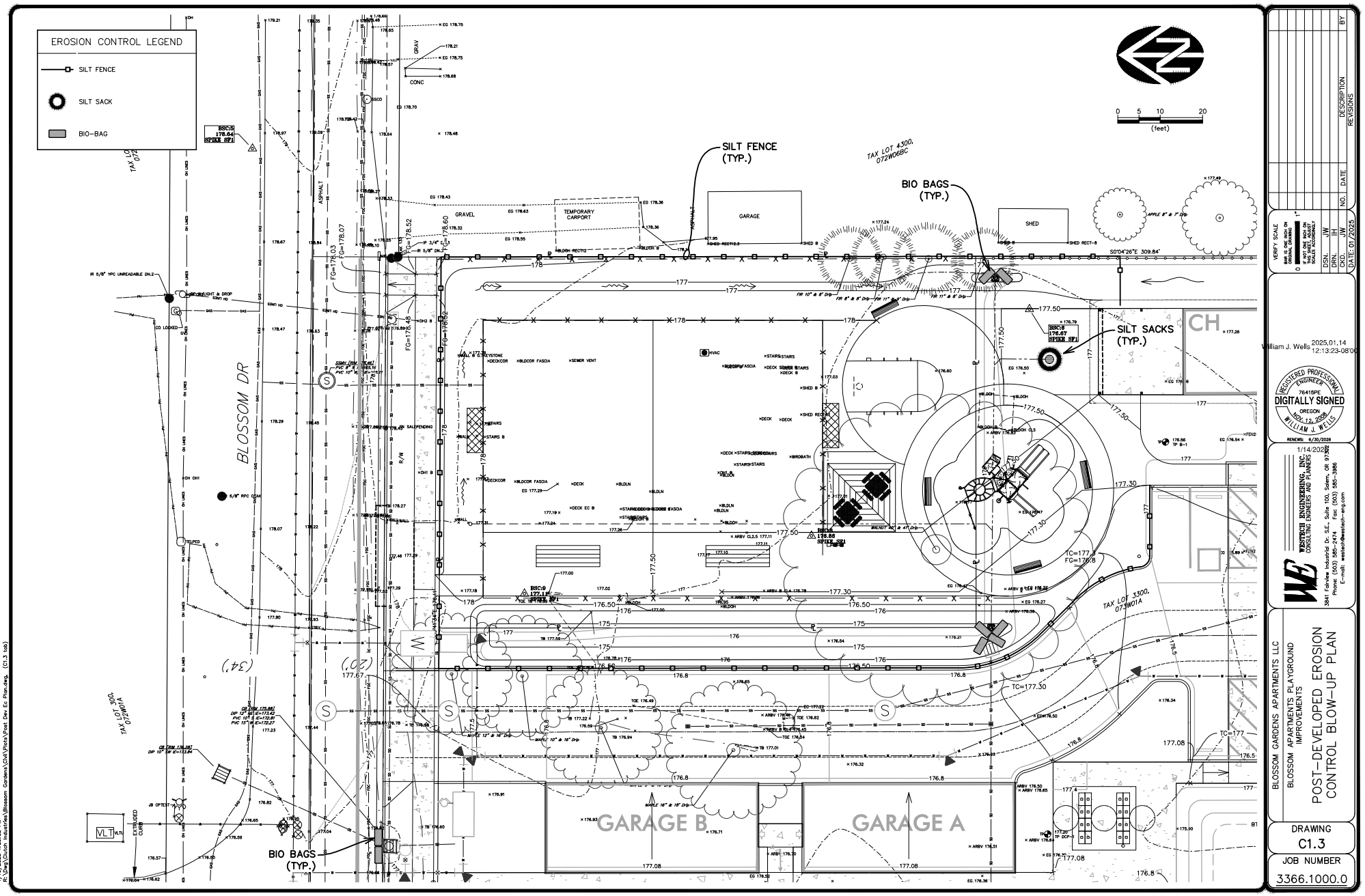

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IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

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		REVISIONS	

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DRN. IH
CKD. JW
DATE: 01/2025

William J. Wells 2025.01.14 12:13:23-08'00'

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

POST-DEVELOPED EROSION CONTROL BLOW-UP PLAN

DRAWING
C1.3

JOB NUMBER
3366.1000.0

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DEQ EROSION CONTROL STANDARD NOTES:

1. Hold a pre-construction meeting of project construction personnel that includes the inspector to discuss erosion and sediment control measures and construction limits. (Schedule A.8.c.i.(3))
2. All inspections must be made in accordance with DEQ 1200-C permit requirements. (Schedule A.12.b and Schedule B.1)
3. Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements. (Schedule B.1.c and B.2)
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. During inactive periods of greater than seven (7) consecutive calendar days, the above records must be retained by the permit registrant but do not need to be at the construction site. (Schedule B.2.c)
5. All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Schedule A B.a)
6. The ESCP must be accurate and reflect site conditions. (Schedule A.12.c.i)
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent within 10 days. (Schedule A.12.c.iv. and v)
8. Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A.7.a.iii)
9. Identify, mark, and protect (by construction fencing or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Schedule A.8.c.i.(1) and (2))
10. Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Schedule A.7.a.v)
11. Maintain and delineate any existing natural buffer within the 50-feet of waters of the state. (Schedule A.7.b.i.and (2(a)(b))
12. Install perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance. (Schedule A.8.c.i.(5))
13. Control both peak flow rates and total stormwater volume, to minimize erosion at outlets and downstream channels and streambanks. (Schedule A.7.c)
14. Control sediment as needed along the site perimeter and at all operational internal storm drain inlets at all times during construction, both internally and at the site boundary. (Schedule A.7.d.i)
15. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
16. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. Temporary or permanent stabilizations measures are not required for areas that are intended to be left unvegetated, such as dirt access roads or utility pole pads.(Schedule A.8.c.ii.(3))
17. Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
18. Prevent tracking of sediment onto public or private roads using BMPs such as: construction entrance, graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Schedule A 7.d.ii and A.8.c.i(4))
19. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(5))
20. Control prohibited discharges from leaving the construction site, i.e., concrete wash-out, wastewater from cleanout of stucco, paint and curing compounds. (Schedule A.6)
21. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives from construction operations. (Schedule A.7.e.i.(2))
22. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Schedule A. 7.e.iii.)
23. Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A 7.a.iv)
24. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Schedule A.9.b.iii)
25. If an active treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Schedule A.9.d)
26. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Schedule A 7.b)
27. As needed based on weather conditions, at the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Schedule A 7.e.ii.(2))
28. Construction activities must avoid or minimize excavation and bare ground activities during wet weather. (Schedule A.7.a.i)
29. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Schedule A.9.c.i)
30. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height and before BMP removal. (Schedule A.9.c.i)
31. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Schedule A.9.c.iii& iv)
32. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean-up of sediment shall be performed according to the Oregon Division of State Lands required timeframe. (Schedule A.9.b.i)
33. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Schedule A.9.b.ii)
34. The entire site must be temporarily stabilized using vegetation or a heavy mulch layer, temporary seeding, or other method should all construction activities cease for 30 days or more. (Schedule A.7.f.i)
35. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Schedule A.7.f.iii)
36. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils must be removed and disposed of properly, unless doing so conflicts with local requirements. (Schedule A.8.c.iii(1) and D.3.c.ii and iii)

Rev. 12/15/15 By: Krista Ratliff

YEAR: / MONTH:	'25 03	'25 04	'25 05	'25 06	'25 07	'25 08	'25 09	'25 10	'25 11	'25 12	'26 01	'25 02
CLEARING	X	X	X									
EXCAVATION	X	X	X	X	X	X	X	X	X			
GRADING	X	X	X	X	X	X	X	X	X			
CONSTRUCTION												
SEDIMENT CONTROLS:												
Silt Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Traps												
Sediment Basins												
Storm Inlet Protection	X	X	X	X	X	X	X	X	X	X	X	X
Drainage Swales												
Check Dams												
Contour Furrows												
Terracing												
Pipe Slope Drains												
Rock Outlet Protection												
Gravel Construction Entrance												
Grass-lined Channel (Turf Reinforcement Mats)												
Protection of trees with construction fences												
Temporary Seeding and Planting												
Permanent Seeding and Planting											X	X
Other:												

CONTROL MEASURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Silt Fencing	X	X	X	X	
Construction Entrance	X	X			
Sediment Traps			X	X	
Storm Inlet Protection	X	X	X	X	
Concrete Washout					
Rock Outlet Protection					
Permanent Seeding and Planting					X

Phase 1: Prior to Ground Disturbance
Phase 2: After Completion of Rough Grading
Phase 3: After Installation of Storm Facilities
Phase 4: After Paving & Construction
Phase 5: After Project Completion and Cleanup

INSPECTION FREQUENCY FOR BMP

Site Condition	Minimum Frequency
1. Active period	Daily when stormwater runoff, including runoff from snowmelt, is occurring. At least once every 14 days, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility.	Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than seven (14) consecutive calendar days	Once every month.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location.
5. Periods during which discharge is unlikely due to frozen conditions	Monthly. Resume monitoring immediately upon melt, or when weather conditions make discharge likely.

BMP Rationale

A comprehensive list of available Best Management Practices (BMP) options based on DEQ's 1200-C Permit Application and ESCP Guidance Document has been reviewed to complete this Erosion and Sediment Control Plan. Some of the above listed BMPs were not chosen because they were determined to not effectively manage erosion prevention and sediment control for this project based on specific site conditions, including soil conditions, topographic constraints, accessibility to the site, and other related conditions. As the project progresses and there is a need to revise the ESCP, an Action Plan will be submitted.

SOIL TYPE(S): PER MARION CO. SOIL SURVEY THE SITE SOILS INCLUDE, "WOOBURN SILT LOAM, 0-3% SLOPES."

EROSION HAZARD: PER MARION CO. SOIL SURVEY EROSION HAZARD RANGE IS "SLIGHT"

SITE AREA: 0.25 Ac

DISTURBANCE AREA: 0.25 Ac

SUPPLEMENTAL WESTECH NOTES:

1. Erosion control measures shall be maintained in such a manner as to ensure that sediment and sediment-laden water does not enter the drainge system, roadways, or violate applicable water quality standards.
2. The erosion control construction, maintenance, replacement and upgrading of the erosion control facilities is the responsibility of the Contractor until all construction is completed and approved, and permanent erosion control (i.e. vegetation/landscaping) is established on all disturbed areas.
3. All recommended erosion control procedures are dependent on construction methods, staging, site conditions, weather and scheduling. During the construction period, erosion control facilities shall be upgraded as necessary due to unexpected storm events and to ensure that sediment and sediment laden water does not leave the site.
4. The Contractor is responsible for control of sediment transport within project limits. If an installed erosion control system does not adequately contain sediment on site, then the erosion control measures shall be adjusted or supplemented by the Contractor as necessary to ensure that sediment laden water does not leave the site. Additional measures shall be provided as required to ensure that all paved areas are kept clean for the duration of the project. Additional interim measures will include, at a minimum, installation of silt fences in accordance with the details shown on the drawings. These measures shall be installed along all exposed embankments and cut slopes to prevent sediment transport.
5. All existing and newly constructed storm inlets and drains shall be protected until pavement surfaces are completed and/or vegetation is established.
6. Erosion control facilities and sediment fences on active sites shall be inspected by the Contractor at least daily during any period with measurable precipitation. Any required repairs or maintenance shall be completed immediately. The erosion control facilities on inactive sites shall be inspected and maintained by the Contractor a minimum of once a month or within 24 hours following the start of a storm event.
7. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system. The Contractor shall remove all accumulated sediment from all impacted catch basins and storm pipes prior to acceptance by the Owner.
8. The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.
9. The Contractor shall provide site watering as necessary to prevent wind erosion of fine-grained soils.
10. Unless otherwise indicated on the drawings, all temporary erosion control facilities, including sediment fences, silt sacks, bio-bags, etc. shall be removed by the Contractor within 30 days after permanent landscaping/vegetation is established.
11. Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to a post.
12. Sediment fence shall be installed per drawing details. Sediment fences shall have adequate support to contain all silt and sediment captured.
13. The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and 6 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
14. Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 lbs., and be contained in a bag made of 1/2-inch plastic mesh.
15. Sediment barriers shall be maintained until the up-slope area has been permanently stabilized. At no time shall more than 10-inches of sediment be allowed to accumulate behind sediment fences. No more than 2 inches of sediment shall be allowed to accumulate behind bio-filter bags. Sediment shall be removed prior to reaching the above stated depths. New sediment barriers shall be installed uphill as required to control sediment transport.
16. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.
17. The Contractor shall verify that all trucks are well sealed when transporting saturated soils from the site. Water drippage from trucks transporting saturated soils must be reduced to less than 1 gallon per hour prior to leaving the site.
18. The entrance shall be maintained in a condition that will prevent tracking or flow of mud onto the public right-of-way or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment.
19. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment laden water does not enter the storm drain system.
20. Temporary grass cover measures must be fully established by October 15th, or other cover measures (ie. erosion control blankets with anchors, 3-inches minimum of straw mulch, 6 mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30th. To establish an adequate grass stand for controlling erosion by October 15th, it is recommended that seeding and mulching occur by September 1st. Straw mulch, if used, shall not leave any bare ground visible through the straw.
21. Minimum wet weather slope protection. For slopes steeper than 3H:1V but less than 2H:1V, use Tensar/North American Green Type S150 erosion control blanket. For slopes 2H:1V or steeper, use Tensar/North American Green Type SC150 erosion control blanket. Use a minimum of 2-inches straw mulch or Tensar/North American Green Type S150 for slopes flatter than 3H:1V. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a 6-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.
22. Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.
23. Soil preparation. Topsoil should be prepared according to landscape plans, if available, or recommendations of grass seed supplier. It is recommended that slopes be textured before seeding by rack walking (ie. driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.
24. When used, hydromulch shall be applied with grass seed at a rate of 2000 lbs. per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than 10 percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology to be in accordance with seed supplier recommendations.
25. When used in lieu of hydromulch, dry, loose, weed free straw used as mulch shall be applied at a rate of 4000 lbs. per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.
26. When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.
27. Seeding. Recommended erosion control grass seed mix is as follows. Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 % by weight), creeping red fescue (20 % by weight). Application rate shall be 100 lbs. per acre minimum.
28. Grass seed shall be fertilized at a rate of 10 lbs. per 1000 S.F with 16- 16-16 slow release type fertilizer. Development areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.
29. Prior to starting construction contractor shall acquire the services of a DEQ Certified Erosion and Sediment Control Inspector and shall submit an "Action Plan" to DEQ indentifying their names, contact information, training and experience as required in Schedule A.6.b.i-ii of the 1200-C Permit
30. Contractor shall submit "Notice of Termination" to DEQ to end the 1200-C permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occured.

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRN. IH
CKD. JW
DATE: 01/2025

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REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

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BLOSSOM GARDENS APARTMENTS LLC
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EROSION CONTROL NOTES

DRAWING
C1.4

JOB NUMBER
3366.1000.0

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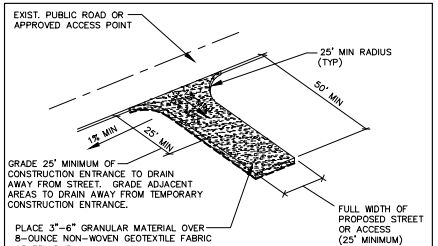


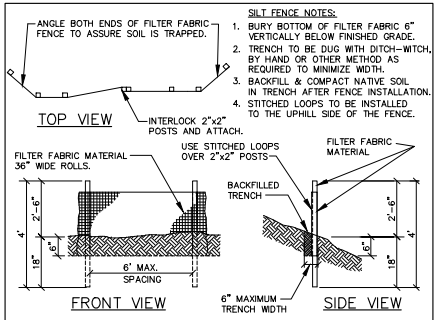
CONSTRUCTION NOTES:

1. THE AREA OF THE CONSTRUCTION ENTRANCE SHALL BE STRIPPED OF ALL TOPSOIL, VEGETATION, ROOTS, AND OTHER NON–COMPACTABLE MATERIAL.
2. SUBGRADE SHALL BE COMPACTED AND PROOFROLLED PRIOR TO PLACEMENT OF GRANULAR MATERIAL. FAILURE TO PASS PROOFROLL WILL REQUIRE USE OF WET WEATHER SECTION.
3. FAILURE OR PUMPING OF THE DRY WEATHER SECTION WILL REQUIRE REMOVAL OF THE GRANULAR MATERIAL AND INSTALLATION OF THE WET WEATHER SECTION.

MAINTENANCE NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 3"–6" INCH STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN–OUT OF STRUCTURES USED TO TRAP SEDIMENT.
2. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
3. ALL TRUCKS TRANSPORTING SATURATED SOILS SHALL BE WELL SEALED. WATER DRIPPAGE FROM TRUCKS MUST BE REDUCED TO 1 GALLON PER HOUR PRIOR TO LEAVING THE SITE.

LAST REVISION DATE:	JO #
MAY 2013	STANDARD
TEMPORARY CONSTRUCTION ENTRANCE (NTS)	
WESTECH ENG.	DETAIL NO. 6100



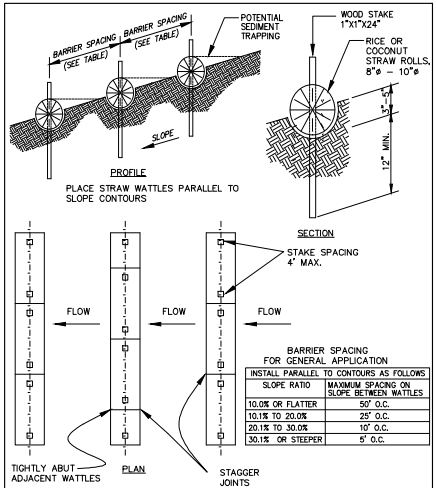
SILT FENCE NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. TRENCH TO BE DUG WITH DITCH–WITCH, BY HAND OR OTHER METHOD AS REQUIRED TO MINIMIZE WIDTH.
3. BACKFILL & COMPACT NATIVE SOIL IN TRENCH AFTER FENCE INSTALLATION.
4. STITCHED LOOPS TO BE INSTALLED TO THE UPHILL SIDE OF THE FENCE.

MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE:	JO #
APRIL 2014	STANDARD
SEDIMENT BARRIERS (NTS)	
WESTECH ENG.	DETAIL NO. 6110



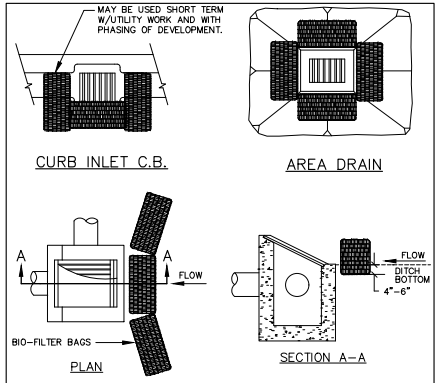
BARRIER SPACING FOR GENERAL APPLICATION

INSTALL PARALLEL TO CONTOURS AS FOLLOWS	
SLOPE RATIO	MAXIMUM SPACING ON SLOPE BETWEEN WATTLES
10.0% OR FLATTER	50' O.C.
10.1% TO 20.0%	25' O.C.
20.1% TO 30.0%	10' O.C.
30.1% OR STEEPER	5' O.C.

NOTES:

1. ALL MATERIAL SHALL CONFORM TO OSSC (ODOT/APWA) SPECIFICATIONS, CURRENT EDITION.
2. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
3. AT NO TIME SHALL SEDIMENT BE ALLOWED TO ACCUMULATE ABOVE THE TOP OF THE STRAW WATTLE.
4. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

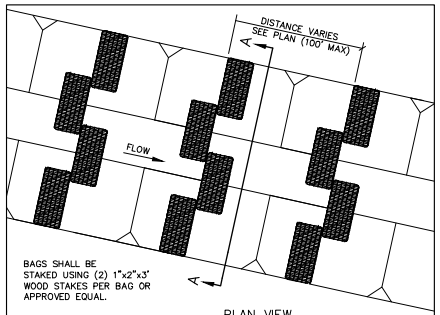
LAST REVISION DATE:	JO #
JUNE 2015	STANDARD
STRAW WATTLE SEDIMENT BARRIER (NTS)	
WESTECH ENG.	DETAIL NO. 6120



MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

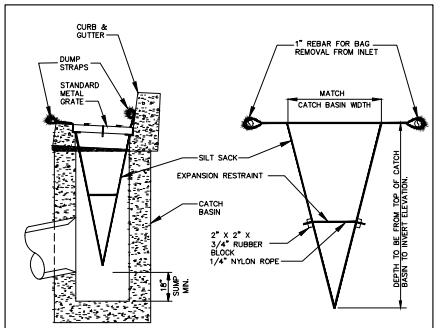
LAST REVISION DATE:	JO #
APRIL 2014	STANDARD
INLET SEDIMENT CONTROL (NTS)	
WESTECH ENG.	DETAIL NO. 6130



MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.
4. PT. 'A' SHALL BE 6" MIN. HIGHER THAN PT. 'B'.

LAST REVISION DATE:	JO #
APRIL 2014	STANDARD
DITCH AND SWALE EROSION PROTECTION (NTS)	
WESTECH ENG.	DETAIL NO. 6140



NOTES:

1. EMPTY SILT SACK AS NECESSARY.
2. SILTSACK SEDIMENT CONTROL DEVICE AS MANUFACTURED BY ACF ENVIRONMENTAL AND SUPPLIED BY ACF WEST (503) 771–5115 OR APPROVED EQUAL.

LAST REVISION DATE:	JO #
OCT 2002	STANDARD
SILTSACK INLET DETAIL (NTS)	
WESTECH ENG.	DETAIL NO. 6150

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REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EROSION CONTROL DETAILS

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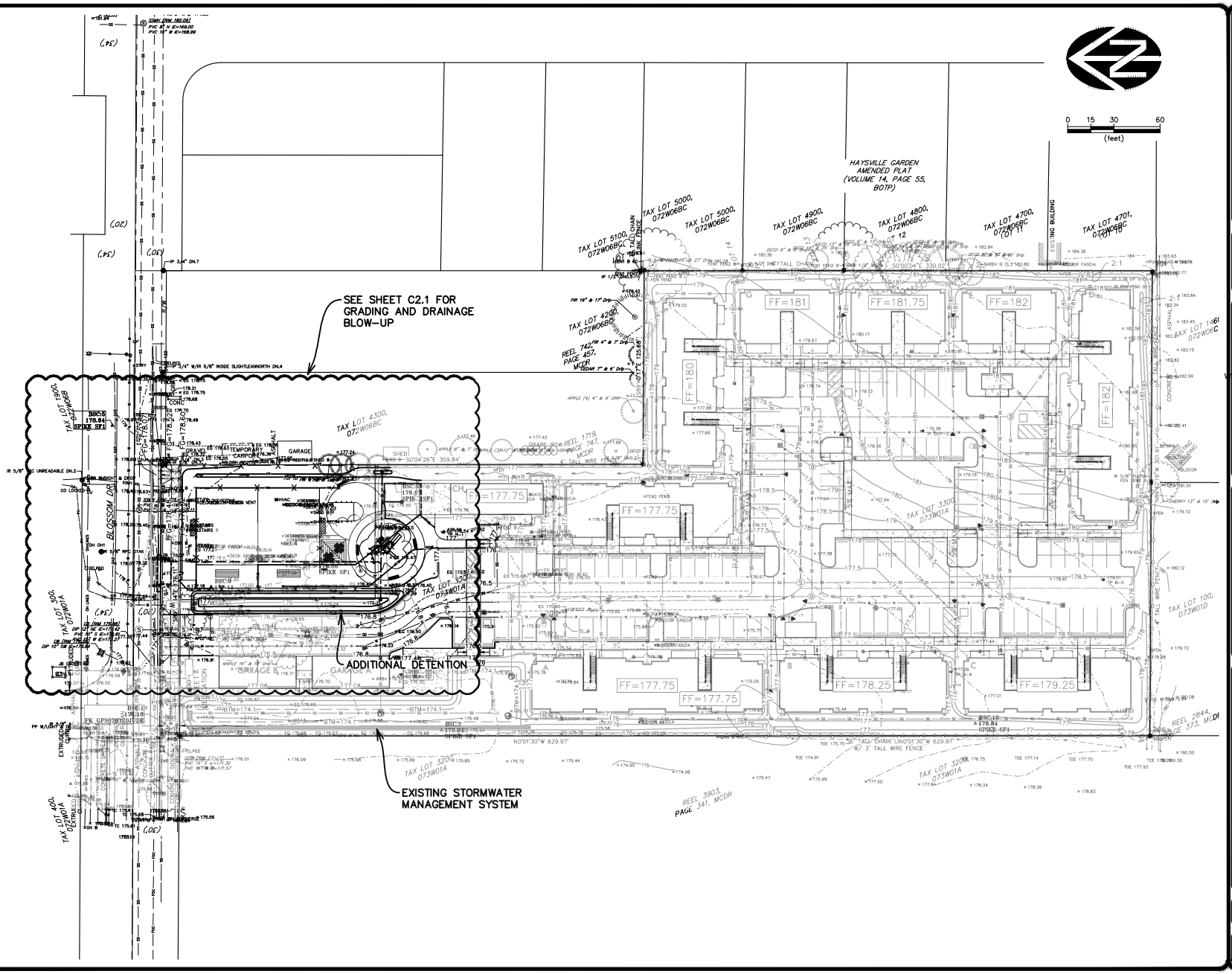

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REGISTERED PROFESSIONAL ENGINEER
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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

GRADING AND DRAINAGE PLAN

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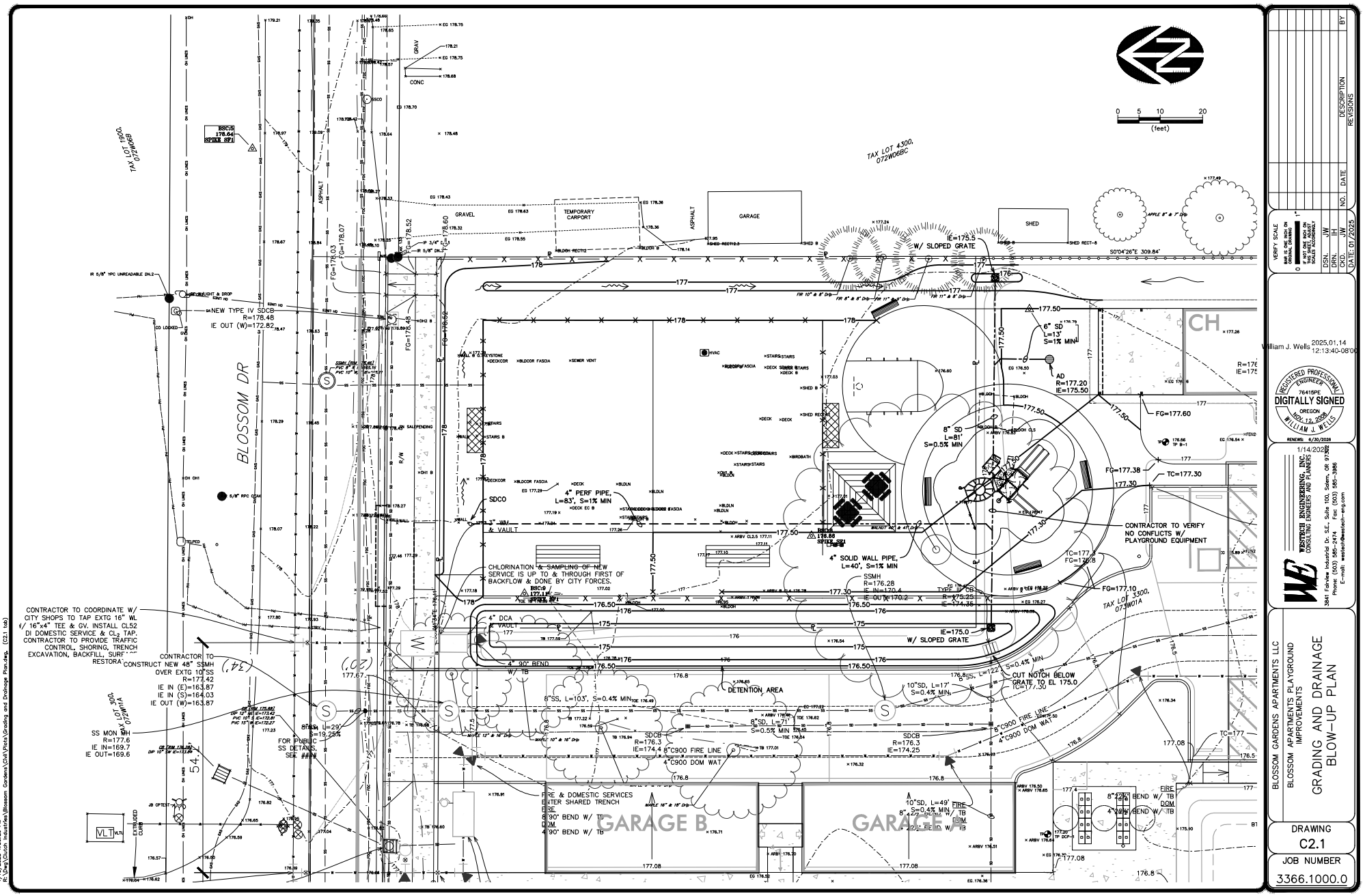

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REGISTERED PROFESSIONAL ENGINEER
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DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

GRADING AND DRAINAGE BLOW-UP PLAN

DRAWING
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GENERAL NOTES
1. Contractor shall procure, and conform to all construction permits required by the City of Salem and Marion County. Contractor shall coordinate and pay all fees and costs associated with connecting to existing water, sanitary sewer and storm sewer facilities, including services and inspections by the Approving Agency.

2. Owner to pay all project permit costs, including but not limited to utility tapping, TV, and chlorination costs. The Contractor shall coordinate with the Approving Agency to determine appropriate fees and provide the Owner with 48 hours notice prior to the required payment of fees or costs.

3. Oregon law requires the Contractor to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952–001–0010 through OAR 952–001–0090. Obtain copies of the rules by calling the center. (Note: the telephone number for the Oregon Utility Notification Center is 503–232–1987).

4. Contractor to notify City, County and all utility companies a minimum of 48 business hours (2 business days) prior to start of construction, and comply with all other notification requirements of the Approving Agency with jurisdiction over the work.

5. Contractor shall provide all bonds and insurance required by public and/or private agencies having jurisdiction. Where required by public and/or private agencies having jurisdiction, the Contractor shall submit a suitable maintenance bond prior to final payment.

6. All materials and workmanship for facilities in street right–of–way or easements shall conform to Approving Agencies' construction specifications wherein each has jurisdiction, including but not limited to the City, County, Oregon Health Division (OHD) and the Oregon Department of Environmental Quality (DEQ).

7. Unless otherwise approved by the Public Works Director, construction of all public facilities shall be done between 7:00 a.m. and 6:00 p.m., Monday through Saturday.

8. The Contractor shall perform all work necessary to complete the project in accordance with the approved construction drawings including such incidentals as may be necessary to meet the Approving Agencies' requirements and provide a completed project.

9. Any inspection by the City, County or other Approving Agency shall not, in any way, relieve the Contractor from any obligation to perform the work in strict compliance with the contract documents, applicable codes, and Approving Agency requirements.

10. Contractor shall maintain one complete set of approved drawings on the construction site at all times whereon he will record all approved deviations in construction from the approved drawings, as well as the station locations and depths of all existing utilities encountered. These field record drawings shall be kept up to date at all times and shall be available for inspection by the Approving Agency or Owner's Representative upon request. Failure to conform to this requirement may result in delay in payment and/or final acceptance of the project.

11. Upon completion of construction of all new facilities, Contractor shall submit a clean set of field record drawings containing all as–built information to the Engineer. All information shown on the Contractor's field record drawings shall be subject to verification. If significant errors or deviations are noted, an as–built survey prepared and stamped by a registered professional Land Surveyor shall be completed at the Contractor's expense.

12. Contractor shall procure and conform to DEQ stormwater permit No. 1200C for construction activities where 1 acre or more are disturbed.

13. 1200–C Erosion Control Permit & Inspection Responsibilities: After contract award and prior to starting construction, the Contractor shall formally transfer to themself the 1200–C permit and responsibility for erosion control inspection under the permit and notify DEQ. No work shall be performed onsite until the permit has been transferred and DEQ has been notified of the change in inspector responsibility.

14. The contractor shall retain and pay for the services of a registered Civil Engineer and/or Land Surveyor licensed in the State of Oregon to establish construction control and perform initial construction surveys to establish the lines and grades of improvements as indicated on the drawings. Staking for buildings, structures, curbs, gravity drainage pipes/structures and other critical improvements shall be completed using equipment accurate to 0.04 feet horizontally and 0.02 feet vertically, or better. Use of GPS equipment for final construction staking of these critical improvements is prohibited. The registered professional surveyor shall provide the design engineer with copies of all grade sheets for construction staking performed for the project.

15. See architectural drawings for site lighting, site dimensioning, and continuation of all utilities.

TRAFFIC CONTROL
16. Contractor shall erect and maintain barricades, warning signs, traffic cones (and all other traffic control devices required) per City and County requirements in accordance with the current MUTCD (including Oregon amendments). Access to driveways shall be maintained at all times. All traffic control measures shall be approved and in place prior to any construction activity. Prior to any work in the existing public right–of–way, Contractor shall submit final traffic control plan to the Approving Agency for review and issuance of a Lane Closure or Work in Right–of–Way Permit.

17. Prior to any work in the existing right–of–way, Contractor shall submit final traffic control plan to Marion County for review and issuance of lane closure permit. Contractor to obtain a lane closure permit before construction starts for any work within the existing public right–of–way, including public street improvements or driveway connections to existing streets.

TESTING AND INSPECTION:
18. For public and private improvements, the Contractor shall be responsible to ensure that all required or necessary inspections are completed by authorized inspectors prior to proceeding with subsequent work which covers or that is dependent on the work to be inspected. Failure to obtain necessary inspection(s) and approval(s) shall result in the Contractor being fully responsible for all problems and/or corrective measures arising from uninspected work.

19. Unless otherwise specified, the attached "Required Testing and Frequency" table outlines the minimum testing schedule for private improvements on the project. This testing schedule is not complete, and does not relieve the Contractor of the responsibility of obtaining all necessary inspections or observations for all work performed, regardless of who is responsible for payment. Cost for retesting shall be borne by the Contractor.

EXISTING UTILITIES & FACILITIES:
20. The location and descriptions of existing utilities shown on the drawings are compiled from available records and/or field surveys. The Engineer or utility companies do not guarantee the accuracy or the completeness of such records. Contractor shall field verify locations and sizes of all existing utilities prior to construction.

21. Utility locations are based on record information and should be field–verified. Call 1–800–332–2344 at least 48 hours prior to construction for on–site locating of utilities.

22. Contractor shall field verify location and depth of all existing utilities where new facilities cross. All utility crossings marked or shown on the drawings shall be potholed using hand tools or other non–invasive methods prior to excavating or boring. Contractor shall be responsible for exposing potential utility conflicts far enough ahead of construction to make necessary grade or alignment modifications without delaying the work. If grade or alignment modification is necessary, Contractor shall notify the Design Engineer, and the Design Engineer or the Owner's Representative shall obtain approval from the Approving Agency prior to construction.

23. The Contractor shall be responsible for locating and marking all existing survey monuments of record (including but not limited to property and street monuments) prior to construction. If any survey monuments are removed, disturbed or destroyed during construction of the project, the Contractor shall retain and pay for the services of a Registered Professional Surveyor licensed in the State of Oregon to reference and replace all such monuments prior to final payment. The monuments shall be replaced within a maximum of 90 days, and the County Surveyor shall be notified in writing as required by per ORS 209.150.

24. All facilities shall be maintained in–place by the Contractor unless otherwise shown or directed. Contractor shall take all precautions necessary to support, maintain, or otherwise protect existing utilities and other facilities at all times during construction. Contractor to leave existing facilities in an equal or better–than–original condition and to the satisfaction of the Approving Agency and Owner's Representative.

25. Utilities or interfering portions of utilities that are abandoned in place shall be removed by the Contractor to the extent necessary to accomplish the work. The Contractor shall plug the remaining exposed ends of abandoned utilities after appropriate verification procedures have taken place.

26. Contractor shall remove all existing signs, mailboxes, fences, landscaping, etc., as required to avoid damage during construction and replace them to existing or better condition.

27. Unless otherwise approved by the Approving Agency, all field tiles or drain lines intercepted or exposed during construction shall be connected to new storm lines, unless they are removed completely during construction, or are located and plugged at 50 foot maximum intervals uphill of the location intercepted. Any abandoned drain tiles downstream of the intercepting trenches shall be plugged with grout.

28. Any septic tanks encountered during construction shall be pumped out. Contractor shall break bottom of tank out and backfill with pea gravel unless otherwise required by public agencies having jurisdiction. Septic tank removal to be in accordance with County Sanitarian requirements.

29. Any wells encountered shall be abandoned per State of Oregon Water Resources Department requirements.

30. The Contractor shall be responsible for managing construction activities to ensure that public streets and right–of–ways are kept clean of mud, dust or debris. Dust abatement shall be maintained by adequate watering of the site by the Contractor.

GRADING, PAVING & DRAINAGE:
31. Contractor to review soils report prepared by GeoEngineers dated July 28, 2020, and conform to all recommendations listed in the report.

32. All materials and workmanship for compaction, fills, grading, rocking and paving within the public right–of–way shall conform to Marion County Standard Construction Specifications.

33. Unless otherwise noted, all grading, rocking and paving to conform to Oregon Standard Specifications for Construction (OSSC/ODOT/APWA), 2021 edition.

34. Clear and grub within work limits all surface vegetation, trees, stumps, brush, roots, etc. Do not damage or remove trees except as approved by the Owner's Representative or as shown on the drawings. Protect all roots two inches in diameter or larger.

35. Strip work limits, removing all organic matter, which cannot be compacted into a stable mass. All trees, brush, and debris associated with clearing, stripping or grading shall be removed and disposed of off–site.

36. Except as otherwise allowed by the specifications drawing details or notes, immediately following stripping and grading operations, compact subgrade to 92% of the maximum dry density per AASHTO T–180 test method (Modified Proctor). Subgrade must be inspected and approved by the Owner's authorized representative before placing, engineered fills or fine grading for base rock.

37. Engineered fills shall be constructed and compacted in 6" lifts over approved subgrade. All fills shall be engineered and comply with the Oregon Structural Specialty Code, with each lift compacted to 92% of the maximum dry density per AASHTO T–180 test method (Modified Proctor).

38. Granular baserock shall conform to the requirements of OSSC (ODOT/APWA) 02630.10 (Dense Graded Base Aggregate), with no more than 10% passing the #40 sieve and no more than 5% passing the #200 sieve.

39. Compact granular baserock to 92% of the maximum dry density per AASHTO T–180 test method (Modified Proctor). Written baserock compaction test results from an independent testing laboratory must be received by the Owner's authorized representative before placing AC pavement, and a finished rock grade proof–roll (witnessed by the Owners authorized representative) must be performed.

40. A.C. pavement shall conform to OSSC (ODOT/APWA) 00745 (Hot Mixed Asphalt Concrete Pavement) for standard duty mix. Unless otherwise specified or shown on the drawings, base lifts shall be 3/4" dense graded mix, while wearing courses shall be 1/2" dense graded mix. Unless otherwise specified or shown on the drawings, A.C. pavement for parking lots and streets shall be Level 2 mix (50 blow Marshall) per OSSC (ODOT/APWA) 00744.13. A.C. Pavement shall be compacted to a minimum of 91% of maximum density as determined by the Rice standard method. Written AC pavement compaction test results from an independent testing laboratory must be received by the Owner's authorized representative before final payment.

41. Pavement surface shall be a smooth, well–sealed, tight mat without depressions or bird baths. Bony or open graded pavement surfaces shall be repaired to the satisfaction of the Owner's authorized representative, prior to final acceptance of the work.

42. HMAC mixtures shall be placed only when the surface is dry and weather conditions are such that proper handling, finishing and compaction can be accomplished. In no case shall bituminous mixtures be placed when the surface temperature is below the minimum established under 2021 OSSC (ODOT/APWA) 00744.40 (AC – Season and Temperature Limitations) or the project specifications, whichever is more stringent.

43. Contractor shall protect new pavement against traffic as required, until it has cooled sufficiently to avoid tracking.

44. Unless otherwise shown on the drawings or details, straight grades shall be run between all finish grade elevations and/or finish contour lines shown (exception: where grades are shown across sidewalks, slopes shall be adjusted to ensure that maximum allowable sidewalk cross slopes are not exceeded).

45. Finish pavement grades at transition to existing pavement shall match existing pavement grades or be feathered past joints with existing pavement as required to provide a smooth, free draining surface.

46. All existing or constructed manholes, cleanouts, monument boxes, gas valves, water valves and similar structures shall be adjusted to match finish grade of the pavement, sidewalk, landscaped area or median strip wherein they lie. Verify that all valve boxes and risers are clean and centered over the operating nut.

47. Unless otherwise shown on the drawings, no cut or fill slopes shall be constructed steeper than 3H:1V.

48. Unless otherwise shown on the landscape plans, all planter areas, shall be backfilled with approved topsoil minimum 8" thick. Stripping materials shall not be used for planter backfill.

49. Contractor shall seed and mulch (uniformly by hand or hydroseed) all exposed slopes and disturbed areas which are not scheduled to be landscaped, including trench restoration areas. If the Contractor fails to apply seed and mulch in a timely manner during periods favorable for germination, or if the seeded areas fail to germinate, the Owner's Representative may (at his discretion) require the Contractor to install sod to cover such disturbed areas.

50. Grading shown on the drawings is critical to functioning of detention system and shall be strictly followed.

51. Contractor shall coordinate and ensure that detention pond volumes are inspected and approved by public agencies having jurisdiction before paving and landscaping.

CURBS & SIDEWALKS:
52. Unless otherwise shown or indicated on the drawings, 6–inches nominal curb exposure used for design of all parking lot and street grades.

53. Where new curbing connects to existing curbing or is installed along existing streets or pavement, the gutter grade shall match the existing street grades so as to allow drainage from the street to the gutter and through any transitions. The Contractor shall notify the Owner's Representative in writing of any grade discrepancies or problems prior to curb placement.

54. Road widening design is based on available survey taken at random intervals. Street pavement widening cross slope shall be a minimum of 2% and a maximum of 5% except at intersections, where the street cross slopes shall not exceed 2% maximum (intersection defined from end of curb radius both directions). Prior to placing curbs, Contractor shall field verify pavement widening cross slope and contact Engineer if the design pavement widening cross slope is not within the limits stated above.

55. Contractor shall construct all handicap access ramps in accordance with current ADA requirements.

56. Sidewalks shall be a minimum of 4–inches thick. Driveways and alley approaches shall be minimum 8–inches thick. All curbs, sidewalks and driveways shall be constructed using 3300–psi concrete, and shall be cured with Type 1 or Type 1D clear curing compound. All sidewalks shall be ADA compliant.

57. Curb & sidewalk concrete shall be placed only during periods when it will not be damaged by rain (protect unhardened concrete from precipitation). Concrete shall not be placed on frozen baserock. Do not begin concrete placement until temperature in the shade is a minimum of 35°F and rising, and stop placement if air temperature falls below 35°F. Protect concrete from freezing for a minimum of 5 days after placement per OSSC (ODOT/APWA) 00440.40.d & 00756.40 or the project specifications, whichever is more stringent.

58. Contraction joints shall be installed directly over any pipes that cross under the sidewalk, to control cracking. In general, cracks in new curbs or sidewalks (at locations other than contraction joints) are not acceptable, and cracked panels shall be removed & replaced unless otherwise approved by the Approving Agency and the design engineer.

59. All sidewalks shall be ADA compliant. Direction of sidewalk cross slope shall conform with the slope direction shown on the grading plan. Sidewalk cross slopes shall not exceed 1:67 (1.5%) nor be less than 1%. Longitudinal slope shall not exceed 1:20 (5%).

60. Where trench excavation requires removal of PCC curbs and/or sidewalks, the curbs and/or sidewalks shall be sawcut and removed at a tooled joint unless otherwise authorized in writing by the Approving Agency. The sawcut lines shown on the drawings are schematic and not intended to show the exact alignment of such cuts.

61. Unless otherwise shown on the drawings, areas along curbs and sidewalks shall be backfilled with approved topsoil, as well as being seeded and mulched (or hydroseeded).

PIPED UTILITIES:
62. All tapping of existing sanitary sewer, must be done by City forces.

63. All tapping to be done by City of Salem forces. To schedule water/sewer/storm taps call (503) 588–6333. Taps are generally available within two business days.

64. The Contractor shall have appropriate equipment on site to produce a firm, smooth, undisturbed subgrade at the trench bottom, true to grade. The bottom of the trench excavation shall be smooth, free of loose materials or tooth grooves for the entire width of the trench prior to placing the granular bedding material.

65. All pipes shall be bedded with minimum 6–inches of 3/4"–0 crushed rock bedding and backfilled with compacted 3/4"–0 crushed rock in the pipe zone (crushed rock shall extend a minimum of 12–inches over the top of the pipe in all cases). Unless CDF or other backfill is shown or noted on the drawings, crushed rock trench backfill shall be used under all improved areas, including pavement, sidewalks, foundation slabs, buildings, etc.

66. Granular trench bedding and backfill shall conform to the requirements of OSSC (ODOT/APWA) 02630.10 (Dense Graded Base Aggregate), 3/4"–0. Unless otherwise shown on the drawings, compact granular backfill to 92% of the maximum dry density per AASHTO T–180 test method (Modified Proctor).

67. Contractor shall arrange to abandon existing sewer and water services not scheduled to remain in service in accordance with approving agency requirements.

68. All piped utilities abandoned in place shall have all openings closed with concrete plugs with a minimum length equal to 2 times the diameter of the abandoned pipe.

69. The end of all utility service lines shall be marked with a 2–x–4 painted white and wired to pipe stub. The pipe depth shall be written on the post in 2" block letters.

70. All non–metallic water, sanitary and storm sewer piping shall have an electrically conductive insulated 12 gauge solid core copper tracer wire the full length of the installed pipe using blue wire for water and green wire for storm and sanitary piping. Tracer wire shall be extended up into all valve boxes, catch basins, manholes and lateral cleanout boxes. Tracer wire penetrations into manholes shall be within 18 inches of the rim elevation and adjacent to manhole steps. The tracer wire shall be tied to the top manhole step or otherwise supported to allow retrieval from the outside of the manhole. All tracer wire splices shall be made with waterproof splices or waterproof/corrosion resistant wire nuts.

71. No trenches in sidewalks, roads, or driveways shall be left in an open condition overnight. All such trenches shall be closed before the end of each workday and normal traffic and pedestrian flows restored.

72. Before mandrel testing, TV inspection or final acceptance of gravity pipelines, all trench compaction shall be completed and all sewers and storm drains flushed & cleaned to remove all mud, debris & foreign material from the pipelines, manholes and/or catch basins.

73. Where future extensions are shown upstream of new manholes (sewer or storm), catch basins or junction boxes, pipe stubs (with gasketed caps) shall be installed at design grades to a point 2' minimum outside of the structure.

WATER SYSTEM:
74. City forces to operate all valves, including fire hydrants, on existing public mains.

75. All 4–inch water mains and larger shall be class 52 ductile iron.

76. All fittings 4–inches through 24–inches in diameter shall be ductile iron fittings in conformance with AWWA C–153 or AWWA C–110. The minimum working pressure for all MJ cast iron or ductile iron fittings 4–inches through 24–inch in diameter shall be 350 psi for MJ fittings and 250 psi for flanged fittings.

77. All water mains to be installed with a minimum 36 inch cover to finish grade unless otherwise noted or directed. Water service lines shall be installed with a minimum 30–inch cover. Deeper depths may be required as shown on the drawings or to avoid obstructions.

78. Unless otherwise shown or approved by the Engineer, all valves shall be flange connected to adjacent tees or crosses.

79. Thrust restraint shall be provided on all bends, tees and other direction changes per Approving Agency requirements and as specified or shown on the drawings.

80. Water service pipe 2–inch and smaller on the public side of the meter shall be Type K soft copper tubing conforming to ASTM B–88. Water service pipe 3–inch and larger shall conform to the construction drawings and approving agency standards.

81. Unless otherwise noted, water service pipe 3–inch and smaller on the private side of the meter shall be Schedule 40 PVC. Water service pipe 4–inches and larger on the private side of the meter shall be C900 DR 18. Unless otherwise specified, private water service piping shall be hydrostatically pressure tested to a minimum of 150% of the maximum static pressure at the site. All materials and workmanship for all private water lines, including water lines located within any building envelope, shall be installed in conformance with Uniform Plumbing Code requirements. All water service pipe on the private side of the meter shall be installed by a licensed plumber in accordance with Uniform Plumbing Code requirements.

82. Domestic and fire backflow prevention devices and vaults shall conform to requirements of public and/or private agencies having jurisdiction. The Contractor shall be responsible for having backflow devices tested and certified prior to final acceptance of the work.

83. Contractor shall provide all necessary equipment and materials (including plugs, blowoffs, valves, service taps, etc.) required to flush, test and disinfect waterlines per the Approving Agency requirements.

84. The work shall be performed in a manner designated to maintain water service to buildings supplied from the existing waterlines. In no case shall service to any main line or building be interrupted for more than four (4) hours in any one–day. Contractor shall notify the Approving Agency and all affected residents and businesses a minimum of 24 business hours (1 business day) before any interruption of service.

85. Where new waterlines cross below or within 18–inches vertical separation above a sewer main or sewer service lateral, center one full length of waterline pipe at point of crossing the sewer line or sewer lateral. In addition (unless otherwise approved in writing by the Approving Agency, existing sewer mains and/or service laterals within this zone shall be replaced with a full length of Class 50 Ductile Iron or C–900 PVC pipe (DR 18) centered at the crossing in accordance with OAR 333–061 and Approving Agency requirements. Connect to existing sewer lines with approved rubber couplings. Example: For an 8–inch waterline with 36–inches cover, 4–inch service lateral inverts within 5.67–feet (68–inches) of finish grade must be DI or C–900 PVC at the crossing.

86. All waterlines, services and appurtenances shall be pressure tested for leakage. All testing shall conform to requirements as outlined in the specifications, Approving Agency standards and/or testing forms. The hydrostatic test shall be performed with all service line corporation stops open and meter stops closed, and with all hydrant line valves open. Prior to the start of each pressure test, the position of all mainline valves, hydrant line valves and service line corporation stops in the test segment shall be verified.

87. After the pressure test and prior to disinfecting, the water lines shall be thoroughly flushed through hydrants, blow offs or by other approved means.

88. Disinfection & Bacteriological Testing. All water mains and service lines shall be chlorine disinfected per Approving Agency requirements, AWWA C–651 or OAR 333–061 (25 mg/L minimum chlorine solution, 24 hours contact time), whichever is more stringent. Unless otherwise approved by the Approving Agency, a Representative from the Approving Agency shall witness the application of the chlorine solution and the chlorine testing at the end of the 24 hour contact period. After the 24 hour chlorine contact period, the free chlorine concentration shall be checked, and if it is found to be 10 mg/L or more, the chlorine solution shall be drained (otherwise the line shall be rechlorinated), the waterline flushed with potable water, and a minimum of two consecutive samples taken at least 24 hours apart shall be collected from the waterline for microbiological analysis (ie. one sample immediately after flushing, and another sample 24 hours later). Contractor to pay for laboratory analysis of water samples taken under the supervision of the Approving Agency. If the results of both analyses indicate that the water is free of coliform organisms, the waterline may be placed in service. Should the initial treatment prove ineffective, the chlorination shall be repeated until confirmed tests show acceptable results.

89. Disinfection of Connections. For connections which cannot be disinfected with the waterline mainlines as noted above, all fittings, valves and appurtenances, including tool surfaces which will come in contact with potable water, shall be thoroughly cleaned by washing with potable water and then swabbed or sprayed with a one percent (1%) hypochlorite solution (10,000 mg/L) in accordance with the requirements of AWWA C–651 and OAR 333–061.

SEWER & STORM MANHOLES:
90. All precast manholes shall be provided with integral rubber boots. Where manholes without integral rubber boots are approved by the Owner's Representative and Approving Agency, a pipe joint shall be provided on all mainlines within 1.5 feet of the outside face of the manhole. Where required by Public Works, watertight lockdown lids required on all manholes outside of public right–of–way.

91. Openings for connections to existing manholes shall be made by core–drilling the existing manhole structure, and installing a rubber boot. Connections shall be watertight and shall provide a smooth flow into and through the manhole with no ponding. Small chipping hammers or similar light tools which will not damage or crack the manhole base may be used to shape channels, but may be used to enlarge existing openings only if authorized in writing by the Owner's Representative. Use of pneumatic jackhammers shall be prohibited.

92. Manhole channels depths (sewer & storm) shall be to the heights shown on the drawings, but in no case shall the channel depth be less than 2/3 of the pipe diameter. Channels, as well as shelves between the channels and the manhole walls, shall be sloped to drain per plan details.

93. Manholes constructed over existing sanitary sewers shall conform to the requirements of OSSC (ODOT/APWA) 490.41, Manholes over Existing Sewers. The existing pipe shall not be broken out until after the completion of the manhole test.

SANITARY SEWER SYSTEM:
94. Unless otherwise specified, sanitary sewer pipe shall be solid wall PVC in conformance with ASTM D3034, SDR 35 (≤15") or ATSM F–679, PS 46 (≥18"). Minimum stiffness shall be 46 psi per ASTM D–2412 and joint type shall be elastomeric gasket conforming to ASTM D–3212. All other appurtenances and installation to conform to the Approving Agency's specifications. All materials and workmanship for all private sanitary sewers, including sewers located within any building envelope, shall be installed in conformance with Uniform Plumbing Code requirements.

95. Unless otherwise specifically noted on the drawings, manufactured fittings (tee or wye per Approving Agency) shall be used for all lateral connections to new sewer mainlines.

96. Contractor shall provide all necessary materials, equipment and facilities to test sanitary sewer pipe and appurtenances for leakage in accordance with testing schedule herein or the Approving Agency's construction standards, whichever are more stringent. Sanitary sewer pipe and appurtenances shall be tested for leakage. Leakage tests shall include an air test of all sewer mains and laterals and vacuum testing of the manholes. Manhole testing shall be performed after completion of AC pavement and final surface restoration.

97. After manhole channeling and prior to mandrel testing and/or TV inspection, flush and clean all sewers, and remove all foreign material from the mainlines and manholes. Failure to clean all dirt, rock and debris from pipelines prior to TV inspection will result in the need to re–clean and re–TV the sewer lines.

98. Contractor shall conduct deflection test of flexible sanitary sewer pipes by pulling an approved mandrel through the completed pipeline following trench compaction. The diameter of the mandrel shall be 95% of the initial pipe diameter. Test shall be conducted not less than 30 days after the trench backfilling and compaction has been completed, unless otherwise approved by the Approving Agency.

99. Upon completion of all sanitary sewer construction, testing and repair, the Contractor shall conduct a color TV acceptance inspection of all mainlines in accordance with OSSC (ODOT/APWA) 445.74 to determine compliance with grade requirements of OSSC (ODOT/APWA) 445.40.b. The TV inspection shall be conducted by an approved technical service which is equipped to make audio–visual recordings of the TV inspections on DVD or flash drive. Unless otherwise required by the Approving Agency, a standard 1–inch diameter ball shall be suspended in front of the camera during the inspection to determine the depth of any standing water. Sufficient water to reveal low areas or reverse grades shall be discharged into the pipe immediately prior to initiation of the TV inspection. The DVD and written report shall be delivered to the Approving Agency.

STORM DRAIN SYSTEM:
100. Storm sewer pipe materials shall conform to the construction drawings and Approving Agency's requirements. Unless otherwise noted or shown on the drawings, storm sewer pipe materials with watertight joints shall conform to the attached "Storm Pipe Table". Contractor shall use uniform pipe material on each pipe run between structures unless otherwise directed or approved. Jointed HDPE pipe shall not be used for slopes exceeding ten percent (10%). All materials and workmanship for all private storm drains, including storm drains located within any building envelope, shall be installed in conformance with Uniform Plumbing Code requirements.

101. Contractor shall designate the pipe material actually installed on the field record drawings and provide this information for inclusion on the as–built drawings.

102. Catch basins and junction boxes shall be set square with buildings or with the edge of the parking lot or street wherein they lie. Storm drain inlet structures and paving shall be adjusted so water flows into the structure without ponding water.

103. Unless otherwise approved by the Engineer, all storm drain connections shall be by manufactured tees or saddles.

104. Unless otherwise shown on the drawings, all storm pipe inlets & outfalls shall be beveled flush to match the slope wherein they lie.

105. Sweep (deflect) storm sewer pipe into catch basins and manholes as required. Maximum joint deflection shall not exceed 5 degrees or manufacturers recommendations, whichever is less.

106. Unless otherwise shown or directed, install storm sewer pipe in accordance with manufacturer installation guidelines.

107. After manhole channeling and prior to mandrel testing or final acceptance, flush and clean all sewers, and remove all foreign material from the mainlines, manholes and catch basins.

108. Mandrel Testing. Contractor shall conduct deflection test of flexible storm sewer pipes by pulling an approved mandrel through the completed pipeline following trench compaction. The diameter of the mandrel shall be 95% of the initial pipe diameter. Test shall be conducted not more than 30 days after the trench backfilling and compaction has been completed.

109. TV Inspection. Upon completion of all storm sewer construction, testing and repair, the Contractor shall conduct a color TV acceptance inspection of all mainlines in accordance with OSSC (ODOT/APWA) 445.74 to determine compliance with grade requirements of OSSC (ODOT/APWA) 445.40.b. The TV inspection shall be conducted by an approved technical service which is equipped to make audio–visual recordings of the TV inspections on DVD (VHS video tape acceptable only upon prior written approval by Public Works). Unless otherwise required by the agency with jurisdiction, a standard 1–inch diameter ball shall be suspended in front of the camera during the inspection to determine the depth of any standing water. Sufficient water to reveal low areas or reverse grades shall be discharged into the pipe immediately prior to initiation of the TV inspection. The DVD and written report shall be delivered to the Approving Agency.

110. Prior to acceptance, the Owner's Representative may lamp storm lines upstream & downstream of structures to verify that the pipes are clean and there is no grout or concrete in the mainlines, and that there are no observable bellies in the line. When necessary, sufficient water to reveal low areas shall be discharged into the pipe by the Contractor prior to any such inspection by the Owner's Representative or the Approving Agency.

FRANCHISE & PRIVATE UTILITIES:
111. Unless otherwise shown on the drawings or approved by jurisdiction having authority, all new franchise and private utilities (power, cable TV, telephone, gas, data, communication, control, alarms, etc.) shall be installed underground. Installation of such utilities or associated conduits in a common trench with public water, sanitary sewer, or storm sewer is prohibited.

112. Contractor shall coordinate with gas, power, telephone, and cable TV Company for location of conduits in common trenches, as well as location or relocation of vaults, pedestals, etc. The Contractor shall be responsible for providing franchise utility companies adequate written notice of availability of the open trench (typically 10 days minimum), and reasonable access to the open trench. Unless otherwise approved in writing by the Approving Agency, all above–grade facilities shall be located in PUEs (where PUEs exist or will be granted by the development), and otherwise shall be placed in a location outside the proposed sidewalk location.

113. Unless otherwise approved by the Approving Agency, installation of private utilities (including either franchise utilities or private water, sewer or storm services) in a common trench with or within 3 feet horizontally of and paralleling public water, sanitary sewer or storm drains is prohibited.

114. Power, telephone and TV trenching and conduits shall be installed per utility company requirements with pull wire. Contractor shall verify with utility company for size, location and type of conduit before construction, and shall ensure that trenches are adequately prepared for installation per utility company requirements. All changes in direction of utility conduit runs shall have long radius steel bends.

115. Contractor shall notify and coordinate with franchise utilities for removal or relocation of power poles, vaults, pedestals, manholes, etc. to avoid conflict with Public utility structures, fire hydrants, meters, sewer or storm laterals, etc.

REQUIRED TESTING AND FREQUENCY TABLE

Contractor to notify Owner's Representative prior to all testing, to allow Owner's Representative to be present if desired.

Test	Frequency	Party Responsible for payment: Contractor		Others (see note 1)
Streets, Fire Lanes, Common Driveways, Parking Lots, Pads, Fills, etc.				
Subgrade	1 Test/4000 S.F./Lift (4 min), locations acceptable to approving agency (typically alternate sides of road or access aisles)	✓	See note 2 & note 3	
Engineered Fills	1 Test/4000 S.F./Lift (4 min), locations acceptable to approving agency	✓	See note 2 & note 5	
Baserock	1 Test/4000 S.F./Lift (4 min), locations acceptable to approving agency (typically alternate sides of road or access aisles)	✓	See note 2 & note 3	
Asphalt	1 Test/6000 S.F./Lift (4 min), locations acceptable to AA (typ. alternate as above)	✓	See note 2	
Piped Utilities, All				
Trench Backfill	1 Test/200 Foot Trench/Lift (4 min)	✓	See note 2	
Trench AC Restoration	1 Test/300 Foot Trench (4 min)	✓	See note 2	
Water				
Pressure Test	(to be witnessed by Owner's Representative or approving agency)	✓	See note 4	
Bacterial Water Test	Per Oregon Health Division	✓	See note 2	
Chlorine Residual Test	Per City Requirements	✓		
Sanitary Sewer				
Air Test	Per City or APWA Requirements, whichever is more stringent	✓	See note 4	
Mandrel	95% of actual inside diameter	✓	See note 4	
TV Inspection	All. Lines must be cleaned prior to TV work	✓		
Manhole	(1) Vacuum test per manhole, witnessed by Owner's Representative or approving agency	✓	See note 2	
Storm				
Mandrel	95% of actual inside diameter	✓	See note 4	
TV Inspection	All. Lines must be cleaned prior to TV work	✓		
Concrete, Block, etc.				
Slump, Air & Cylinders for structural & reinforced concrete, equipment slabs, curbs, sidewalks & PCC pavements. Unless otherwise specified, one set of cylinders per 100 cubic yards (or portion thereof) of each class of concrete placed per day. Slump & air tests required on same load as cylinders.		✓	See note 2	

Note 1: "Others" refers to Owner's authorized Representative or Approving Agency as applicable. Contractor responsible for scheduling testing. All testing must be completed prior to performing subsequent work.

Note 2: Testing must be performed by an approved independent testing laboratory.

Note 3: In addition to in–place density testing, the subgrade and base rock shall be proof–rolled with a loaded 10 yard dump truck provided by the Contractor. Baserock proofroll shall take place immediately prior to (within 24 hours of) paving, and shall be witnessed by the Owner's authorized Representative or approving agency. Location and pattern of testing and proofroll to be as approved or directed by said Owner's authorized Representative or approving agency.

Note 4: To be witnessed by the Owner's Representative or approving agency. The Contractor shall perform pretests prior to scheduling witnessed waterline or sanitary sewer pressure tests, or pipeline mandrel test.

Note 5: The approved independent laboratory retained by the Contractor shall provide a certification (stamped by an engineer licensed in the State of Oregon) that the subgrade was prepared and all engineered fills were placed in accordance with the provisions of the construction drawings and the contract documents.

Contractor to notify Owner's Representative prior to all testing, to allow Owner's Representative to be present if desired.

STORM PIPE TABLE

Cover Depth	6" – 18" Diameter
Less than 2' Cover	Class 50 ductile iron pipe with bell and spigot joints and rubber gasket.
2' to 2–1/2' Cover	Pipe specified for lesser cover depths –or– Class 3, ASTM C–14 non–reinforced concrete pipe with bell and spigot joints & rubber gaskets, ASTM 150 Type II cement. –or– PVC pipe conforming to AWWA C900 DR 18 (6"–12") or AWWA C–905 (14"–18") with bell and spigot joints and rubber gasket
2–1/2' to 15' Cover	Pipe specified for lesser cover depths –or– PVC pipe conforming to ASTM D–3034 PVC SDR 35 (6"–15") or ASTM F–679 PVC solid wall SDR 35 (18") with bell and spigot joints and rubber gasket. –or– HDPE (high density polyethylene) pipe conforming to AASHTO M–252, (8"–10") or AASHTO M–294 (12"–18"). For slopes less than 6% the pipe shall be ADS N–12 IB ST, Hancor Sure–Lok F477, or approved equal. For slopes greater than 6% the pipe shall be ADS N–12 IB WT, Hancor Blue Seal, or approved equal with watertight pressure testable fittings, –except– jointed HDPE (high density polyethylene) pipe referenced above not permitted for depth to invert greater than 12 feet.

Perforated pipe underdrains to be SCH 40 ABS or SCH 40 PVC perforated or slotted pipe unless otherwise specified.

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OREGON
NOV. 12, 2008
WILLIAM J. WELLS
RENEWS: 6/30/2026

1/14/2025

WESTECH ENGINEERING, INC.
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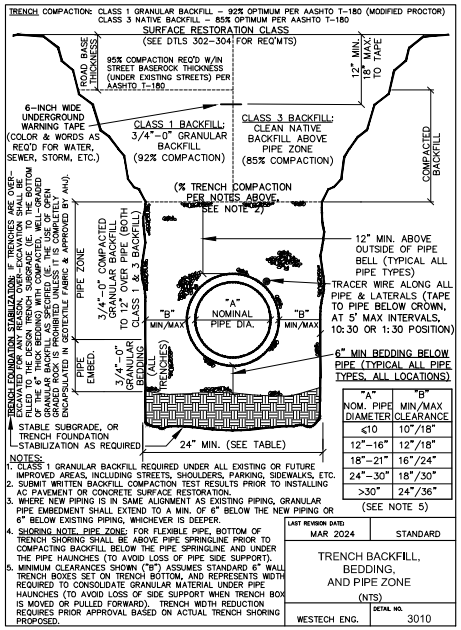
E–mail: westech@westech–eng.com

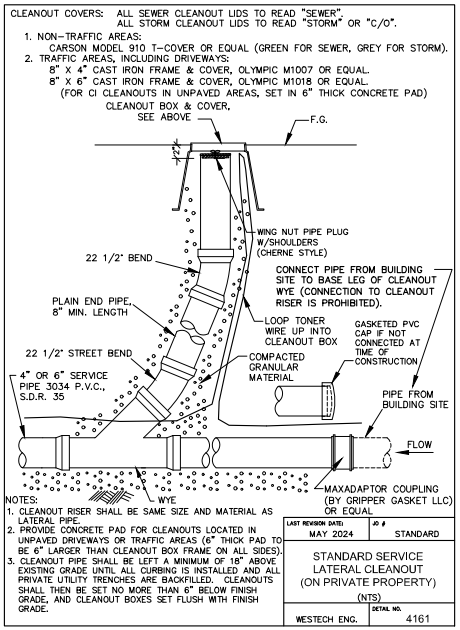
BLOSSOM GARDENS APARTMENTS LLC
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

CONSTRUCTION NOTES

DRAWING
C3.0

JOB NUMBER
3366.1000.0





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BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

CONSTRUCTION DETAILS

DRAWING
C4.0

JOB NUMBER
3366.1000.0

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Exhibit H – Stormwater Report

STORMWATER CALCULATIONS

Prepared For:

Clutch Industries

360 Belmont St. NE

Salem, OR 97303

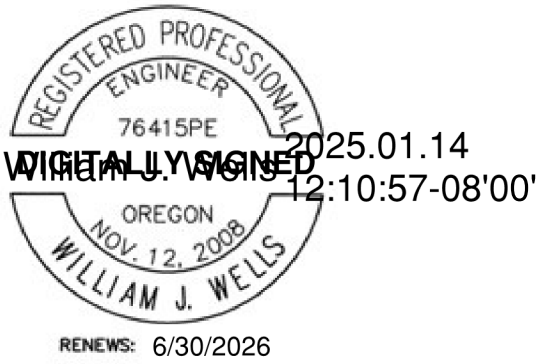
Project:

Blossom Apartments

Blossom Drive NE

Salem, OR 97305

Prepared By:



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3841 Fairview Industrial Drive SE, Suite 100
Salem, OR 97302
(503) 585-2474 FAX: (503) 585-3986

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Updated January 2025

TABLE OF CONTENTS

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APPENDICES

PROJECT OVERVIEW & DESCRIPTION

1.1 SIZE & LOCATION OF PROJECT

The proposed residential development project is located on a 3.55-acre lot. The property is located on Blossom Drive NE, in Salem, Oregon. Refer to the Civil Drawings for a site map of the project area.

1.2 BRIEF DESCRIPTION OF PROJECT SCOPE AND PROPOSED IMPROVEMENTS

The project scope is to develop the lot for residential use with construction of a parking lot, and associated improvements. The project includes site preparation and construction of the facilities.

1.3 DESCRIPTION OF SIZE OF WATERSHED DRAINING TO THE SITE

The proposed stormwater facilities receive runoff from a 148,850 square foot area on-site which includes all proposed impervious improvements and the majority of pervious improvements on-site. No additional drainage area drains to the project site.

1.4 DESCRIPTION OF THE EXISTING SITE CONDITIONS, TREES & NATIVE VEGETATION, CONSTRAINTS, SENSITIVE AREAS & WATERWAYS

The existing site is primarily covered in grass and a few existing buildings. The existing site does not contain any trees. Stormwater from the site will drain to the proposed stormwater facility.

1.5 SUMMARY OF GREEN STORMWATER INFRASTRUCTURE

Per Appendix 4E of the City of Salem (COS) Design Standards, a large project will be considered to have met the maximum extent feasible (MEF) requirement when the stormwater runoff from the total amount of new plus replaced impervious surfaces flows into an area set aside for GSI that is at least 10% of the total area of the new plus replaced impervious surfaces or at least 80% of all impervious area must be treated by GSI. This design implements GSI for the entire project impervious area and therefore meets MEF for GSI.

1.6 REGULATORY PERMITS REQUIRED

City of Salem permits are required. A 1200-C permit is required since more than one acre of land is disturbed. No other permits are required for this project.

1.7 100 YEAR STORM ESCAPE ROUTES

Please refer to the Developed Basin Map in Appendix A for 100-year storm emergency overflow routes.

METHODOLOGY

2.1 DEPTH TO GROUNDWATER

Per the Geotechnical Report in Appendix D groundwater was encountered at a depth of 15 feet below ground surface. The proposed stormwater rain garden has drain rock to an elevation of 168.35, which is approximately 8.5' feet below ground surface and therefore conforms to the COS Design Standards requirement of 3 feet of separation from groundwater.

2.2 MAXIMUM INFILTRATION AND VEGETATIVE TREATMENT

Per the attached Geotechnical Reports, the measured average infiltration rate onsite is between 0.4 and 0.7 inches per hour near the location of the raingarden. The design infiltration rate for the stormwater infiltration facility was determined based on the adjacent measured infiltration rates. A design infiltration rate of 0.275 inches per hour is used for stormwater calculations for the raingarden.

The proposed stormwater design will treat and detain the entire site's impervious area with one raingarden, therefore GSI has been implemented to the maximum extent feasible.

2.3 SOIL INFORMATION

The pre-developed project site contains primarily hydrologic soil group C-rated soils. Hydrologic group C-rated soils were used for analysis. Refer to the Soils Report in Appendix B for more details.

2.4 HAZARDOUS MATERIAL

The owner is not aware of any hazardous material contamination onsite.

ANALYSIS

3.1 METHODS & SOFTWARE USED

HydroCAD modeling software was used to size the stormwater facilities. The Santa Barbara Unit Hydrograph Type 1A storm was used to model the required design storms. Per the City of Salem Design Standards, the design storms used were the 1.38-inch, 24-hour (water quality storm), half the 2-year, 24-hour, the 10-year, 24-hour, the 25-year, 24-hour, and the 100-year, 24-hour storm events.

Table 1 | City of Salem 24-hour Design Storms

	24-Hour Rainfall Depths for Salem, OR						
Recurrence Interval, Years	WQ	2	5	10	25	50	100
24-Hour Depths, Inches	1.38	2.2	2.7	3.2	3.6	4.1	4.4

Source: City of Salem Administrative Rules Chapter 109 – Division 004 Appendix D

3.2 CURVE NUMBER AND TIME OF CONCENTRATION CALCULATIONS

Per the COS Design Standards, the pre-developed site was covered in a combination of woods and grass, which corresponds to a pre-developed curve number of 72 for hydrologic soil group C-rated soils.

The developed impervious areas were assigned a curve number of 98. The impervious areas were assigned a curve number of 98 which corresponds paved areas. The pervious areas were assigned a curve number of 74 which corresponds to greater than 75% grassed area in good condition for hydrologic soil group C-rated soils.

Time of concentration (Tc) for the pre-developed conditions was calculated to be 49.5 minutes using the sheet flow equation. See the Pre-Developed Basin Map in Appendix A for the flow path used and refer to the HydroCAD Summaries in Appendix C for calculations. A minimum time of concentration (Tc) of 5 minutes is applied to the developed basins due to the minimum time-step used by the HydroCAD modeling software.

3.3 TREATMENT & FLOW CONTROL SIZING CALCULATIONS

The site was analyzed as one (1) basin for predeveloped and developed stormwater calculations. General basin characteristics of both pre-developed and developed conditions are listed in Table 2. For more detail refer to the Basin Maps in Appendix A and the Civil Drawings.

Table 2 | General Basin Characteristics

Basin ID	Source (Roof/Road/ Other)	Impervious Area (sf)	Pervious Area (sf)	Design Storms				CN[1]	Tc (min)
				½ 2 Year (cfs)	10 Year (cfs)	25 Year (cfs)	100 Year (cfs)		
Predeveloped	Native	-	148,850	0.04	0.28	0.39	0.66	72	49.5
Developed	Paved/Roof/ Landscape	98,380	50,470	0.52	1.90	2.20	2.81	90	5.0

[1] Weighted Curve number listed for the impervious / pervious areas in the basin

Stormwater is released from the RG by exfiltration into the subsoils and a Type III Flow Control Catch Basin. See Table 3 below for a summary of facility release rates for the RG. Refer to the Civil Drawings for details.

Table 3 | Summary of Facility Outlet Sizing and Release Rates – RG

Outlet ID/ Storm Event	Orifice Size (in)	Orifice Elevation (ft)	Release Rate (cfs)	Peak WSE[1] (ft)	Overflow Elevation (ft)	Infiltration Rate (in/hr)
Half 2 Year	1.6	171.85	0.00	171.83	176.1	0.275
WQ[3]	-	-	0.04	172.43[3]	176.1	0.275
10 Year	2.0	173.50	0.27	175.43	176.1	0.275
25 Year	-	-	0.29	175.82	176.1	0.275
100 Year[2]	24	175.91	0.63	176.06	176.1	0.275

[1] WSE = water surface elevation
[2] Flow Control provided by 24" weir opening in top of the Type III Flow Control Catch Basin.
[3] Water Quality WSE corresponding to the plans is shown in Surface Test Table 5 (174.55). The above WSE for the water quality storm assumes free flow through the media.

The RG has been sized to drain the water quality storm below the growing media in 25 hours from the start of the event, which is less than the required 54 hours per the COS Design Standards. See the HydroCAD Summaries in Appendix C for drain time during the water quality storm.

As noted above the developed release from the site is less than or equal to that of the predeveloped release for all design storms.

A summary of the rain garden geometry and required drain rock is provided in Table 4 below. Please note that the RG requires drain rock with areas shown in Table 4 (and denoted on the Civil Drawings) to detain and control the design storms in conformance with COS standards.

Table 4 | Facility Sizing Summary – RG 1

Facility ID[1]	Facility Elevations[2] (ft)		Facility Surface Area[2] (SF)		Required Drain Rock Surface Area (SF)	Depth of Drain Rock (in)
	Top	Bottom	Top	Bottom		
RG	177.0	174.1	8,540	2,610	3,860	48

[1] All facilities are privately owned and maintained stormwater GSI facilities.
[2] The top facility elevation and corresponding square footage area refer to the top of the 3:1 slope. The bottom elevation and corresponding square footage area refer to the bottom of the 3:1 slope.

The HydroCAD modeled release rates and water surface elevations (WSE) shown in Table 3 assume free-flow though the rain garden growing media. Release from the rain garden facility can also be controlled by the filtration capacity of the growing media. To verify the entire WQ storm event is filtered through the growing media for treatment, the rain garden hydraulics were also modeled at the facility surface with an assumed filtration rate of 2 in/hr per COS Design Standards. The surface tests were calculated using Darcy's Law of hydraulic conductivity with the groundwater elevation set 1.5 feet below the surface to represent the 1.5 feet (18 inches) of growing media thickness per COS Design Standards. The rain gardens provide treatment for the entire developed basin. See the HydroCAD analysis in Appendix C for surface test calculations.

Table 5 | Surface Filtration Test Summary – WQ Storm

Facility ID[1]	Facility Bottom Elevation (ft)	Max. Treatment Elevation[2]	WSE (ft)
RG	174.10	174.60	174.55

[1] The facility is a privately owned and maintained rain garden
[2] Elevation at which water overtops the 24-inch inlet in the top of the Type III Flow Control Catch Basin within rain garden.

3.4 CONVEYANCE CAPACITY CALCULATIONS

Per the COS Design Standards for sites less than 50 acres, the stormwater facilities were designed to convey the developed 100-year, 24-hour storm which has a total peak flow of 0.63 cfs released from the RG. The 100-year stormwater runoff is conveyed from the rain garden by a 12-inch pipe. See the Civil Drawings for more detail. The 12-inch pipe has a full-flow capacity of 1.42 cfs using a minimum slope of 0.3%.

3.5 SUMMARY

The stormwater system has been designed to release half the 2-year, 24-hour, the 10-year, 24-hour, the 25-year, 24-hour, and the 100-year, 24-hour storm events at rates less than their respective pre-developed storm. The proposed design also treats the water quality storm in less than the required 54 hours from the start of the storm event. Therefore, the project meets the flow control and treatment requirements as set forth in Administrative Rule 109 Division 004 - Stormwater System.

APPENDIX A

BASIN MAPS

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Predeveloped Basin Map

Predeveloped Basin Info:
Total Area = 148,850 SF

Predeveloped Basin Boundary

Flow Path:
Sheet Flow = 300 FT
Sheet Flow S = 2.2%
Conc. Flow L = 155 FT
Conc. Flow S = 1%

PARCEL 1

PARCEL 2

BLOSSOM DR

EXISTING BUILDING

TEMPORARY STOCKPILE LOCATION

0 15 30 60
(feet)

CLUTCH INDUSTRIES
BLOSSOM APARTMENTS

JOB NUMBER 3366.00000.0

DRAWING

WESTECH ENGINEERING, INC.
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 12, 2005
WILLIAM J. WELLS
REVIEW
RENEWS: 6/30/2024

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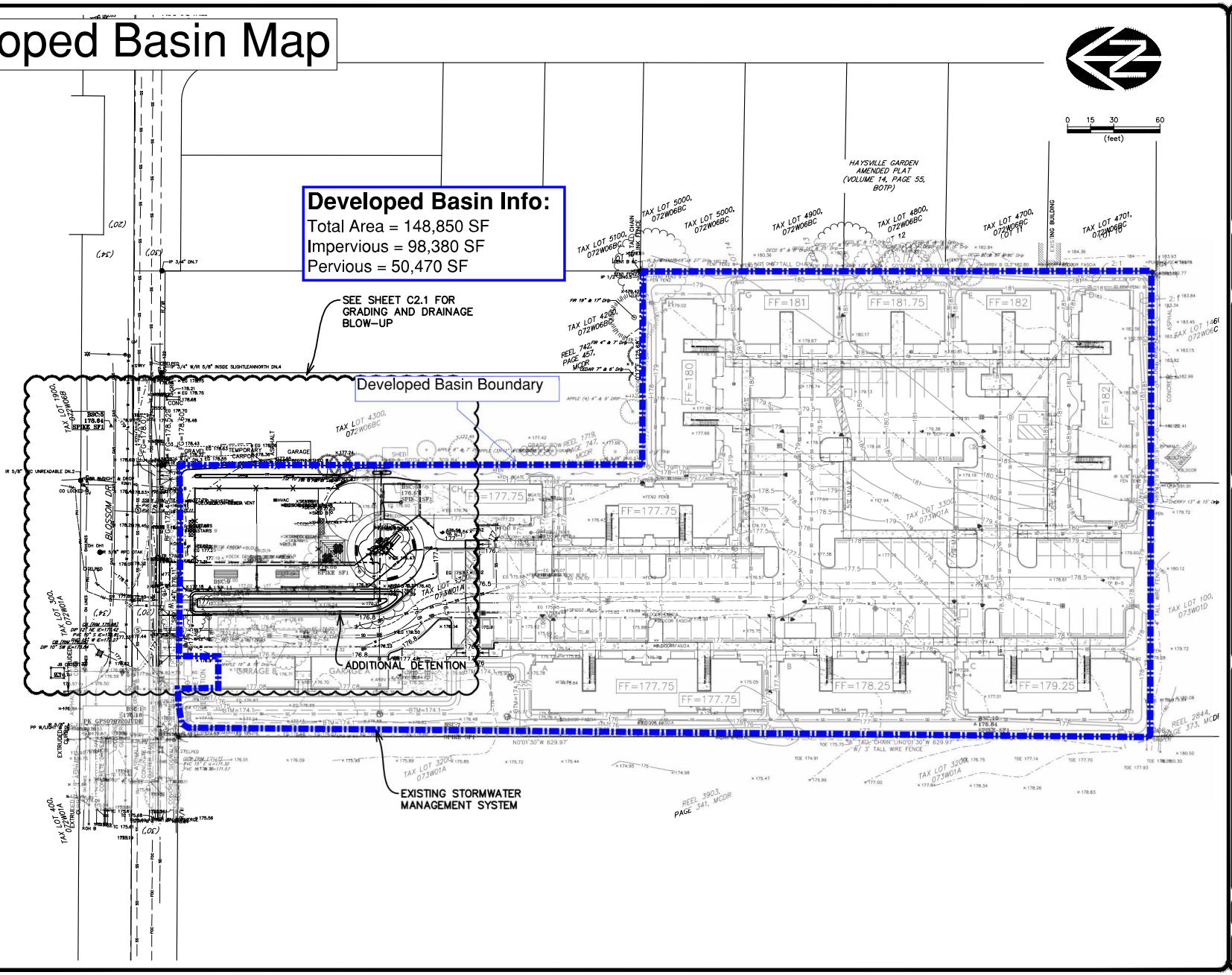
Developed Basin Map



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DATE: 01/2025

REGISTERED PROFESSIONAL ENGINEER
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DIGITALLY SIGNED
OREGON
NOV. 12, 2024
WILLIAM J. WELLS
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BLOSSOM GARDENS APARTMENTS LLC
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS
GRADING AND DRAINAGE PLAN

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APPENDIX B
NRCS SOIL REPORT

Map Scale: 1:1,160 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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: Marion County Area, Oregon
Survey Area Data: Version 20, Sep 14, 2022

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

Date(s) aerial images were photographed: Aug 1, 2018—Aug 31, 2018

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
WuA	Woodburn silt loam, 0 to 3 percent slopes	3.6	100.0%
Totals for Area of Interest		**3.6**	**100.0%**

Hydrologic Soil Group—Marion County Area, Oregon

Map Scale: 1:1,160 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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 Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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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.

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Date(s) aerial images were photographed: Aug 1, 2018—Aug 31, 2018

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
WuA	Woodburn silt loam, 0 to 3 percent slopes	C	3.6	100.0%
Totals for Area of Interest			**3.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

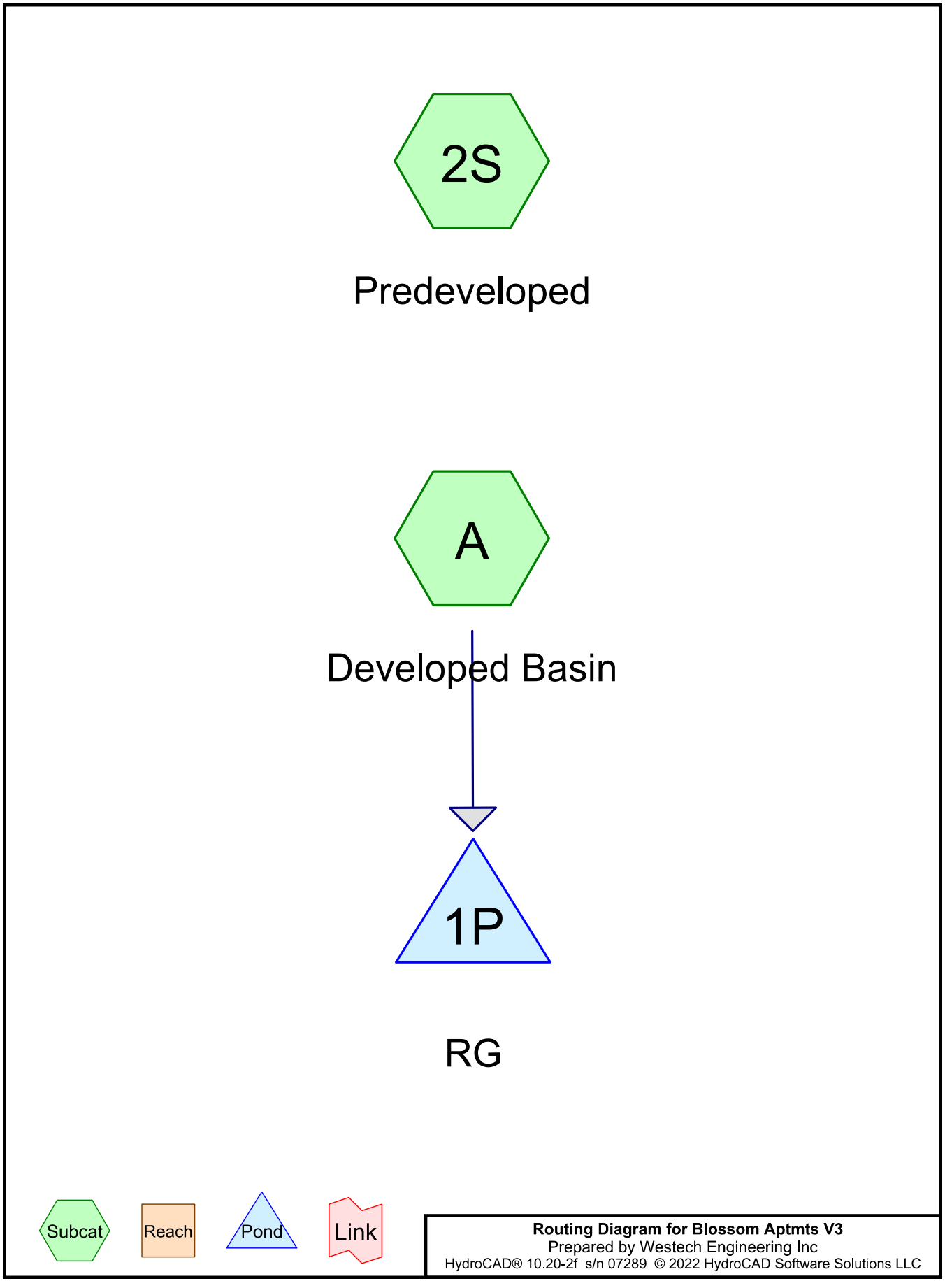
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C

HYDROCAD SUMMARIES


2S
Predeveloped
A
Developed Basin
1P
RG
Subcat
Reach
Pond
Link
Routing Diagram for Blossom Aptmts V3
Prepared by Westech Engineering Inc
HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment 9S: Predeveloped

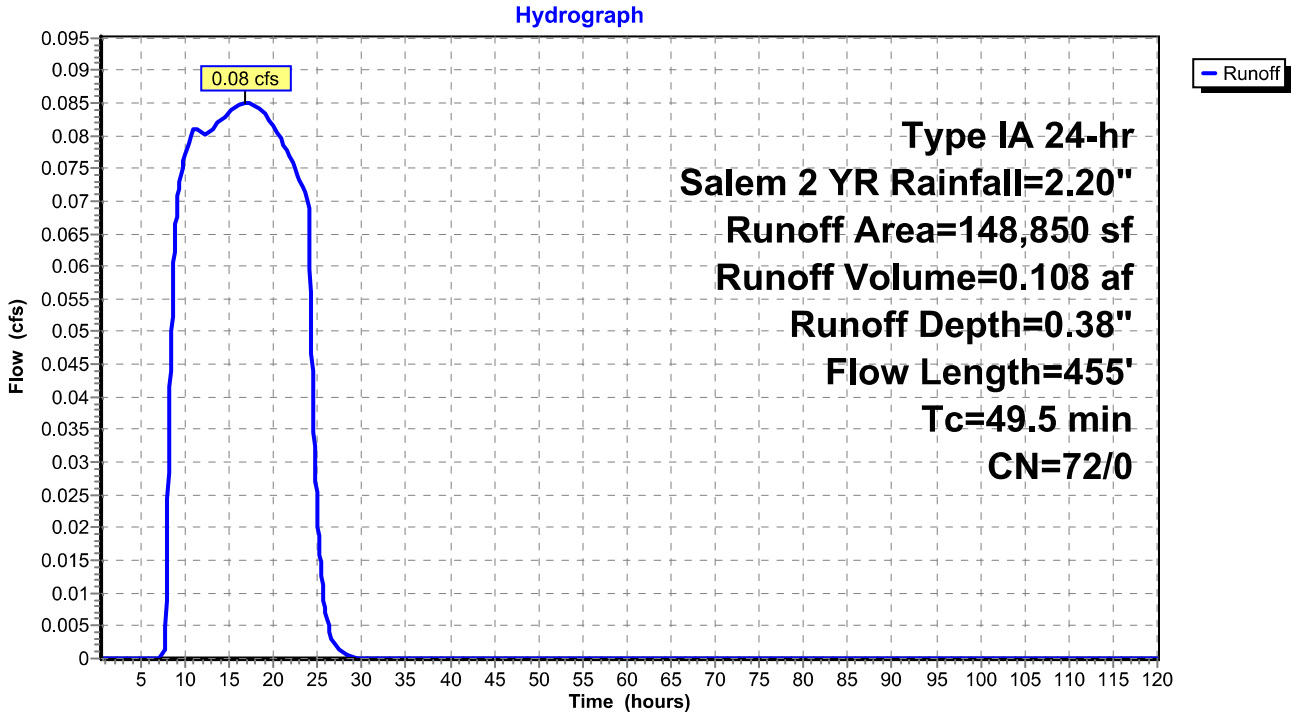
Runoff = 0.08 cfs @ 16.84 hrs, Volume= 0.108 af, Depth= 0.38"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 2 YR Rainfall=2.20"

Area (sf)	CN	Description
148,850	72	Woods/grass comb., Good, HSG C
148,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.7	300	0.0220	0.10		**Sheet Flow,** n= 0.300 P2= 2.20"
1.8	155	0.0096	1.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
49.5	455	Total			

Subcatchment 9S: Predeveloped



Summary for Subcatchment 9S: Predeveloped

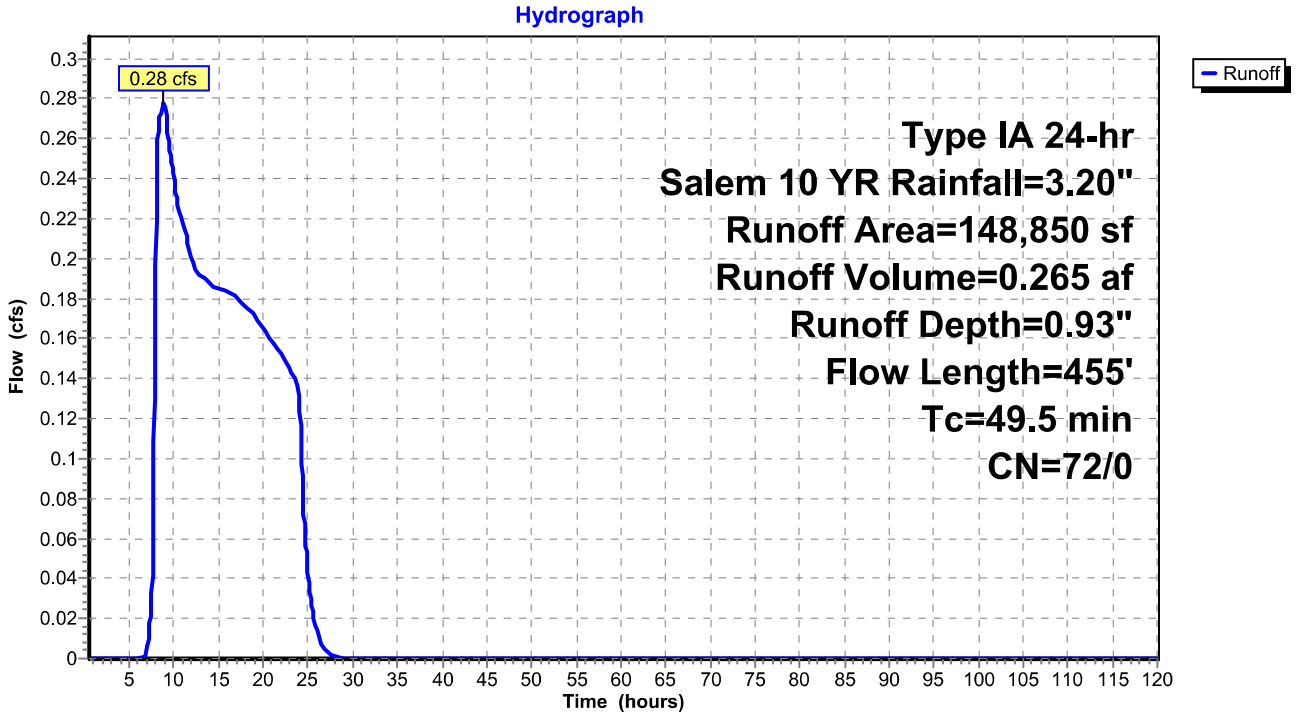
Runoff = 0.28 cfs @ 8.80 hrs, Volume= 0.265 af, Depth= 0.93"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
148,850	72	Woods/grass comb., Good, HSG C
148,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.7	300	0.0220	0.10		**Sheet Flow,** n= 0.300 P2= 2.20"
1.8	155	0.0096	1.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
49.5	455	Total			

Subcatchment 9S: Predeveloped



Summary for Subcatchment 9S: Predeveloped

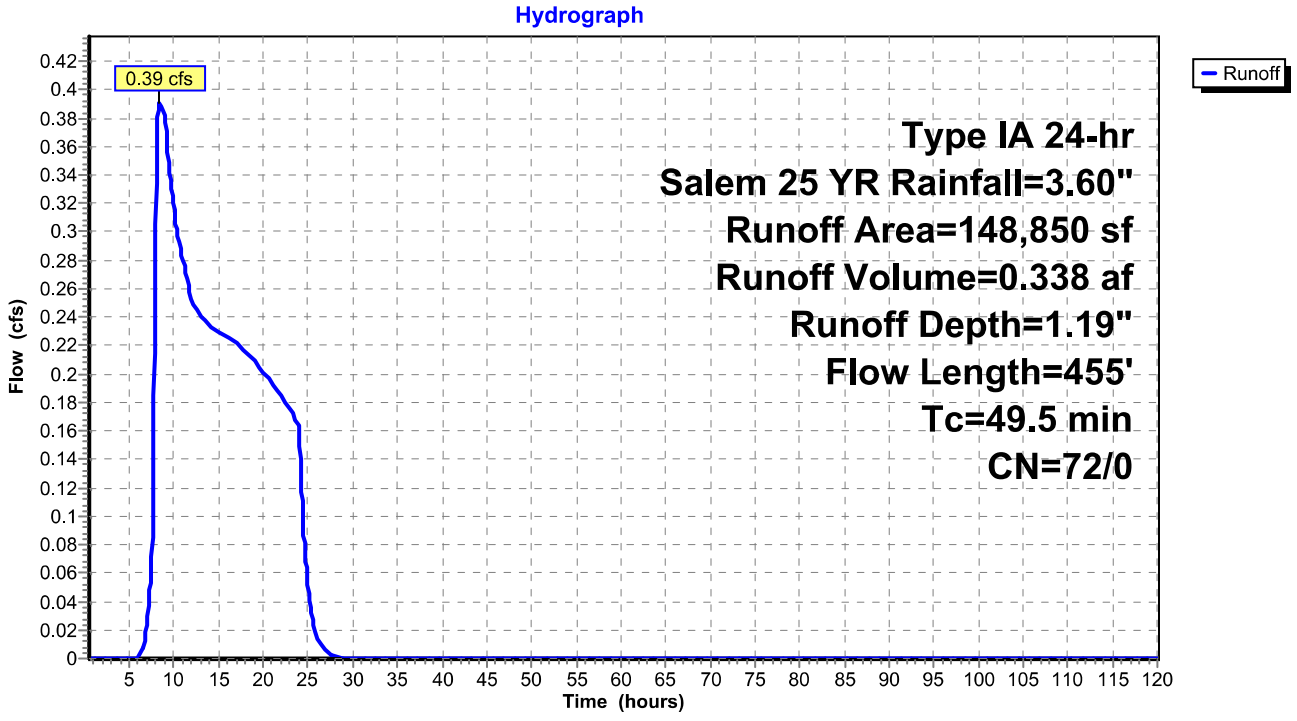
Runoff = 0.39 cfs @ 8.39 hrs, Volume= 0.338 af, Depth= 1.19"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
148,850	72	Woods/grass comb., Good, HSG C
148,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.7	300	0.0220	0.10		**Sheet Flow,** n= 0.300 P2= 2.20"
1.8	155	0.0096	1.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
49.5	455	Total			

Subcatchment 9S: Predeveloped



Summary for Subcatchment 9S: Predeveloped

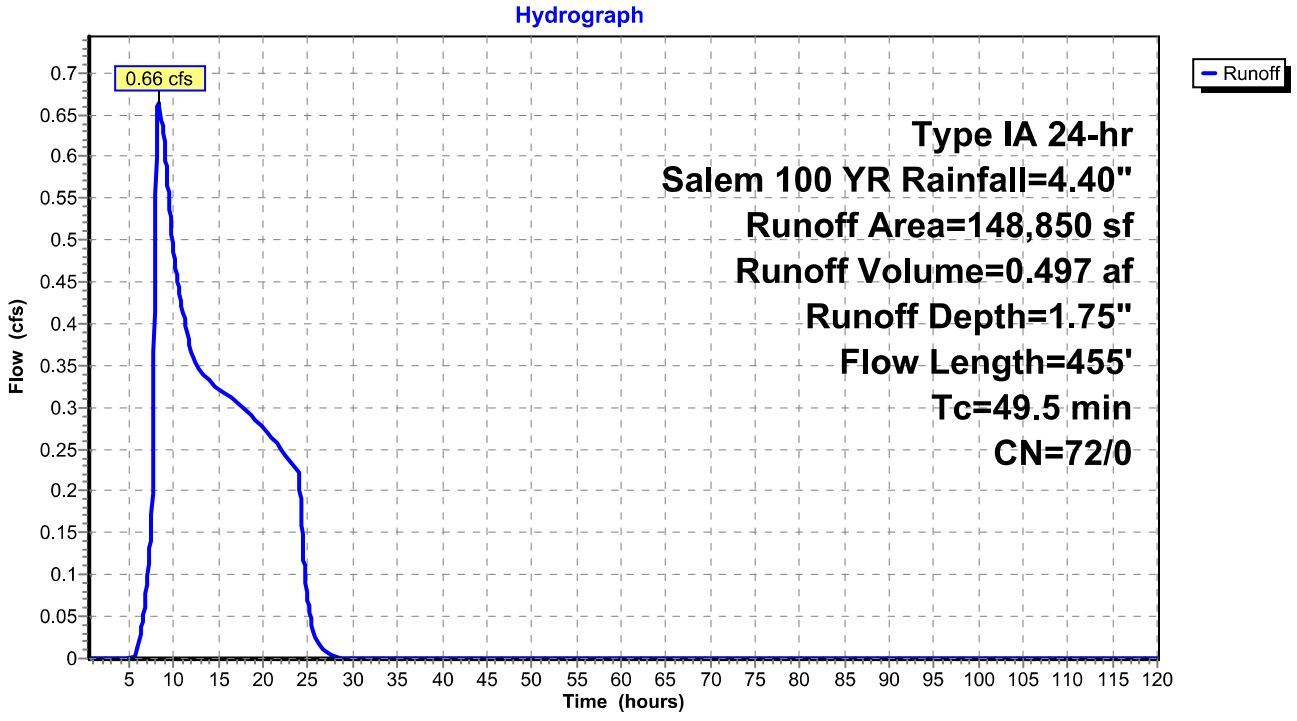
Runoff = 0.66 cfs @ 8.30 hrs, Volume= 0.497 af, Depth= 1.75"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
148,850	72	Woods/grass comb., Good, HSG C
148,850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
47.7	300	0.0220	0.10		**Sheet Flow,** n= 0.300 P2= 2.20"
1.8	155	0.0096	1.47		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
49.5	455	Total			

Subcatchment 9S: Predeveloped



Summary for Subcatchment 11S: Developed Basin

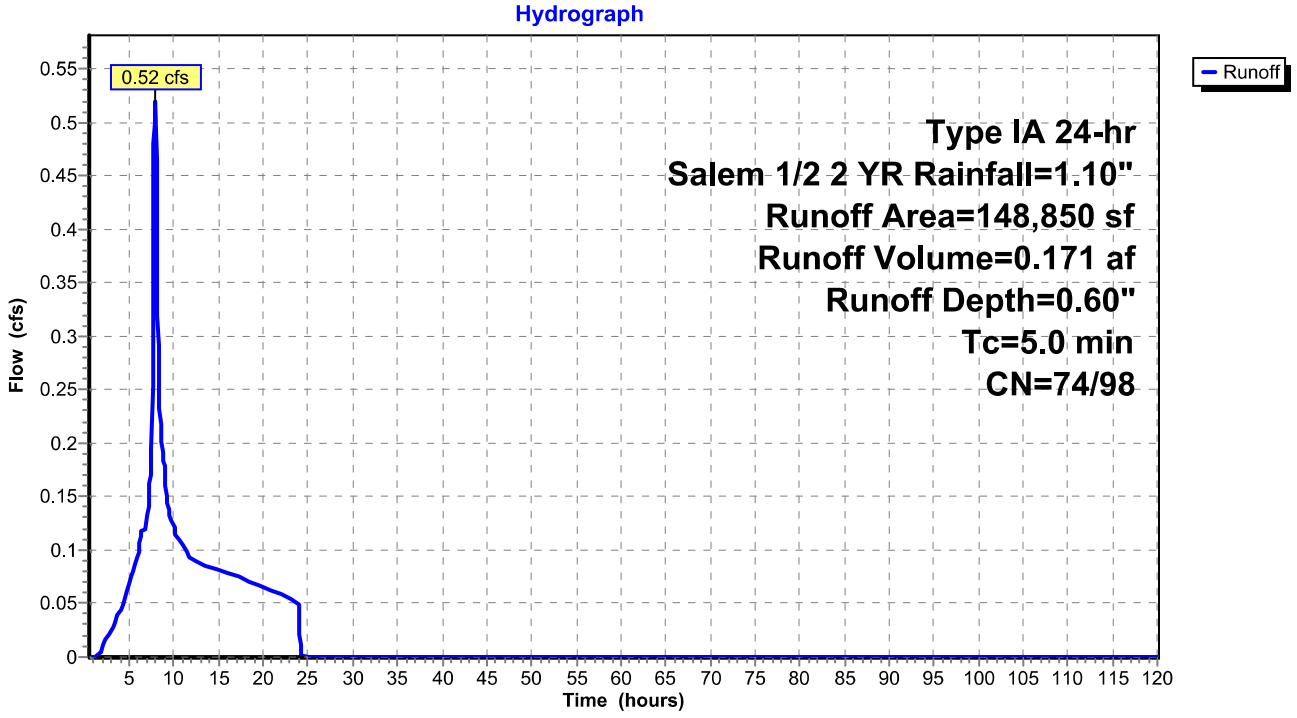
Runoff = 0.52 cfs @ 7.92 hrs, Volume= 0.171 af, Depth= 0.60"
Routed to Pond 12P : RG (Added Area)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 1/2 2 YR Rainfall=1.10"

Area (sf)	CN	Description
98,380	98	Paved parking, HSG C
50,470	74	>75% Grass cover, Good, HSG C
148,850	90	Weighted Average
50,470		33.91% Pervious Area
98,380		66.09% Impervious Area

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

Subcatchment 11S: Developed Basin



Summary for Subcatchment 11S: Developed Basin

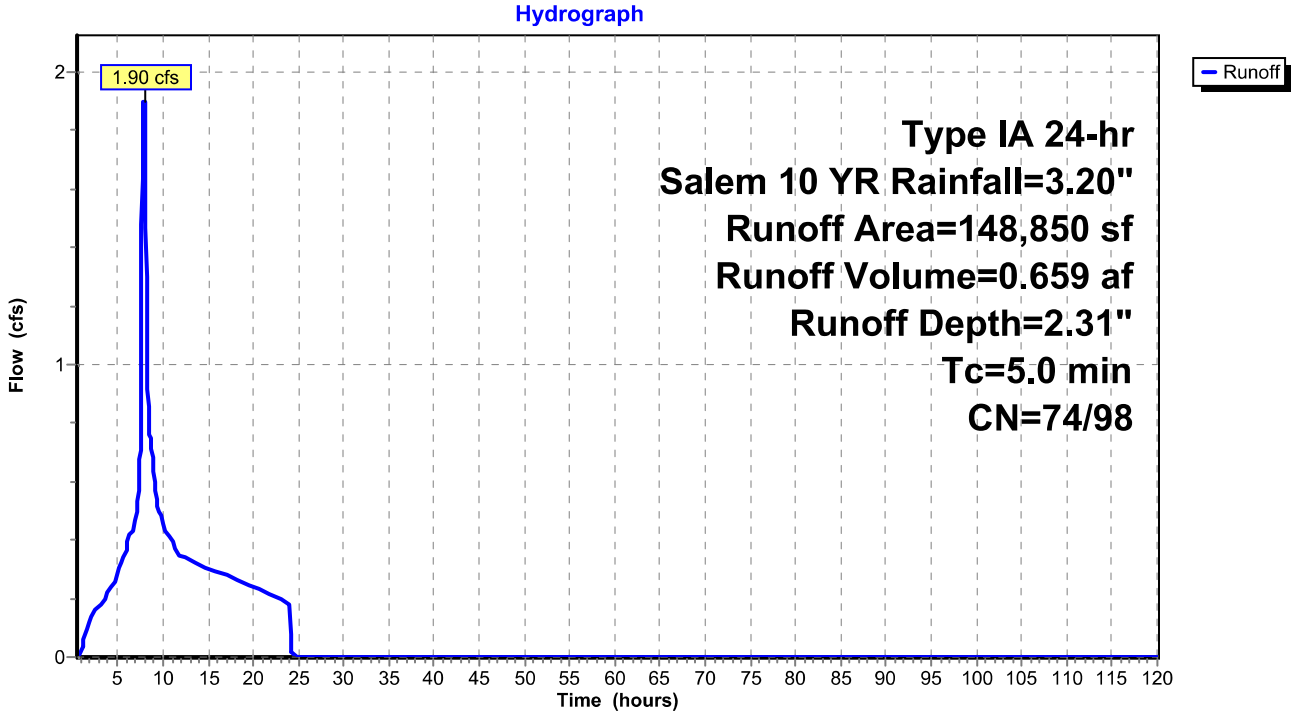
Runoff = 1.90 cfs @ 7.92 hrs, Volume= 0.659 af, Depth= 2.31"
Routed to Pond 12P : RG (Added Area)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 10 YR Rainfall=3.20"

Area (sf)	CN	Description
98,380	98	Paved parking, HSG C
50,470	74	>75% Grass cover, Good, HSG C
148,850	90	Weighted Average
50,470		33.91% Pervious Area
98,380		66.09% Impervious Area

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

Subcatchment 11S: Developed Basin



Summary for Subcatchment 11S: Developed Basin

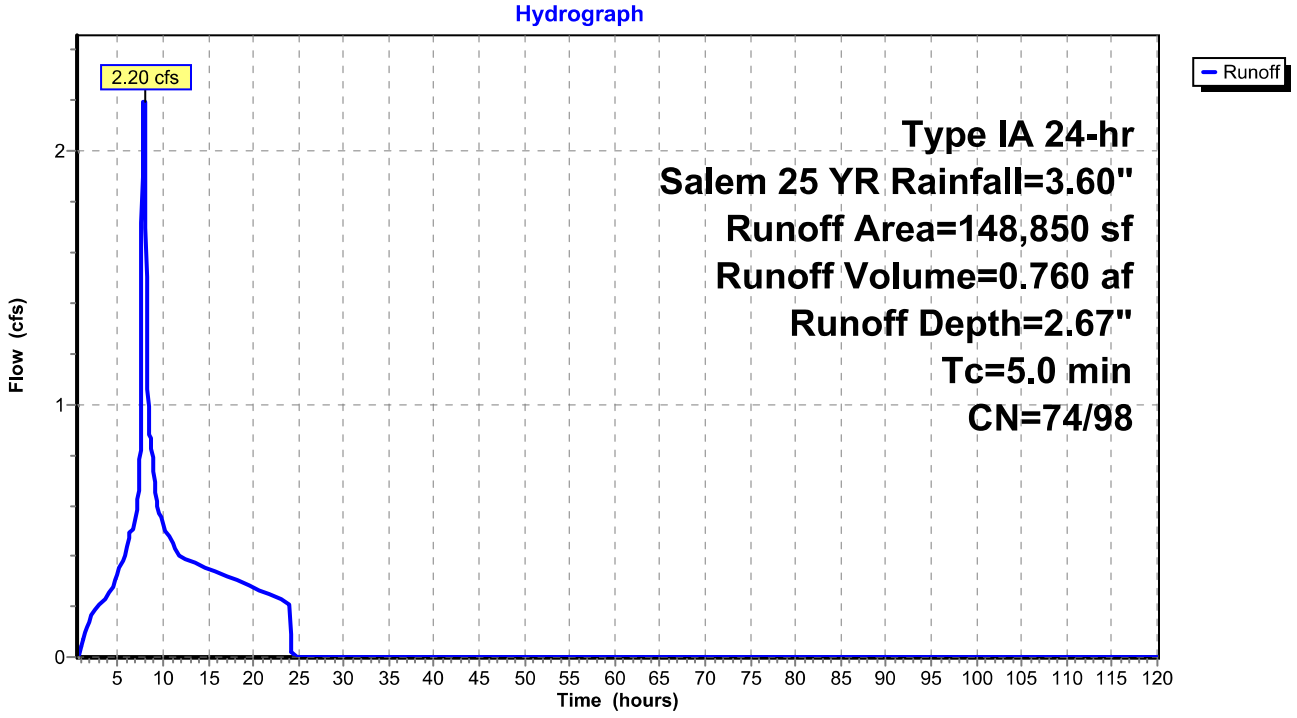
Runoff = 2.20 cfs @ 7.92 hrs, Volume= 0.760 af, Depth= 2.67"
Routed to Pond 12P : RG (Added Area)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 25 YR Rainfall=3.60"

Area (sf)	CN	Description
98,380	98	Paved parking, HSG C
50,470	74	>75% Grass cover, Good, HSG C
148,850	90	Weighted Average
50,470		33.91% Pervious Area
98,380		66.09% Impervious Area

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

Subcatchment 11S: Developed Basin



Summary for Subcatchment 11S: Developed Basin

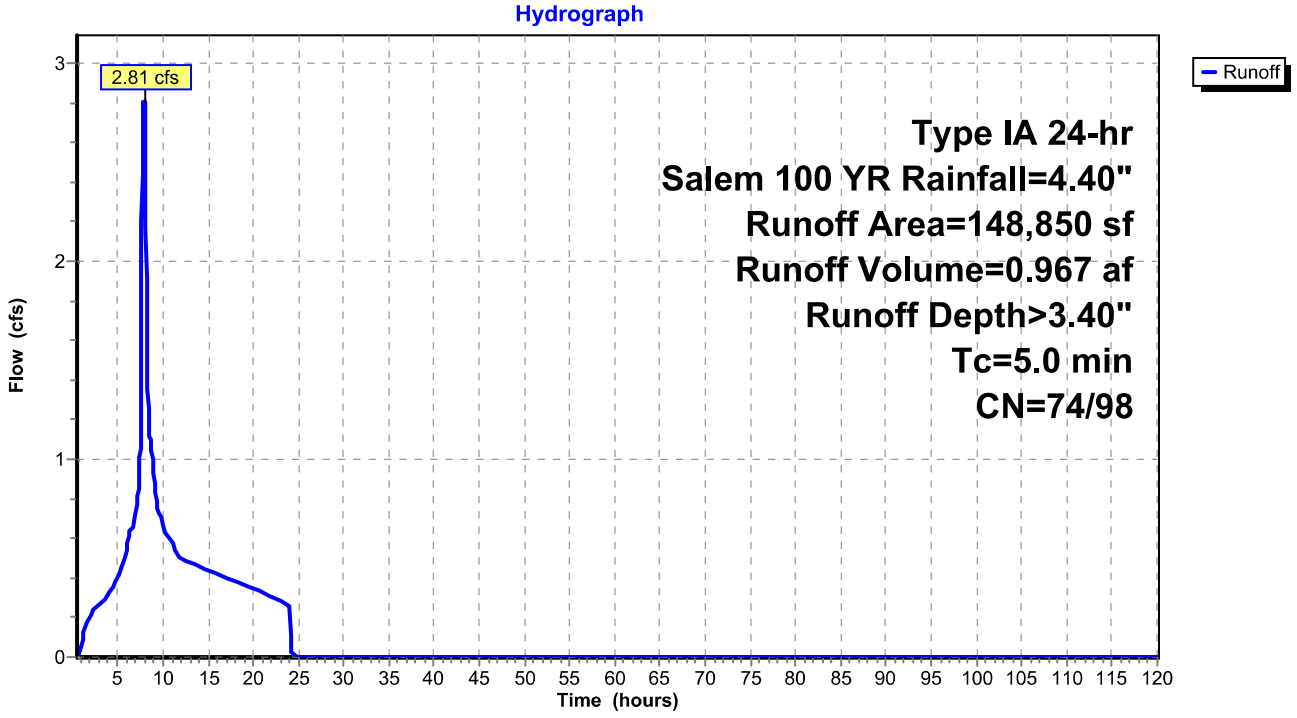
Runoff = 2.81 cfs @ 7.92 hrs, Volume= 0.967 af, Depth> 3.40"
Routed to Pond 12P : RG (Added Area)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem 100 YR Rainfall=4.40"

Area (sf)	CN	Description
98,380	98	Paved parking, HSG C
50,470	74	>75% Grass cover, Good, HSG C
148,850	90	Weighted Average
50,470		33.91% Pervious Area
98,380		66.09% Impervious Area

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

Subcatchment 11S: Developed Basin



Summary for Subcatchment 11S: Developed Basin

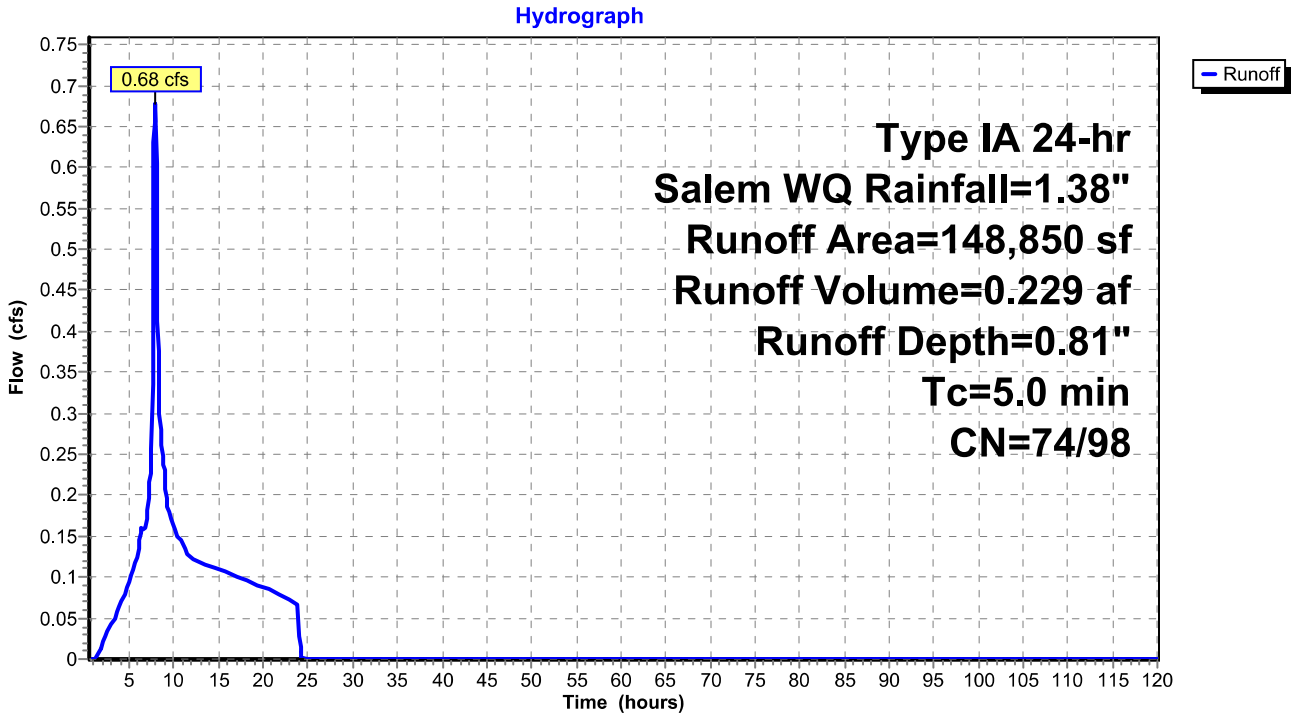
Runoff = 0.68 cfs @ 7.91 hrs, Volume= 0.229 af, Depth= 0.81"
Routed to Pond 12P : RG (Added Area)

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
98,380	98	Paved parking, HSG C
50,470	74	>75% Grass cover, Good, HSG C
148,850	90	Weighted Average
50,470		33.91% Pervious Area
98,380		66.09% Impervious Area

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

Subcatchment 11S: Developed Basin



Summary for Pond 12P: RG (Added Area)

Inflow Area = 3.417 ac, 66.09% Impervious, Inflow Depth = 0.60" for Salem 1/2 2 YR event
Inflow = 0.52 cfs @ 7.92 hrs, Volume= 0.171 af
Outflow = 0.03 cfs @ 24.08 hrs, Volume= 0.171 af, Atten= 94%, Lag= 969.6 min
Discarded = 0.03 cfs @ 24.08 hrs, Volume= 0.171 af
Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 171.83' @ 24.08 hrs Surf.Area= 3,860 sf Storage= 5,368 cf

Plug-Flow detention time= 1,721.0 min calculated for 0.171 af (100% of inflow)
Center-of-Mass det. time= 1,721.8 min (2,440.2 - 718.4)

Volume	Invert	Avail.Storage	Storage Description
#1	168.35'	23,888 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

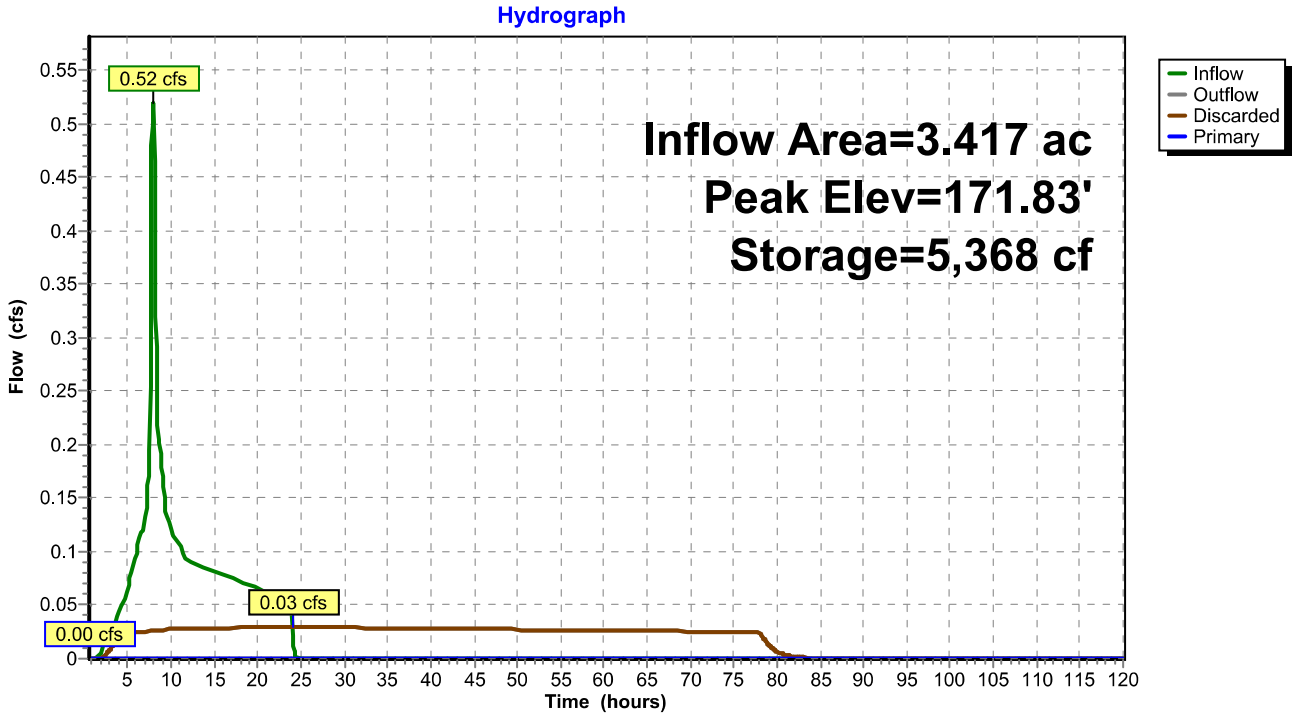
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.35	3,860	0.0	0	0	3,860
172.60	3,860	40.0	6,562	6,562	4,796
174.09	2,610	0.1	5	6,567	6,081
174.10	2,610	100.0	26	6,593	6,083
175.00	4,460	100.0	3,145	9,737	7,943
176.00	6,760	100.0	5,570	15,308	10,258
177.00	10,540	100.0	8,580	23,888	14,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	168.35'	**0.275 in/hr Exfiltration over Wetted area**
#2	Primary	171.85'	**1.6" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	173.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	175.91'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.03 cfs @ 24.08 hrs HW=171.83' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=168.35' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: RG (Added Area)



Summary for Pond 12P: RG (Added Area)

Inflow Area = 3.417 ac, 66.09% Impervious, Inflow Depth = 2.31" for Salem 10 YR event
Inflow = 1.90 cfs @ 7.92 hrs, Volume= 0.659 af
Outflow = 0.33 cfs @ 13.46 hrs, Volume= 0.659 af, Atten= 83%, Lag= 332.4 min
Discarded = 0.06 cfs @ 13.46 hrs, Volume= 0.237 af
Primary = 0.27 cfs @ 13.46 hrs, Volume= 0.422 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 175.43' @ 13.46 hrs Surf.Area= 5,386 sf Storage= 11,841 cf

Plug-Flow detention time= 834.8 min calculated for 0.659 af (100% of inflow)
Center-of-Mass det. time= 834.5 min (1,531.0 - 696.5)

Volume	Invert	Avail.Storage	Storage Description
#1	168.35'	23,888 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

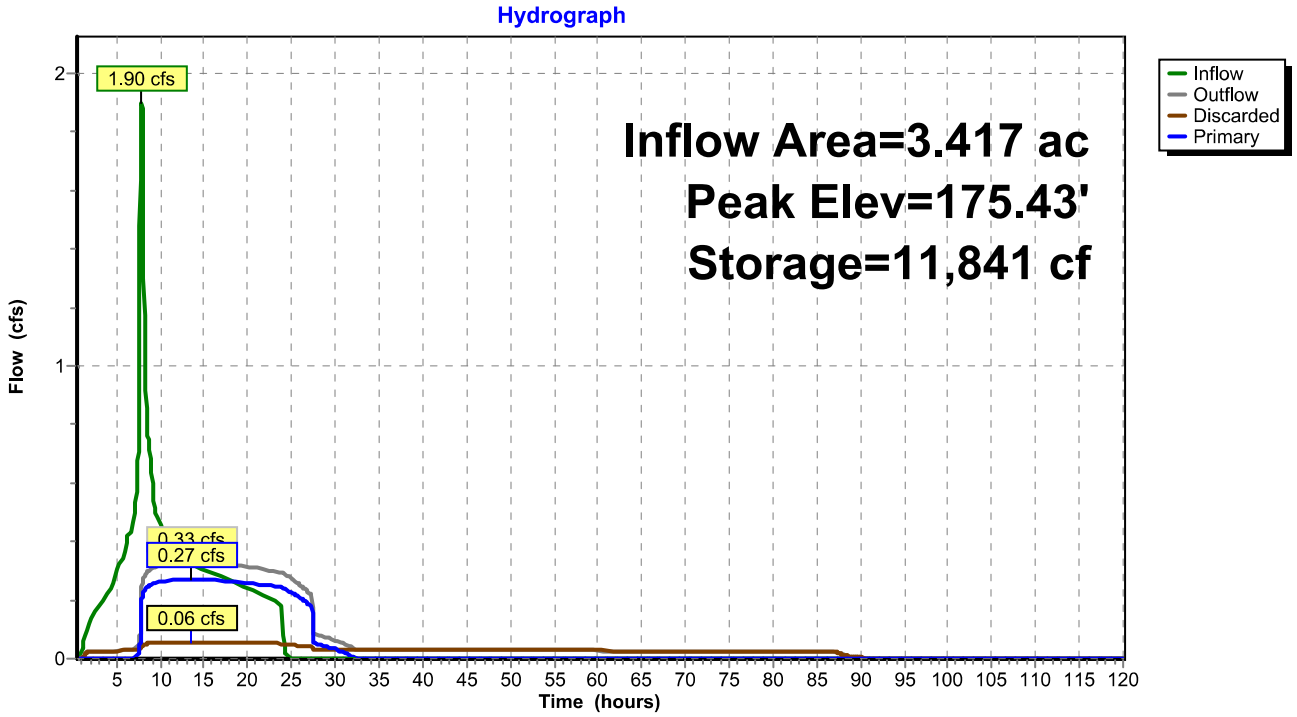
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.35	3,860	0.0	0	0	3,860
172.60	3,860	40.0	6,562	6,562	4,796
174.09	2,610	0.1	5	6,567	6,081
174.10	2,610	100.0	26	6,593	6,083
175.00	4,460	100.0	3,145	9,737	7,943
176.00	6,760	100.0	5,570	15,308	10,258
177.00	10,540	100.0	8,580	23,888	14,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	168.35'	**0.275 in/hr Exfiltration over Wetted area**
#2	Primary	171.85'	**1.6" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	173.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	175.91'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.06 cfs @ 13.46 hrs HW=175.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.27 cfs @ 13.46 hrs HW=175.43' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 9.02 fps)
├**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.54 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: RG (Added Area)



Summary for Pond 12P: RG (Added Area)

Inflow Area = 3.417 ac, 66.09% Impervious, Inflow Depth = 2.67" for Salem 25 YR event
Inflow = 2.20 cfs @ 7.92 hrs, Volume= 0.760 af
Outflow = 0.35 cfs @ 14.76 hrs, Volume= 0.760 af, Atten= 84%, Lag= 410.2 min
Discarded = 0.06 cfs @ 14.76 hrs, Volume= 0.256 af
Primary = 0.29 cfs @ 14.76 hrs, Volume= 0.504 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 175.82' @ 14.76 hrs Surf.Area= 6,309 sf Storage= 14,126 cf

Plug-Flow detention time= 838.7 min calculated for 0.760 af (100% of inflow)
Center-of-Mass det. time= 838.4 min (1,532.6 - 694.1)

Volume	Invert	Avail.Storage	Storage Description
#1	168.35'	23,888 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

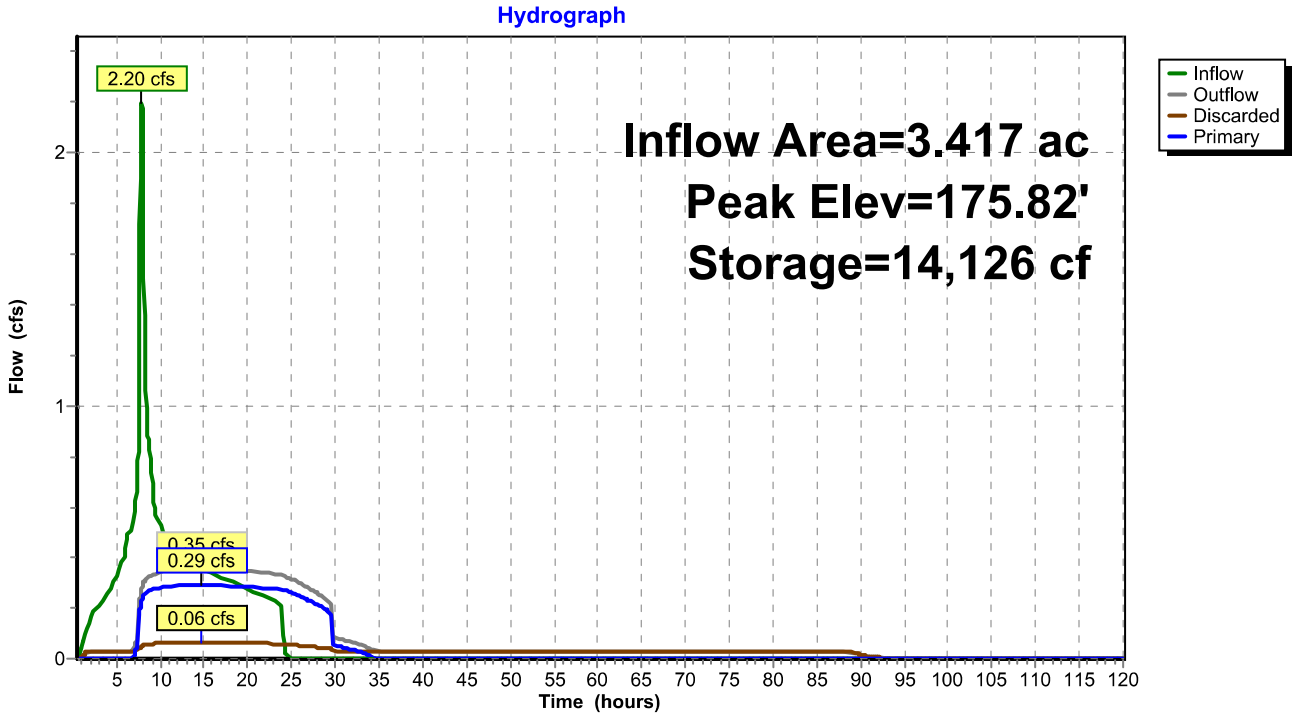
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.35	3,860	0.0	0	0	3,860
172.60	3,860	40.0	6,562	6,562	4,796
174.09	2,610	0.1	5	6,567	6,081
174.10	2,610	100.0	26	6,593	6,083
175.00	4,460	100.0	3,145	9,737	7,943
176.00	6,760	100.0	5,570	15,308	10,258
177.00	10,540	100.0	8,580	23,888	14,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	168.35'	**0.275 in/hr Exfiltration over Wetted area**
#2	Primary	171.85'	**1.6" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	173.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	175.91'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.06 cfs @ 14.76 hrs HW=175.82' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.29 cfs @ 14.76 hrs HW=175.82' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.13 cfs @ 9.51 fps)
├**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.20 fps)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: RG (Added Area)



Summary for Pond 12P: RG (Added Area)

Inflow Area = 3.417 ac, 66.09% Impervious, Inflow Depth > 3.40" for Salem 100 YR event
Inflow = 2.81 cfs @ 7.92 hrs, Volume= 0.967 af
Outflow = 0.70 cfs @ 9.80 hrs, Volume= 0.967 af, Atten= 75%, Lag= 113.1 min
Discarded = 0.07 cfs @ 9.80 hrs, Volume= 0.270 af
Primary = 0.63 cfs @ 9.80 hrs, Volume= 0.696 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 176.06' @ 9.80 hrs Surf.Area= 6,964 sf Storage= 15,722 cf

Plug-Flow detention time= 733.7 min calculated for 0.967 af (100% of inflow)
Center-of-Mass det. time= 733.4 min (1,423.4 - 690.0)

Volume	Invert	Avail.Storage	Storage Description
#1	168.35'	23,888 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

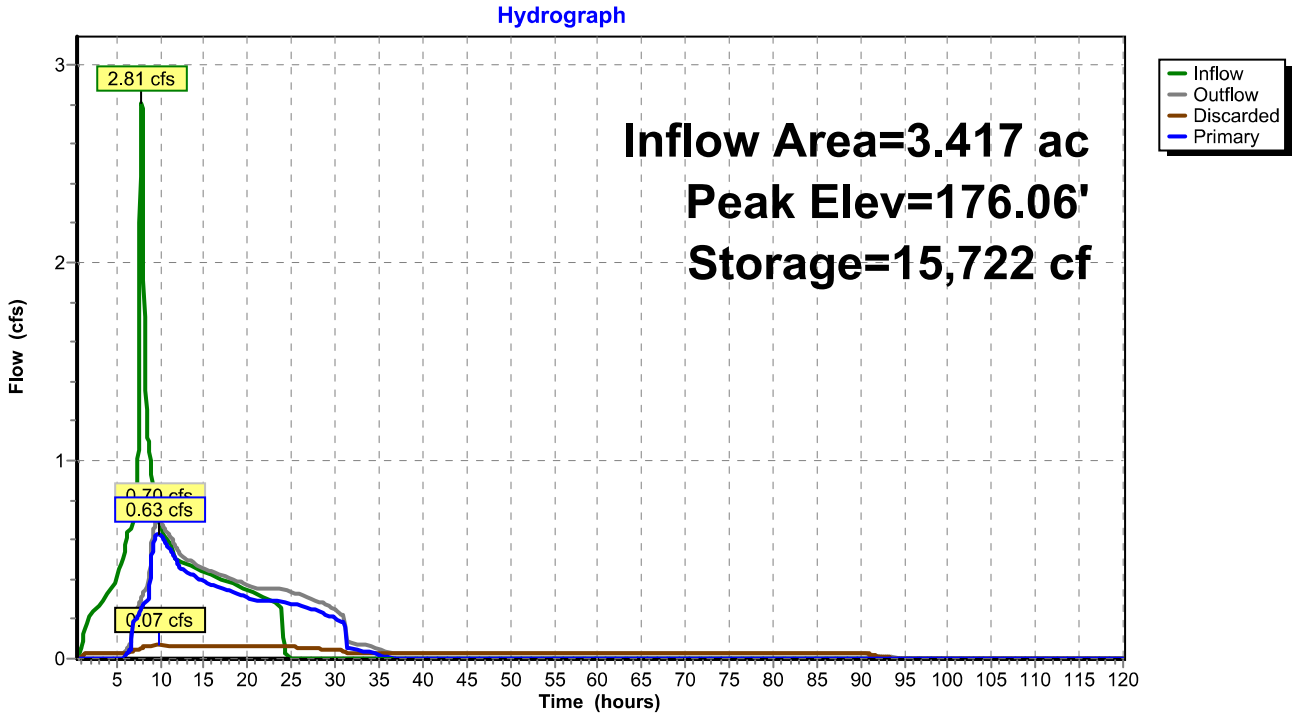
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.35	3,860	0.0	0	0	3,860
172.60	3,860	40.0	6,562	6,562	4,796
174.09	2,610	0.1	5	6,567	6,081
174.10	2,610	100.0	26	6,593	6,083
175.00	4,460	100.0	3,145	9,737	7,943
176.00	6,760	100.0	5,570	15,308	10,258
177.00	10,540	100.0	8,580	23,888	14,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	168.35'	**0.275 in/hr Exfiltration over Wetted area**
#2	Primary	171.85'	**1.6" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	173.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	175.91'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.07 cfs @ 9.80 hrs HW=176.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.63 cfs @ 9.80 hrs HW=176.06' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.14 cfs @ 9.80 fps)
├**3=Orifice/Grate** (Orifice Controls 0.17 cfs @ 7.58 fps)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.33 cfs @ 1.09 fps)

Pond 12P: RG (Added Area)



Summary for Pond 12P: RG (Added Area)

Inflow Area = 3.417 ac, 66.09% Impervious, Inflow Depth = 0.81" for Salem WQ event
Inflow = 0.68 cfs @ 7.91 hrs, Volume= 0.229 af
Outflow = 0.08 cfs @ 21.82 hrs, Volume= 0.229 af, Atten= 88%, Lag= 834.8 min
Discarded = 0.03 cfs @ 21.82 hrs, Volume= 0.186 af
Primary = 0.05 cfs @ 21.82 hrs, Volume= 0.044 af
Routed to nonexistent node 6L

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 172.43' @ 21.82 hrs Surf.Area= 3,860 sf Storage= 6,303 cf

Plug-Flow detention time= 1,584.5 min calculated for 0.229 af (100% of inflow)
Center-of-Mass det. time= 1,585.5 min (2,298.9 - 713.4)

Volume	Invert	Avail.Storage	Storage Description
#1	168.35'	23,888 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

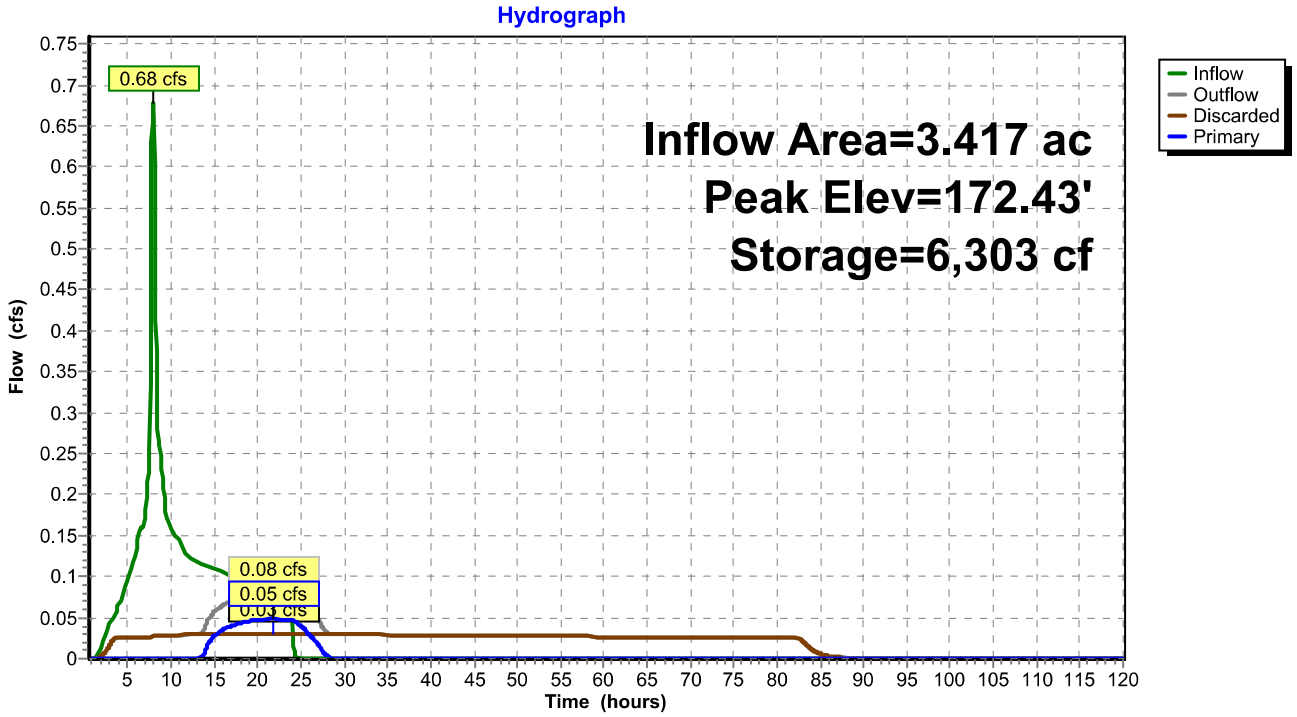
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
168.35	3,860	0.0	0	0	3,860
172.60	3,860	40.0	6,562	6,562	4,796
174.09	2,610	0.1	5	6,567	6,081
174.10	2,610	100.0	26	6,593	6,083
175.00	4,460	100.0	3,145	9,737	7,943
176.00	6,760	100.0	5,570	15,308	10,258
177.00	10,540	100.0	8,580	23,888	14,052

Device	Routing	Invert	Outlet Devices
#1	Discarded	168.35'	**0.275 in/hr Exfiltration over Wetted area**
#2	Primary	171.85'	**1.6" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	173.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	175.91'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

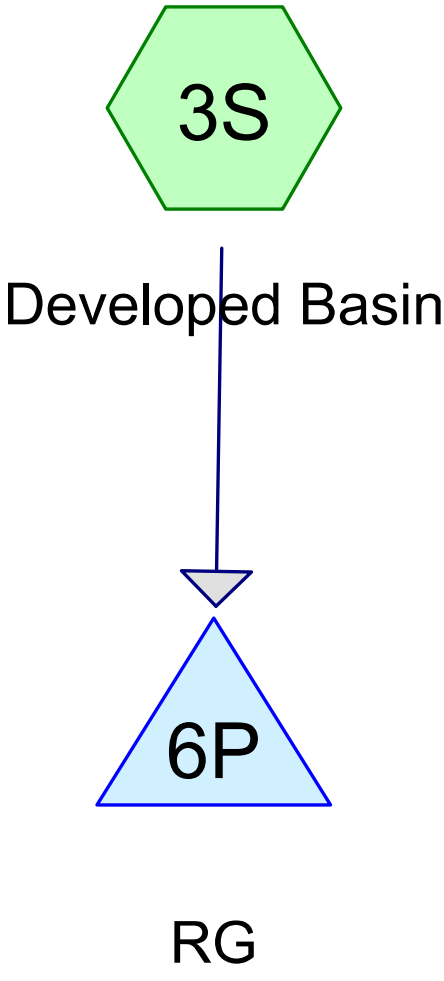
Discarded OutFlow Max=0.03 cfs @ 21.82 hrs HW=172.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.05 cfs @ 21.82 hrs HW=172.43' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 3.46 fps)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: RG (Added Area)



Surface Test



Subcat Reach Pond Link

Routing Diagram for Blossom Aptmts V3
Prepared by Westech Engineering Inc
HydroCAD® 10.20-2f s/n 07289 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment 3S: Developed Basin

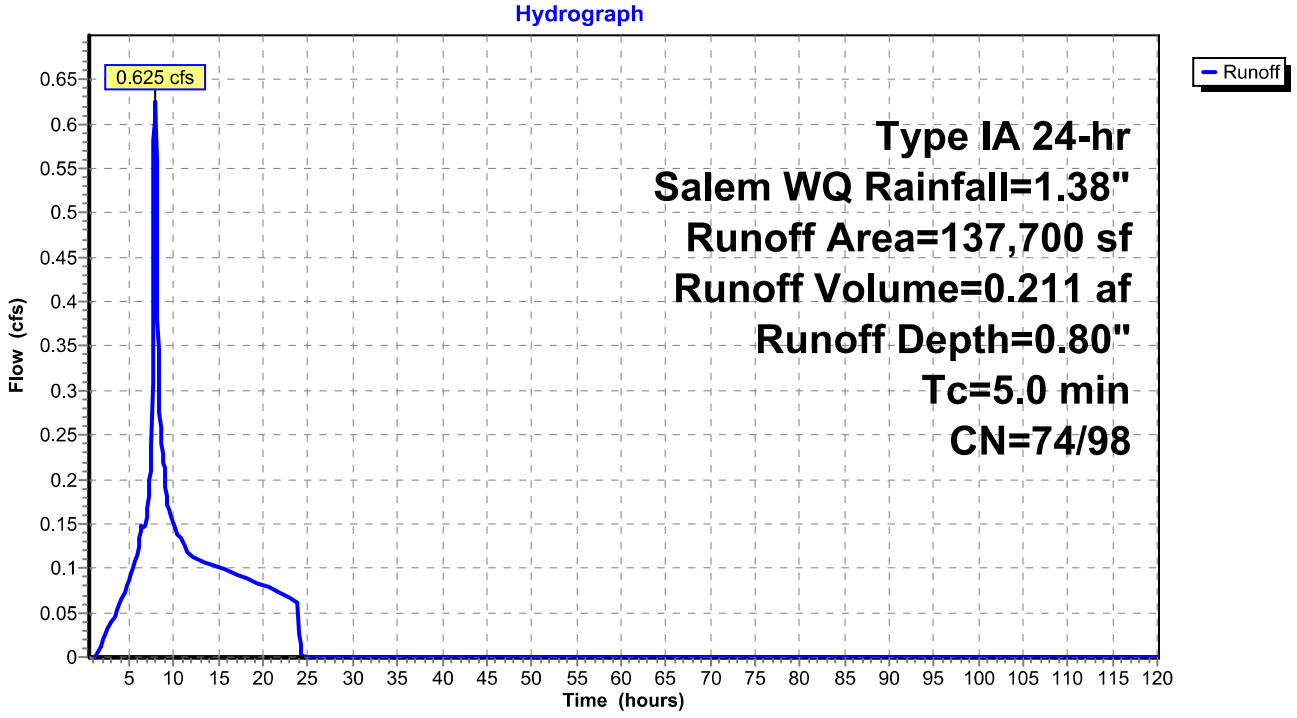
Runoff = 0.625 cfs @ 7.91 hrs, Volume= 0.211 af, Depth= 0.80"
Routed to Pond 6P : RG

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Type IA 24-hr Salem WQ Rainfall=1.38"

Area (sf)	CN	Description
90,700	98	Paved parking, HSG C
47,000	74	>75% Grass cover, Good, HSG C
137,700	90	Weighted Average
47,000		34.13% Pervious Area
90,700		65.87% Impervious Area

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

Subcatchment 3S: Developed Basin



Summary for Pond 6P: RG

Inflow Area = 3.161 ac, 65.87% Impervious, Inflow Depth = 0.80" for Salem WQ event
Inflow = 0.625 cfs @ 7.91 hrs, Volume= 0.211 af
Outflow = 0.191 cfs @ 9.08 hrs, Volume= 0.211 af, Atten= 69%, Lag= 69.9 min
Discarded = 0.191 cfs @ 9.08 hrs, Volume= 0.211 af

Routing by Stor-Ind method, Time Span= 0.50-120.00 hrs, dt= 0.05 hrs
Peak Elev= 174.55' @ 9.08 hrs Surf.Area= 3,252 sf Storage= 1,330 cf

Plug-Flow detention time= 50.4 min calculated for 0.211 af (100% of inflow)
Center-of-Mass det. time= 50.4 min (764.0 - 713.6)

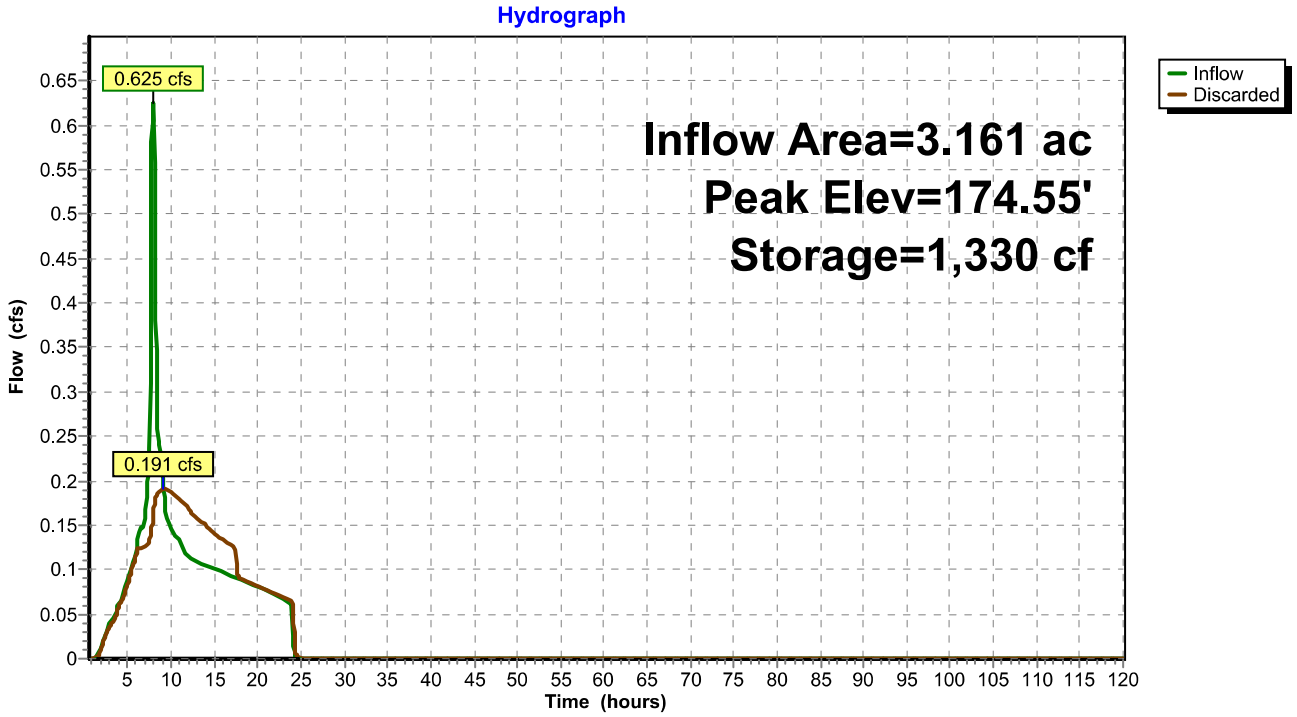
Volume	Invert	Avail.Storage	Storage Description
#1	174.10'	7,559 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
174.10	2,610	0.0	0	0	2,610
175.00	3,950	100.0	2,931	2,931	3,962
176.00	5,340	100.0	4,628	7,559	5,373

Device	Routing	Invert	Outlet Devices
#1	Discarded	174.10'	**2.000 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 172.60'

Discarded OutFlow Max=0.191 cfs @ 9.08 hrs HW=174.55' (Free Discharge)
↑**1=Exfiltration** (Controls 0.191 cfs)

Pond 6P: RG


Hydrograph
Inflow Area=3.161 ac
Peak Elev=174.55'
Storage=1,330 cf
0.625 cfs
0.191 cfs
Inflow
Discarded
Flow (cfs)
Time (hours)
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0.65
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

APPENDIX D

GEOTECHNICAL REPORT

Geotechnical Engineering Report

Blossom Drive Apartments
Salem, Oregon

for
Clutch Industries, Inc.

July 28, 2020

GeoEngineers
Earth Science + Technology

Geotechnical Engineering Report

Blossom Drive Apartments
Salem, Oregon

for
Clutch Industries, Inc.

July 28, 2020

GeoEngineers

333 High Street NE, Suite 102
Salem, Oregon 97301
971.304.3078

Geotechnical Engineering Report

Blossom Drive Apartments
Salem, Oregon

File No. 23830-006-00

July 28, 2020

Prepared for:

Clutch Industries, Inc.
360 Belmont Street NE
Salem, Oregon 97301

Attention: Chris Anderson

Prepared by:

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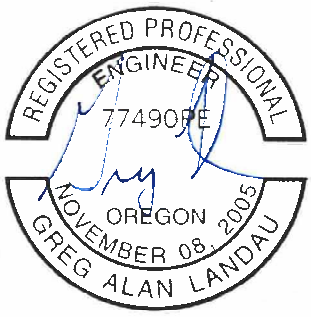
Benjamin J. Hoffman, PE
Senior Engineer

for

Julio C. Vela, PhD, PE, GE
Principal



EXPIRES: 12.31.20

BJH:JCV:cje

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APPENDICES

1.0 INTRODUCTION

GeoEngineers, Inc. (GeoEngineers), is pleased to submit this geotechnical engineering report for the proposed Blossom Drive Apartments located at the property at 3480 Blossom Drive NE in Salem, Oregon. Our understanding of the project is based on information provided to us by Mr. Chris Anderson of Clutch Industries, LLC, including a "Proposed Site Plan" dated June 10, 2020, that was prepared by others. The location of the site relative to the surrounding area is shown in the Vicinity Map, Figure 1.

Based on the information provided to us, we understand that the project consists of constructing a total of eight apartment buildings (Buildings 1 through 8), that are two- or three-story wood-framed structures, as well as associated paved parking and drive areas. The apartment development would be located to the south of the current private residence at 3480 Blossom Drive NE, in areas of the property generally consisting of an agricultural use area that includes farm-related structures and an open grass field. Building and pavement traffic loads were not provided. We have assumed typical light wood-frame structural loads consistent with development of two- and three-story wood-framed apartment structures with assumed maximum column and wall loads on the order of 30 kips per column and 2 to 3 kips per lineal foot (klf) respectively, and floor loads for slabs on grade of 100 pounds per square foot (psf) or less. We have also assumed that maximum cuts and fills will be less than 2 feet each, and that no on-site retaining walls will be required.

2.0 SCOPE OF SERVICES

The purpose of our services was to evaluate soil and groundwater conditions as a basis for developing geotechnical design and construction recommendations for the proposed apartment development project.

Our proposed scope of services included the following:

1. Reviewed existing available subsurface soil and groundwater information, geologic maps and other available geotechnical engineering related information pertinent to the site.
2. Coordinated and managed the field investigation, including public utility notification and scheduling of subcontractors and GeoEngineers' field staff.
3. Explored subsurface soil and groundwater conditions at the site by drilling a total of eight borings. Six borings (B-1 through B-6) advanced within proposed apartment building footprints, each extending to a depth of 16½ feet below ground surface (bgs), and two borings (B-7 and B-8) advanced in proposed paved and parking areas, extending to a depth of 6½ feet bgs. Exploration locations are shown in the Site Plans, Figures 2A and 2B. Logs of each exploration are provided in Appendix A.
4. Obtained samples at representative intervals from the explorations, observed groundwater conditions and maintained detailed logs in general accordance with ASTM International (ASTM) Standard Practices Test Method D 2488. Qualified staff from our office observed and documented field activities.
5. Performed two infiltration tests (IT-1 and IT-2) at select locations at the project site as shown in Figures 2A and 2B. Infiltration testing was conducted as required by Division 004 of the *City of Salem Department of Public Works Administrative Rules Design Standards* (COSDS).

6. Performed laboratory tests on selected soil samples obtained from the explorations to evaluate pertinent engineering characteristics. Laboratory test results are included in the exploration logs in Appendix A.
7. Provided a geotechnical evaluation of the site and provided project-specific design recommendations in this geotechnical report that address the following geotechnical components:
    a. A general description of site topography, geology and subsurface conditions.
    b. An opinion as to the adequacy of the proposed development from a geotechnical engineering standpoint.
    c. Recommendations for site preparation measures, including disposition of undocumented fill and unsuitable native soils, recommendations for temporary cut slopes and constraints for wet weather construction.
    d. Provide estimates of groundwater level and management recommendations.
    e. Recommendations for temporary excavation and temporary excavation protection, such as excavation sheeting and bracing.
    f. Recommendations for earthwork construction, including use of on-site and imported structural fill, and fill placement and compaction requirements.
    g. Recommendations for shallow foundations to support the proposed structures, including minimum width and embedment, design soil bearing pressures, settlement estimates (total and differential), coefficient of friction and passive earth pressures for sliding resistance.
    h. Recommendations for supporting on-grade slabs, including base rock, capillary break, and modulus of subgrade reaction.
    i. Summary of infiltration testing and discussion of suitability of on-site infiltration facilities based on subsurface conditions.
    j. Seismic design parameters, including soil site class evaluation in accordance with the current version of the International Building Code (IBC).

Our geotechnical work has been directly supervised by a professional engineer licensed in the state of Oregon.

3.0 SITE CONDITIONS

3.1. Surface Conditions

The proposed new development is located in an approximate 3.5-acre farm property consisting of several farm structures, fencing, trees, and an open grass field. The property is generally level to gently undulating, with the majority of the site ground surface elevation between approximately 179 and 186 feet North American Vertical Datum 1988 (NAVD 88). Site surface conditions are shown in Figures 2A and 2B.

3.2. Site Geology

The geology of the site is mapped by Tolan and Beeson (2000) as underlain by Holocene to Pleistocene "older alluvium" of the Willamette River and its tributaries, described as "…..poorly indurated glaciofluvial clays and silts deposited by the catastrophic (Missoula) Floods."

Our on-site investigation suggests that the site geology is generally consistent with the published mapping and our experience in the area. Subsurface conditions encountered in our borings suggest the shallow soils are typically silt.

3.3. Subsurface Conditions

We completed field explorations at the project site on July 14, 2020. Our explorations included eight drilled borings (B-1 through B-8) to depths of between 6½ to 16½ feet bgs, two infiltration tests (IT-1 and IT-2) at depths of 3 and 2.5 feet bgs, respectively, and two dynamic cone penetrometer (DCP) readings (DCP-1 and DCP-2) to depths of approximately 42 inches bgs. A summary of our exploration methods as well as the boring logs/infiltration test logs can be found in Appendix A. Laboratory test results are also provided in the exploration logs and described in Appendix A. The approximate locations of the explorations are shown in Figures 2A and 2B.

At the time of our explorations, the site was surfaced with a gravel driveway, mowed grass lawn, and a tall grass field that included an approximate 6-inch-thick rootzone/topsoil layer with a tilled soil zone that extended to a depth of 12 to 18 inches. The surface soil is generally underlain by 15 or more feet of medium stiff to very stiff silt and silt with sand to the maximum depth explored.

3.4. Groundwater

Groundwater was not encountered during drilling and likely present at depths greater than 15 feet bgs. Groundwater may be present at shallower depths in a perched or capillary condition during wet times of the year or during extended periods of wet weather. Groundwater conditions at the site are expected to vary seasonally due to rainfall events and other factors not observed in our explorations.

4.0 CONCLUSIONS

4.1. General

Based on our explorations, testing and analyses, it is our opinion that the site is suitable for the proposed project from a geotechnical standpoint, provided the recommendations in this report are included in design and construction. We offer the following summary of conclusions regarding geotechnical design at the site.

- Groundwater was not encountered in the upper 15 feet bgs during drilling.
- Surface conditions at the site consist primarily of undeveloped areas covered with field-type grass; therefore, stripping will be required in all proposed development areas. We anticipate a stripping depth of approximately 6 inches bgs to remove the grass roots and topsoil layer. The upper tilled zone is considered disturbed and classified as undocumented fill. The upper tilled zone should be compacted after stripping and prior to placement of fill.
- Measured infiltration rates generally range from 0.4 to 0.7 inches/hour (in/hr). In general, soils with infiltration rates less than 2 in/hr are not well suited as the sole means of stormwater disposal for sites.

In addition, relatively shallow groundwater levels limit the depth to which infiltration facilities can be extended.

- Typical infiltration facilities require at least 5 feet of separation between the base of the facility and the seasonal high groundwater level. Groundwater was not encountered at depths of at least 15 feet bgs.
- On-site near surface soils generally consist of silt. The silty soil will become significantly disturbed when trafficked during earthwork, particularly when construction traffic over the site occurs during periods of wet weather or when the moisture content of the soil is more than a few percentage points above optimum. Wet weather construction practices will be required over exposed native soils unless earthwork occurs during the dry summer months (typically mid-July to mid-September).
- Proposed structures can be satisfactorily supported on continuous and isolated shallow foundations supported on medium stiff to very stiff native soils or on structural fill that extends to native soil.
- Based on proposed development, our foundation recommendations are based on maximum anticipated loads of 30 kips or less for columns, 3 klf or less for walls, and floor loads of 100 psf or less. Based on these design loads, we estimate total settlement to be less than 1 inch. If larger structural loads are anticipated, we should review and reassess the estimated settlement.
- Fill material encountered at subgrade elevation should be evaluated by GeoEngineers during construction. Soft fill or fill with significant debris or unsuitable material should be removed to native stiff or firmer material and replaced with compacted structural fill.
- Slabs-on-grade will be satisfactorily supported on medium stiff to very stiff native soils with a minimum 6-inch-thick layer of compacted crushed rock base overlying approved subgrade or on structural fill over medium stiff to stiff native soils.
- Standard pavement sections prepared as described in this report will suitably support the estimated traffic loads provided the site subgrade is prepared as recommended.

5.0 INFILTRATION TESTING

5.1. General

As is typical for development projects in the Salem area, we conducted infiltration tests on site to assist in evaluation of the site for potential stormwater infiltration design. We conducted two infiltration tests, at depths of 2.5 and 3 feet bgs; one (IT-1) near Blossom Drive NE at the entrance to the site and near boring B-7, the other (IT-2) near the center of the open grass field and boring B-8. This is a typical depth for consideration of stormwater disposal.

Testing was conducted using the encased falling head procedure consistent with the method outlined in "Division 004" of the COSDS. A 2- to 3-inch-thick layer of pea gravel was placed in the pipes prior to adding water to diminish disturbance from flowing water at the base of the pipe interior. The test areas were pre-soaked over a 4-hour period by repeated addition of water into the pipe when necessary. A good seal was present between the base of the pipe and the underlying soil in our opinion.

In both infiltration tests (IT-1 and IT-2), after the saturation period, the pipe was filled with clean water to at least 1 foot above the bottom of the pipe placed in the boring. The drop in water level was measured over a period of time after the soak period. In the case where water levels fall during the time-measured testing,

infiltration rates diminish as a result of less head from the water column in the test. Field test results are summarized in Table 1.

TABLE 1. INFILTRATION RESULTS

Infiltration Test No.	Location	Depth (feet)	USCS Material Type	Field Measured Infiltration Rate[1] (inches/hour)
IT-1	North area of site (near B-7)	3	ML	0.4 to 0.7
IT-2	South-central area of site (near B-8)	2.5	ML	0.4 to 0.7

Notes:

[1] Appropriate factors should be applied to the field-measured infiltration rate, based on the design methodology and specific system.

USCS = Unified Soil Classification System

Infiltration rates shown in Table 1 are field-measured rates and represent a relatively short-term measured rate. Factors of safety have not been applied for the type of infiltration system being considered, or for variability that may be present in the on-site soil. In our opinion, and consistent with the state of the practice, correction factors should be applied to this measured rate to reflect the small area of testing and the number of tests conducted.

Appropriate correction factors should be applied by the project civil engineer to account for long-term infiltration parameters. From a geotechnical perspective, we recommend a factor of safety (correction factor) of at least 2 be applied to this type of field infiltration testing result to account for potential soil variability with depth and location within the area tested. In addition, the stormwater system design engineer should determine and apply appropriate remaining correction factor values, or factors of safety, to account for repeated wetting and drying that occur in this area, degree of in-system filtration, frequency and type of system maintenance, vegetation, potential for siltation and bio-fouling, etc., as well as system design correction factors for overflow or redundancy, and base and facility size.

Actual depths, lateral extent, and estimated infiltration rates can vary from the values presented above. Field testing/confirmation during construction is often required in large or long systems or other situations where soil conditions may vary within the area where the system is constructed. The results of this field testing during construction might necessitate that the infiltration locations be modified to achieve the design infiltration rate for the overall system.

Even in the best of circumstances. the infiltration flow rate of a focused stormwater system typically diminishes over time as suspended solids and precipitates in the stormwater slowly clog the void spaces between soil particles or cake on the infiltration surface. The serviceable life of a stormwater system can be extended by pre-filtering or with on-going accessible maintenance. Eventually, most systems will fail and will need to be replaced or have media regenerated or replaced. We recommend that infiltration systems include an overflow that is connected to a suitable discharge point. Also, infiltration systems can cause localized high groundwater levels and should not be located near basement walls, retaining walls, or other embedded structures unless these are specifically designed to account for resulting hydrostatic pressure. Infiltration locations should not be located on or adjacent to sloping ground, unless it is approved by the project geotechnical engineer of record, and should not be infiltrated at a location that allows for flow to travel laterally toward a slope face, such as a mounded water condition or too near the slope face.

5.2. Suitability of Infiltration System

Successful design and implementation of stormwater infiltration systems, and whether a system is suitable for a development depend on several site-specific factors. Stormwater infiltration systems are generally best suited for sites having sandy or gravelly soil with saturated hydraulic conductivities greater than 2 in/hr. Sites with silty or clayey soil, including sites with fine sand, silty sand such as at the upper portions of this site, or gravel with a high percentage of silt or clay in the matrix are generally not well suited for stormwater infiltration. Soil that has higher fine-grained matrices is susceptible to volumetric change and softening during wetting and drying cycles. Fine-grained soil also has large variations in the magnitude of infiltration rates because of bedding and stratification that occurs during deposition and often has thin layers of less permeable or impermeable soil within a larger layer.

As a result of fine-grained soil conditions and relatively low measured infiltration rates, we recommend infiltration of stormwater not be used in the upper soils, or at the very least not be used as the sole method of stormwater management at this site unless those design factors can be otherwise accounted for by increasing infiltration area or coupling with other methods of stormwater disposal. At a minimum, an overflow method should be provided for the overall system.

6.0 EARTHWORK RECOMMENDATIONS

6.1. Site Preparation

In general, site preparation and earthwork for site development will include demolition of existing farm structures, excavation for removal of existing tree and tree root removal, stripping and grubbing, grading the site and excavating for utilities and foundations, and may also include removal or relocation of existing site utilities where present beneath proposed buildings.

6.1.1. Demolition

Existing structures should be demolished and removed from the site. If present, existing utilities that will be abandoned on site should be identified prior to project construction. Abandoned utility lines beneath proposed structural areas should be completely removed or filled with grout if abandoned and left in-place in order to reduce potential settlement or caving in the future. Materials generated during demolition of existing utilities should be transported off site for disposal.

Existing voids and new depressions created due to removal of existing utilities, or other subsurface elements, should be cleaned of loose soil or debris down to firm soil and backfilled with compacted structural fill. Disturbance to a greater depth should be expected if site preparation and earthwork are conducted during periods of wet weather.

6.1.2. Stripping and Grubbing

Based on our observations at the site, we estimate that the depth of stripping of on-site organics in grass-covered areas will be on the order of about 6 inches. Greater stripping depths may be required to remove localized zones of loose or organic soil, and in areas where moderate to heavy vegetation may be present, or surface disturbance has occurred. In addition, if present in areas of proposed development, the primary root systems of trees should be completely removed. Stripped material should be transported off site for disposal or processed and used as fill in landscaping areas.

Where encountered, trees and their root balls should be grubbed to the depth of the roots, which could exceed 3 feet bgs. Depending on the methods used to remove the preceding material, considerable disturbance and loosening of the subgrade could occur. We recommend that disturbed soil be removed to expose stiff native soil. The resulting excavations should be backfilled with structural fill.

6.2. Subgrade Preparation and Evaluation

Upon completion of site preparation activities, exposed subgrades that are to receive fill should be compacted in-place prior to fill placement due to the presence of a tilled zone that extends to depths of 12 to 18 inches bgs. If site grading extends to below these depths, and to the native in-place (non-tilled) soils, compaction of in-place subgrade is not required.

Exposed subgrades should be proof-rolled with a fully loaded dump truck or similar heavy rubber-tired construction equipment where space allows to identify soft, loose or unsuitable areas. Probing may be used for evaluating smaller areas or where proof-rolling is not practical. Proof-rolling and probing should be conducted prior to placing fill, and should be performed by a representative of GeoEngineers who will evaluate the suitability of the subgrade and identify areas of yielding that are indicative of soft or loose soil. If soft or loose zones are identified during proof-rolling or probing, these areas should be excavated to the extent indicated by our representative and replaced with structural fill.

As discussed in Section 4.1 of this report, the native fine-grained, silty soil can be sensitive to small changes in moisture content and will be difficult, if not impossible, to compact adequately during wet weather. While tilling and compacting the subgrade is the economical method for subgrade improvement, it will likely only be possible during extended dry periods and following moisture conditioning of the soil.

During wet weather, or when the exposed subgrade is wet or unsuitable for proof-rolling, the prepared subgrade should be evaluated by observing excavation activity and probing with a steel foundation probe. Observations, probing, and compaction testing should be performed by a member of our staff. Wet soil that has been disturbed due to site preparation activities or soft or loose zones identified during probing should be removed and replaced with compacted structural fill.

6.3. Subgrade Protection and Wet Weather Considerations

The upper fine-grained soils at the site are highly susceptible to moisture. Wet weather construction practices will be necessary if work is performed during periods of wet weather. If site grading will occur during wet weather conditions, it will be necessary to use track-mounted equipment, load material into trucks supported on gravel work pads and employ other methods to reduce ground disturbance. The contractor should be responsible to protect the subgrade during construction, reflective of their proposed means and methods and time of year.

Earthwork planning should include considerations for minimizing subgrade disturbance. The following recommendations can be implemented if wet weather construction is considered:

- The ground surface in and around the work area should be sloped so that surface water is directed to a sump or discharge location. The ground surface should be graded such that areas of ponded water do not develop. Measures should be taken by the contractor to prevent surface water from collecting in excavations and trenches. Measures should be implemented to remove surface water from the work area.

- Earthwork activities should not take place during periods of heavy precipitation.
- Slopes with exposed soils should be covered with plastic sheeting or similar means.
- The site soils should not be left uncompacted and exposed to moisture. Sealing the surficial soils by rolling with a smooth-drum roller prior to periods of precipitation will reduce the extent to which these soils become wet or unstable.
- Construction activities should be scheduled so that the length of time that soils are left exposed to moisture is reduced to the extent practicable.
- Construction traffic should be restricted to specific areas of the site, preferably areas that are surfaced with working pad materials not susceptible to wet weather disturbance such as haul roads and rocked staging areas.
- When on-site fine-grained soils are wet of optimum, they are easily disturbed and will not provide adequate support for construction traffic or the proposed development. The use of granular haul roads and staging areas will be necessary for support of construction traffic. Generally, a 12- to 16-inch-thick mat of imported granular base rock aggregate material is sufficient for light staging areas for building pad and light staging activities but is not expected to be adequate to support repeated heavy equipment or truck traffic. The granular mat for haul roads and areas with repeated heavy construction traffic should be increased to between 18 and 24 inches. The actual thickness of haul roads and staging areas should be based on the contractor's approach to site development, and the amount and type of construction traffic.
- During periods of wet weather, concrete should be placed as soon as practical after preparation of the footing excavations. Foundation bearing surfaces should not be exposed to standing water. If water collects in the excavation, it should be removed before placing structural fill or reinforcing steel. Subgrade protection for foundations consisting of a lean concrete mat may be necessary if footing excavations are exposed to extended wet weather conditions.
- The base rock (Aggregate Base and Aggregate Subbase) thicknesses described in Section 9.0 of this report is intended to support post-construction design traffic loads. The design base rock thicknesses will likely not support repeated heavy construction traffic during site construction, or during pavement construction. A thicker base rock section, as described above for haul roads, will likely be required to support construction traffic.

During wet weather, or when the exposed subgrade is wet or unsuitable for proof-rolling, the prepared subgrade should be evaluated by observing excavation activity and probing with a steel foundation probe. Observations, probing and compaction testing should be performed by a member of our staff. Wet soil that has been disturbed due to site preparation activities or soft or loose zones identified during probing should be removed and replaced with compacted structural fill.

6.4. Cement Treated Subgrade Design

These recommendations are included as a potential alternative to the use of imported granular material for wet weather structural fill provided areas being graded or developed make the cement treating process a feasible option.

An experienced contractor may be able to amend the on-site soil with portland cement to obtain suitable support properties. Successful use of soil amendment depends on the use of correct mixing techniques,

soil moisture content and amendment quantities. Specific recommendations, based on exposed site conditions, for soil amending can be provided if necessary. However, for preliminary planning purposes, it may be assumed that a minimum of 5 percent cement (by dry weight, assuming a unit weight of 100 pounds per cubic foot [pcf]) will be sufficient for subgrade and general fill amendment. Treatment depths of 12 to 16 inches for roadway subgrades are typical (assuming a seven-day unconfined compressive strength of at least 80 pounds per square inch [psi]), though they may be adjusted in the field depending on site conditions. Soil amending should be conducted in accordance with the specifications provided in Oregon Structural Specialty Code 00344 (Treated Subgrade).

Portland cement-amended soil is hard and has low permeability; therefore, this soil does not drain well nor is it suitable for planting. Future landscape areas should not be cement amended, if practical, or accommodations should be planned for drainage and planting. Cement amendment should not be used if runoff during construction cannot be directed or drained away from areas that would be negatively affected by runoff from the amended surface, including adjacent building foundations, low-lying wet areas or active waterways, and area drainage paths.

We recommend a target strength for cement-amended soils of 80 psi. The amount of cement used to achieve this target generally varies with moisture content and soil type. It is difficult to predict field performance of soil to cement amendment due to variability in soil response, and we recommend laboratory testing to confirm expectations. However, for preliminary design purposes, 4 to 5 percent cement by weight of dry soil can generally be used when the soil moisture content does not exceed approximately 25 percent. If the soil moisture content is in the range of 25 to 35 percent, 5 to 7 percent by weight of dry soil is recommended. The amount of cement added to the soil may need to be adjusted based on field observations and performance.

When used for construction of pavement, staging, or haul road subgrades, the amended surface should be protected from abrasion by placing a minimum 4-inch thickness of crushed rock. To prevent strength loss during curing, cement-amended soil should be allowed to cure for a minimum of four days prior to placing the crushed rock. The crushed rock may typically become contaminated with soil during construction. Contaminated base rock should be removed and replaced with clean rock in pavement areas such that the minimum thickness of free-draining base at the surface is 4 inches.

It is not possible to amend soil during heavy or continuous rainfall. Work should be completed during suitable conditions.

6.5. Excavation

Based on the materials encountered in our subsurface exploration, it is our opinion that conventional earthmoving equipment in proper working condition should be capable of making necessary general excavations.

The earthwork contractor should be responsible for reviewing this report, including the boring logs, providing their own assessments, and providing equipment and methods needed to excavate the site soils while protecting subgrades.

6.6. Dewatering

As discussed in Section 3.4 of this report, groundwater was not encountered during drilling in the upper 15 feet at the site. We do not anticipate excavations to extend below this depth. However, if excavations do extend into saturated/wet soils they should be dewatered. Sump pumps are expected to adequately address groundwater encountered in shallow excavations. Deeper excavations may require more intensive or filtered dewatering or use of well points. Deeper excavations that extend below groundwater into sandier soils may be difficult to dewater with conventional sumps because inflow of water may promote a "running soils" condition into excavations, where sandy material flows in with seeping groundwater. For deep excavations or where running soils are encountered, dewatering from well points would likely be required to maintain an open and workable trench.

In addition to groundwater seepage and upward confining flow, surface water inflow to the excavations during the wet season can be problematic. Provisions for surface water control during earthwork and excavations should be included in the project plans and should be installed prior to commencing earthwork.

6.7. Trench Cuts and Trench Shoring

All trench excavations should be made in accordance with applicable Occupational Safety and Health Administration (OSHA) and state regulations. Site soils within expected excavation depths typically range from medium stiff to stiff silt. In our opinion, native soils are generally OSHA Type B, provided there is no seepage and excavations occur during periods of dry weather. Excavations deeper than 4 feet should be shored or laid back at an inclination of 1H:1V (horizontal to vertical) for Type B soils. Flatter slopes may be necessary if workers are required to enter. Excavations made to construct footings or other structural elements should be laid back or shored at the surface as necessary to prevent soil from falling into excavations.

Shoring for trenches less than 6 feet deep that are above the effects of groundwater should be possible with a conventional box system. Slight to moderate sloughing should be expected outside the box. Shoring deeper than 6 feet or below the groundwater table should be designed by a registered engineer before installation. Further, the shoring design engineer should be provided with a copy of this report.

In our opinion, the contractor will be in the best position to observe subsurface conditions continuously throughout the construction process and to respond to the soil and groundwater conditions. Construction site safety is generally the sole responsibility of the contractor, who also is solely responsible for the means, methods and sequencing of the construction operations and choices regarding excavations and shoring. Under no circumstances should the information provided by GeoEngineers be interpreted to mean that GeoEngineers is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

6.8. Erosion Control

Erosion control plans are required on construction projects located within Marion County in accordance with Oregon Administrative Rules (OAR) 340-41-006 and 340-41-455 and City of Salem (City) regulations. Measures that can be employed to reduce erosion include the use of silt fences, hay bales, buffer zones of natural growth, sedimentation ponds and granular haul roads.

6.9. Structural Fill and Backfill

6.9.1. General

Structural areas include areas beneath foundations, floor slabs, pavements, and any other areas intended to support structures or within the influence zone of structures, should generally meet the criteria for structural fill presented below. All structural fill soils should be free of debris, clay balls, roots, organic matter, frozen soil, man-made contaminants, particles with greatest dimension exceeding 4 inches (3-inch maximum particle size in building footprints) and other deleterious materials. The suitability of soil for use as structural fill will depend on the gradation and moisture content of the soil. As the amount of fines in the soil matrix increases, the soil becomes increasingly more sensitive to small changes in moisture content and achieving the required degree of compaction becomes more difficult or impossible. Recommendations for suitable fill material are provided in the following sections.

6.9.2. On-Site Soils

On-site near-surface soil consists of native silt. On-site soils can be used as structural fill, provided the material meets the above requirements, although due to moisture sensitivity, this material will likely be unsuitable as structural fill during most of the year. If the soil is too wet to achieve satisfactory compaction, moisture conditioning by drying back the material will be required. If the material cannot be properly moisture conditioned, we recommend using imported material for structural fill.

An experienced geotechnical engineer from GeoEngineers should determine the suitability of on-site soil encountered during earthwork activities for reuse as structural fill.

6.9.3. Imported Select Structural Fill

Select imported granular material may be used as structural fill. The imported material should consist of pit or quarry run rock, crushed rock, or crushed gravel and sand that is fairly well-graded between coarse and fine sizes (approximately 25 to 65 percent passing the U.S. No. 4 sieve). It should have less than 5 percent passing the U.S. No. 200 sieve and have a minimum of 75 percent fractured particles according to American Association of State Highway and Transportation Officials (AASHTO) TP-61.

6.9.4. Aggregate Base

Aggregate base material located under floor slabs and pavements and crushed rock used in footing overexcavations should consist of imported clean, durable, crushed angular rock. Such rock should be well-graded, have a maximum particle size of 1 inch and have less than 5 percent passing the U.S. No. 200 sieve (3 percent for retaining walls), and meet the gradation requirements in Table 2. In addition, aggregate base shall have a minimum of 75 percent fractured particles according to AASHTO TP-61 and a sand equivalent of not less than 30 percent based on AASHTO T-176.

TABLE 2. RECOMMENDED GRADATION FOR AGGREGATE BASE

Sieve Size	Percent Passing (by weight)
1 inch	100
½ inch	50 to 65
No. 4	40 to 60

Sieve Size	Percent Passing (by weight)
No. 40	5 to 15
No. 200	0 to 5

6.9.5. Trench Backfill

Backfill for pipe bedding and in the pipe zone should consist of well-graded granular material with a maximum particle size of ¾ inch and less than 5 percent passing the U.S. No. 200 sieve. The material should be free of organic matter and other deleterious materials. Further, the backfill should meet the pipe manufacturer's recommendations. Above the pipe zone backfill, Imported Select Structural Fill may be used as described above.

6.10. Fill Placement and Compaction

Structural fill should be compacted at moisture contents that are within 3 percent of the optimum moisture content as determined by ASTM Test Method D 1557 (Modified Proctor). The optimum moisture content varies with gradation and should be evaluated during construction. Fill material that is not near the optimum moisture content should be moisture conditioned prior to compaction.

Fill and backfill material should be placed in uniform, horizontal lifts, and compacted with appropriate equipment. The appropriate lift thickness will vary depending on the material and compaction equipment used. Fill material should be compacted in accordance with Table 3, below. It is the contractor's responsibility to select appropriate compaction equipment and place the material in lifts that are thin enough to meet these criteria. However, in no case should the loose lift thickness exceed 18 inches.

TABLE 3. COMPACTION CRITERIA

Fill Type	Compaction Requirements		
	Percent Maximum Dry Density Determined by ASTM Test Method D 1557 at ± 3% of Optimum Moisture		
	0 to 2 Feet Below Subgrade	> 2 Feet Below Subgrade	Pipe Zone
Fine-grained soils (non-expansive)	92	92	----
Imported Granular, maximum particle size < 1¼ inch	95	95	----
Imported Granular, maximum particle size 1¼ inch to 4 inches (3-inch maximum under building footprints)	n/a (proof-roll)	n/a (proof-roll)	----
Retaining Wall Backfill*	92	92	----
Nonstructural Zones	90	90	90
Trench Backfill	95	90	90

Note:

* Measures should be taken to prevent overcompaction of the backfill behind retaining walls. We recommend placing the zone of backfill located within 5 feet of the wall in lifts not exceeding about 6 inches in loose thickness and compacting this zone with hand-operated equipment such as a vibrating plate compactor and a jumping jack.

A representative from GeoEngineers should evaluate compaction of each lift of fill. Compaction should be evaluated by compaction testing unless other methods are proposed for oversized materials and are approved by GeoEngineers during construction. These other methods typically involve procedural placement and compaction specifications together with verifying requirements such as proof-rolling.

6.11. Slopes

6.11.1. Permanent Slopes

Permanent cut or fill slopes should not exceed a gradient of 2H:1V. Where access for landscape maintenance is desired, we recommend a maximum gradient of 3H:1V. Fill slopes should be overbuilt by at least 12 inches and trimmed back to the required slope to maintain a firm face.

Slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

6.11.2. Temporary Slopes

All temporary soil cuts associated with site excavations (greater than 4 feet in depth) should be adequately sloped back to prevent sloughing and collapse, in accordance with applicable OSHA and state guidelines.

Temporary cut slopes should not exceed a gradient appropriate for the soil type being excavated. As noted in Section 6.7, medium stiff silt soils should be considered OSHA Soil Type B. However, because of the variables involved, actual slope angles required for stability in temporary cut areas can only be estimated before construction.

The stability and safety of cut slopes depend on a number of factors, including:

- The type and density of the soil.
- The presence and amount of any seepage.
- Depth of cut.
- Proximity and magnitude of the cut to any surcharge loads, such as stockpiled material, traffic loads or structures.
- Duration of the open excavation.
- Care and methods used by the contractor.

We recommend that stability of the temporary slopes used for construction be the responsibility of the contractor, since the contractor is in control of the construction operation and is continuously at the site to observe the nature and condition of the subsurface. If groundwater seepage is encountered within the excavation slopes, the cut slope inclination may have to be flatter than 1.5H:1V. However, appropriate inclinations will ultimately depend on the actual soil and groundwater seepage conditions exposed in the cuts at the time of construction. It is the responsibility of the contractor to ensure that the excavation is properly sloped or braced for worker protection, in accordance with applicable guidelines. To assist with this effort, we make the following recommendations regarding temporary excavation slopes:

- Protect the slope from erosion with plastic sheeting for the duration of the excavation to minimize surface erosion and raveling.
- Limit the maximum duration of the open excavation to the shortest time period possible.
- Place no surcharge loads (equipment, materials, etc.) within 10 feet of the top of the slope.

More restrictive requirements may apply depending on specific site conditions, which should be continuously assessed by the contractor.

If temporary sloping is not feasible based on-site spatial constraints, excavations could be supported by internally braced shoring systems, such as a trench box or other temporary shoring. There are a variety of options available. We recommend that the contractor be responsible for selecting the type of shoring system to apply.

6.11.3. Slope Drainage

If seepage is encountered at the face of permanent or temporary slopes, it will be necessary to flatten the slopes or install a subdrain to collect the water. We should be contacted to evaluate such conditions on a case-by-case basis.

7.0 STRUCTURAL DESIGN RECOMMENDATIONS

7.1. Foundation Support Recommendations

Proposed structures can be satisfactorily founded on continuous strip or isolated column footings supported on firm native soils, or on structural fill placed over native soils. Exterior footings should be established at least 18 inches below the lowest adjacent grade. The recommended minimum footing depth is greater than the anticipated frost depth. Interior footings can be founded a minimum of 12 inches below the top of the floor slab. Continuous wall footings should have a minimum width equal to 18 inches. Isolated column and continuous wall footings should have minimum widths of 24 and 18 inches, respectively. We have assumed that the maximum isolated column loads will be on the order of 30 kips, wall loads will be 3 klf or less and floor loads for slabs-on-grade will be 100 psf or less for the proposed development. If design loads exceed these values, we should be notified as our recommendations may need to be revised.

7.1.1. Foundation Subgrade Preparation

We recommend that prepared subgrades be observed by a member of our firm, who will evaluate the suitability of the subgrade and identify any areas of yielding, which are indicative of soft or loose soil. The exposed subgrade soil should be probed with a ½-inch-diameter steel rod. If soft, yielding or otherwise unsuitable areas are revealed during probing the unsuitable soils should be removed and replaced with structural fill, as needed.

Fill material encountered at subgrade elevation should be evaluated by GeoEngineers during construction. Soft fill or fill with significant debris or unsuitable material should be removed to native medium stiff or stiffer material and replaced with compacted structural fill. The width of the overexcavation should extend beyond the edge of the footing a distance equal to the depth of the overexcavation below the base of the footing.

We recommend loose or disturbed soils be removed before placing reinforcing steel and concrete. Foundation bearing surfaces should not be exposed to standing water. If water infiltrates and pools in the excavation, the water, along with any disturbed soil, should be removed before placing reinforcing steel. A thin layer (2 to 3 inches) of crushed rock can be used to provide protection to the subgrade from light foot traffic. Compaction should be performed as described in Section 6.10.

We recommend GeoEngineers observe all foundation excavations before placing concrete forms and reinforcing steel to determine that bearing surfaces have been adequately prepared and the soil conditions are consistent with those observed during our explorations.

7.1.2. Bearing Capacity – Spread Footings

We recommend conventional footings be proportioned using a maximum allowable bearing pressure of 2,500 psf if supported on medium stiff or stiffer native silt or structural fill bearing on these materials. The recommended bearing pressure applies to the total of dead and long-term live loads and may be increased by one-third when considering earthquake or wind loads. This is a net bearing pressure. The weight of the footing and overlying backfill can be ignored in calculating footing sizes.

7.1.3. Foundation Settlement

Foundations designed and constructed as recommended are expected to experience settlements of less than 1 inch. Differential settlements of up to one half of the total settlement magnitude can be expected between adjacent footings supporting comparable loads.

7.1.4. Lateral Resistance

Lateral loads on footings can be resisted by passive earth pressures on the sides of footings and by friction on the bearing surface. We recommend that passive earth pressures be calculated using an equivalent fluid unit weight of 250 pcf for foundations confined by native medium stiff or stiffer silt and 400 pcf if confined by a minimum of 2 feet of imported granular fill.

We recommend using a friction coefficient of 0.37 for foundations placed on the native medium stiff or stiffer silt, or 0.50 for foundations placed on a minimum 1-foot-thickness of compacted crushed rock. The passive earth pressure and friction components may be combined provided the passive component does not exceed two-thirds of the total.

The passive earth pressure value is based on the assumptions that the adjacent grade is level and static groundwater remains below the base of the footing throughout the year. The top 1 foot of soil should be neglected when calculating passive lateral earth pressures unless the adjacent area is covered with pavement or slab-on-grade. The lateral resistance values include a safety factor of approximately 1.5.

7.2. Drainage Considerations

We recommend the ground surface be sloped away from the buildings at least 2 percent. All downspouts should be tightlined away from the building foundation areas and should also be discharged into a stormwater disposal system. Downspouts should not be connected to footing drains.

Although not required based on expected groundwater depths, if perimeter footing drains are used for below-grade structural elements or crawlspaces, they should be installed at the base of the exterior footings. If used, perimeter footing drains should be provided with cleanouts and should consist of at least

4-inch-diameter perforated pipe placed on a 3-inch bed of, and surrounded by, 6 inches of drainage material enclosed in a non-woven geotextile such as Mirafi 140N (or approved equivalent) to prevent fine soil from migrating into the drain material. We recommend against using flexible tubing for footing drainpipes. The perimeter drains should be sloped to drain by gravity to a suitable discharge point, preferably a storm drain. We recommend that the cleanouts be covered and placed in flush-mounted utility boxes. Water collected in roof downspout lines must not be routed to the footing drain lines.

If an elevator pit or utility vaults or other subterranean open structural elements are installed below the expected level of groundwater, we recommend foundation drains be installed as described above. Active dewatering or tightline routing of draining water will be required during wet times of the year at these locations in order to provide a removal pathway.

7.3. Floor Slabs

Satisfactory subgrade support for floor slabs supporting up to 100 psf floor loads can be obtained provided the floor slab subgrade is as described in Section 6.2 of this report. Slabs should be reinforced according to their proposed use and per the structural engineer's recommendations. Subgrade support for concrete slabs can be obtained from the medium stiff or stiffer native soils. We recommend that on-grade slabs be underlain by a minimum 6-inch-thick compacted crushed rock base section to reduce the potential for moisture migration into the slab and to provide structural support as noted below. The crushed rock base material should consist of Aggregate Base material as described Section 6.9 of this report. The material should be placed as recommended in Section 6.10.

If dry slabs are required (e.g., where moisture-sensitive adhesives are used to anchor carpet or tile to the slab), a waterproof liner may be placed as a vapor barrier below the slab. The vapor barrier should be selected by the structural engineer and should be accounted for in the design floor section and mix design selection for the concrete, to accommodate the effect of the vapor barrier on concrete slab curing. Load-bearing concrete slabs should be designed assuming a modulus of subgrade reaction (k) of 125 psi per inch. We estimate that concrete slabs constructed as recommended will settle less than ½ inch. We recommend that the floor slab subgrade be evaluated by proof-rolling prior to placing concrete.

7.4. Seismic Design

Parameters provided in Table 4 are based on the conditions encountered during our subsurface exploration program and the procedure outlined in the 2015 IBC. Some jurisdictions are beginning to adopt the 2018 IBC, which references the 2016 Minimum Design Loads for Buildings and Other Structures (American Society of Civil Engineers [ASCE] 7-16). Per ASCE 7-16 Section 11.4.8, a ground motion hazard analysis or site-specific response analysis is required to determine the design ground motions for structures on Site Class D sites with S_1 greater than or equal to 0.2g.

For this project, the site is classified as Site Class D with an S_1 value of 0.401g; therefore, the provision of 11.4.8 applies. Alternatively, the parameters listed in Table 5 below may be used to determine the design ground motions if Exception 2 of Section 11.4.8 of ASCE 7-16 is used. Using this exception, the seismic response coefficient (C_s) is determined by Equation (Eq.) (12.8-2) for values of $T \leq 1.5T_S$, and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$, where T represents the fundamental period of the structure and T_S=0.801 sec. If requested, we can complete a site-specific seismic response analysis, which might provide somewhat reduced seismic demands from the parameters in Table 5 and the requirements for using Exception 2 of

Section 11.4.8 in ASCE 7-16. The reduced values will likely not be significant enough to warrant the additional cost of further evaluation if designing to 2018 IBC.

We recommend seismic design be performed using the values noted in Tables 4 or 5 below depending on the version of the IBC used for design.

TABLE 4. MAPPED 2015 IBC SEISMIC DESIGN PARAMETERS

Parameter	Recommended Value[1]
Site Class	D
Mapped Spectral Response Acceleration at Short Period (S_S)	0.921 g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.430 g
Site Modified Peak Ground Acceleration (PGA_M)	0.452 g
Site Amplification Factor at 0.2 second period (F_a)	1.132
Site Amplification Factor at 1.0 second period (F_v)	1.570
Design Spectral Acceleration at 0.2 second period (S_{DS})	0.695 g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.450 g

Note:

[1] Parameters developed based on Latitude 44.9925959° and Longitude -122.9898991° using the ATC Hazards online tool.

TABLE 5. MAPPED 2018 IBC SEISMIC DESIGN PARAMETERS

Parameter	Recommended Value[1,2]
Site Class	D
Mapped Spectral Response Acceleration at Short Period (S_S)	0.817 g
Mapped Spectral Response Acceleration at 1 Second Period (S_1)	0.406 g
Site Modified Peak Ground Acceleration (PGA_M)	0.462 g
Site Amplification Factor at 0.2 second period (F_a)	1.173
Site Amplification Factor at 1.0 second period (F_v)	1.894
Design Spectral Acceleration at 0.2 second period (S_{DS})	0.639 g
Design Spectral Acceleration at 1.0 second period (S_{D1})	0.513 g

Notes:

[1] Parameters developed based on Latitude 44. 9925959° and Longitude -122. 9898991° using the ATC Hazards online tool.

[2] These values are only valid if the structural engineer utilizes Exception 2 of Section 11.4.8 (ASCE 7-16).

7.4.1. Liquefaction Potential

Liquefaction is a phenomenon caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. The excessive buildup of pore water pressure results in the sudden loss of shear strength in a soil. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressures can dissipate. Sand boils and flows observed at the ground surface after an earthquake are the result of excess pore pressures dissipating upwards, carrying soil particles with the draining water. In general, loose, saturated sand soil with low silt and clay contents is the most susceptible to liquefaction. Low plasticity, silty sand may be moderately susceptible to liquefaction under relatively higher levels of ground shaking.

Based on our boring logs at the project site, the groundwater is located below the extent of the depth of drilling of 15 feet bgs, indicating that the soils encountered within our boring logs are not susceptible to liquefaction. Liquefaction is not considered a hazard for the project.

8.0 OTHER CONSIDERATIONS

8.1. Frost Penetration

The near-surface soils are slightly susceptible to frost heave. However, floor slabs are expected to bear on compacted granular fill and the foundations will be founded below the anticipated depth of frost penetration in the region, which is approximately 12 inches. The recommended exterior and interior footing embedment depths provided above should allow adequate frost protection.

8.2. Expansive Soils

Based on our laboratory test results and experience with similar soils in the area, we do not consider the soils encountered in our borings to be expansive.

9.0 PAVEMENT RECOMMENDATIONS

9.1. Dynamic Cone Penetrometer (DCP) Testing

We conducted DCP testing in general accordance with ASTM D 6951 to estimate the subgrade resilient modulus (M_R) at each test location. We recorded penetration depth of the cone versus hammer blow count and terminated testing when at a depth of approximately 3 to 4 feet bgs. The approximate locations of the explorations are presented in Figures 2A and 2B. We plotted depth of penetration versus blow count and visually assessed portions of the data where slopes were relatively constant using the equation from the Oregon Department of Transportation (ODOT) Pavement Design Guide to estimate the moduli using a conversion coefficient, $C_f = 0.35$. Table 6 lists our estimate of the subgrade resilient modulus, and Appendix A (Figures A-10 and A-11) provides a summary of the field data.

TABLE 6. ESTIMATED SUBGRADE RESILIENT MODULI BASED ON DCP TESTING

Boring Number	Estimated Resilient Modulus (psi)
DCP-1	4,900
DCP-2	5,600

9.2. Asphalt Concrete (AC) Pavement Sections

Pavement recommendations are provided herein for paved parking and drive areas at the project site. Standards used for pavement design for asphalt pavement design are listed below:

- ODOT Pavement Design Guide (ODOT 2019)
- AASHTO Guide for Design of Pavement Structures (AASHTO 1993)

Our pavement recommendations assume that traffic at the site will consist of occasional truck traffic and passenger cars. We do not have specific information on the frequency and type of vehicles that will use the area; however, we have based our design analysis on traffic consisting of two heavy trucks per day to account for delivery and service-type vehicles and passenger car traffic for pavement sections within drive areas, and passenger car traffic only for pavement sections within parking areas.

Our pavement recommendations are based on the following assumptions:

- The on-site soil subgrade below proposed fill placed to raise site grades or below aggregate base sections has been prepared as described in Section 6.0 of this report, and observations indicate that subgrade is in a firm and unyielding condition.
- A resilient modulus of 20,000 psi was estimated for base rock prepared and compacted as recommended.
- A resilient modulus of 5,000 psi was estimated for firm in-place soils or structural fill placed on firm native soils.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability and standard deviations of 90 percent and 0.49, respectively.
- Structural coefficients of 0.42 and 0.10 for the asphalt and base rock, respectively.
- A 20-year design life.

If any of the noted assumptions vary from project design use, our office should be contacted with the appropriate information so that the pavement designs can be revised or confirmed adequate. The recommended minimum pavement sections are provided in Table 7 below.

TABLE 7. MINIMUM PAVEMENT SECTIONS FOR ON-SITE ROADWAYS AND PARKING AREAS

	Minimum Asphalt Thickness (inches)	Minimum Base Thickness (inches)
Drive Lanes	3.0	9.0
Parking (cars only)	3.0	6.0

The aggregate base course should conform to Section 6.9.4 of this report and be compacted to at least 95 percent of the maximum dry density (MDD) determined in accordance with AASHTO T-180/ASTM Test Method D 1557.

The AC pavement should conform to Section 00745 of the most current edition of the ODOT Standard Specifications for Highway Construction. The Job Mix Formula should meet the requirements for a ½-inch Dense Graded Level 2 Mix. The AC should be PG 64-22 grade meeting the ODOT Standard Specifications for Asphalt Materials. AC pavement should be compacted to 91.0 percent at Maximum Theoretical Unit Weight (Rice Gravity) of AASHTO T-209.

The recommended pavement sections assume that final improvements surrounding the pavement will be designed and constructed such that stormwater or excess irrigation water from landscape areas does not infiltrate below the pavement section into the crushed base.

10.0 DESIGN REVIEW AND CONSTRUCTION SERVICES

Recommendations provided in this report are based on the assumptions and design information stated herein. We welcome the opportunity to review and discuss construction plans and specifications for this project as they are being developed. In addition, GeoEngineers should be retained to review the geotechnical-related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in this report.

Satisfactory construction and earthwork performance depend to a large degree on quality of construction. Sufficient monitoring of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

In order to continue as geotechnical engineer of record for the project, we recommend that GeoEngineers be retained to observe construction at the site to confirm that subsurface conditions are consistent with the site explorations, and to confirm that the intent of project plans and specifications relating to earthwork, pavement and foundation construction are being met.

11.0 LIMITATIONS

We have prepared this report for the exclusive use of Clutch Industries, Inc., and their authorized agents and/or regulatory agencies for the proposed Blossom Drive Apartments in Salem, Oregon.

This report is not intended for use by others, and the information contained herein is not applicable to other sites. No other party may rely on the product of our services unless we agree in advance and in writing to such reliance.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in the area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

12.0 REFERENCES

American Association of State Highway and Transportation Officials (AASHTO). 1993. Guide for Design of Pavement Structures.

American Society of Civil Engineers (ASCE). 2017. Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

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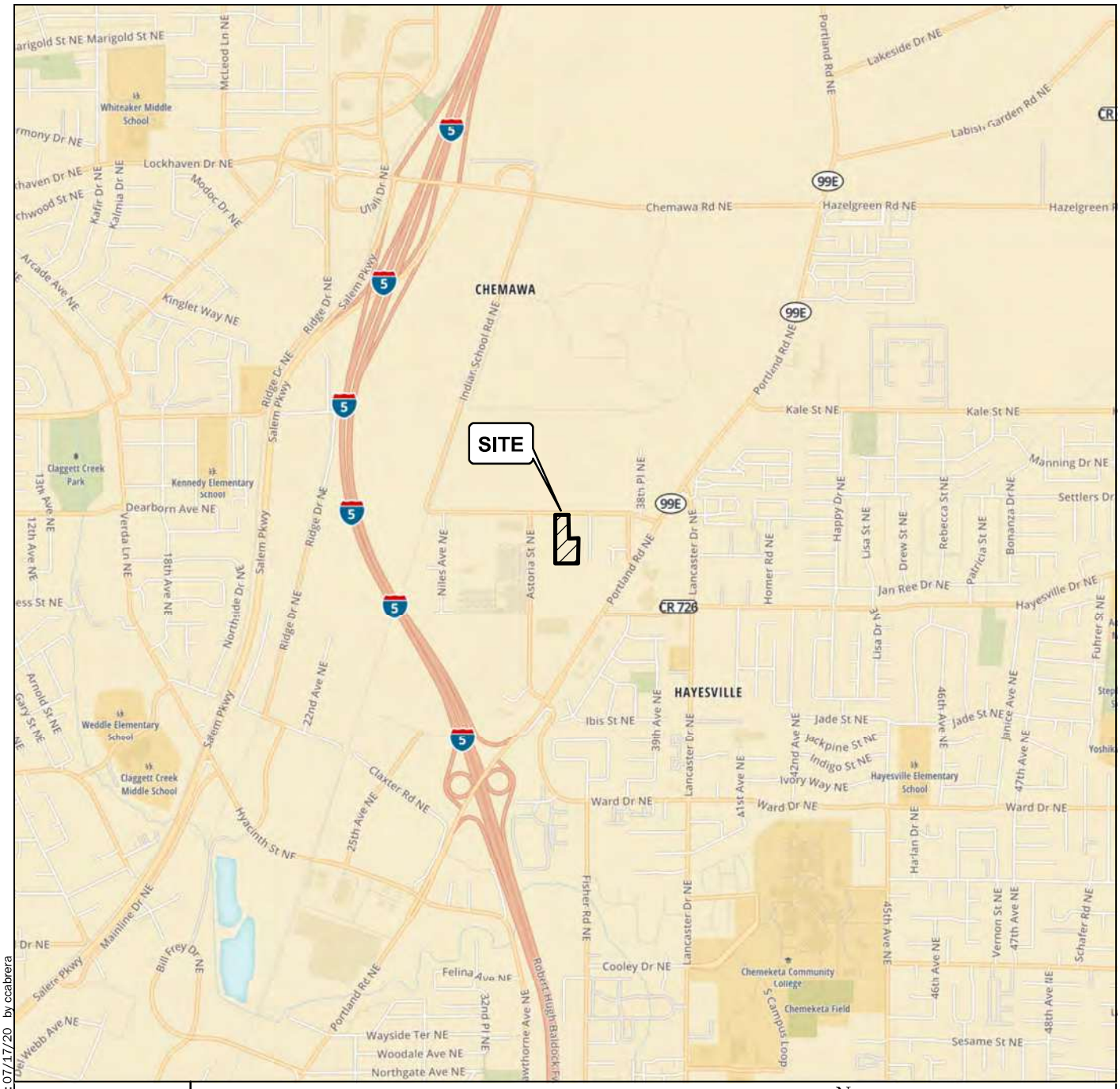
FIGURES

GeoEngineers



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Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

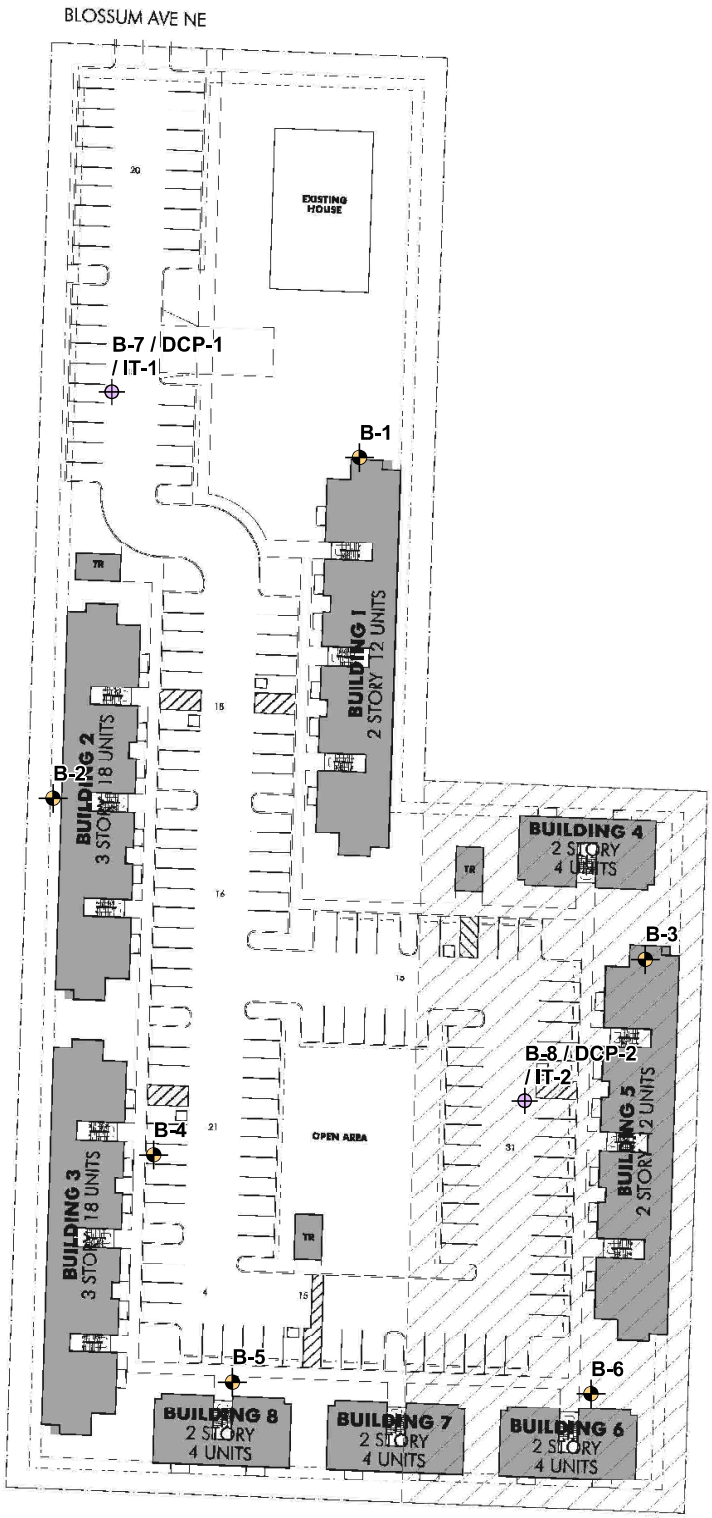
Vicinity Map

Clutch Industries Blossom Drive Apartments
Salem, Oregon

GeoEngineers

Figure 1

P:\23\23830006\GIS\MXD\23830006_F01_VicinityMap.mxd Date Exported: 07/17/20 by ccabrera



Legend

Boring Number and Approximate Location

Boring, DCP and Infiltration Test Number and Approximate Location

N
W E
S

55 0 55

Feet

Site Plan

Clutch Industries Blossom Drive Apartments
Salem, Oregon

GeoEngineers

Figure 2A

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Projection: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl

P:\23\23830006\GIS\MXD\2383000600_F02_SitePlan_Aerial.mxd Date Exported: 07/17/20 by ccabrera

Legend

- Boring Number and Approximate Location
- Boring, DCP and Infiltration Test Number and Approximate Location

N
W E
S

55 0 55

Feet

Site Plan

Clutch Industries Blossom Drive Apartments
Salem, Oregon

GeoEngineers

Figure 2B

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI Clarity. Taxlot from Marion County GIS.

Projection: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl

APPENDICES

GeoEngineers

APPENDIX A
Field Explorations and Laboratory Testing

APPENDIX A
FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

Soil and groundwater conditions at the site were explored on July 14, 2020, by completing eight drilled borings, two infiltration tests, and two direct cone penetrometer (DCP) tests at the approximate locations shown in the Site Plans, Figures 2A and 2B. The machine-drilled borings were advanced with a solid-stem auger using a trailer-mounted drill rig owned and operated by Dan Fischer Drilling.

The drilling was continuously monitored by an engineering geologist from our office who maintained detailed logs of subsurface exploration, visually classified the soil encountered, and obtained representative soil samples from the borings. Samples were collected using a 1-inch, inside-diameter, standard split spoon sampler and a 3-inch, inside-diameter, Dames and Moore (D&M) split spoon sampler. Samplers were driven into the soil using a rope and cathead 140-pound hammer, free-falling 30 inches on each blow. The number of blows required to drive the sampler each of three, 6-inch increments of penetration were recorded in the field. The sum of the blow counts for the last two, 6-inch increments of penetration was reported on the boring logs as the ASTM International (ASTM) Standard Practices Test Method D 1556 standard penetration testing (SPT) N-value. The approximate N-values for D&M samples were converted to SPT N-values using the Lacroix-Horn Conversion [N(SPT) = (2*N1*W1*H1)/(175*D1*D1*L1), where N1 is the non-standard blowcount, W1 is the hammer weight in pounds (140), H1 is the hammer drop height in inches (30), D1 is the non-standard sampler outside diameter in inches (3.23), and L1 is the length of penetration in inches (12)].

Recovered soil samples were visually classified in the field in general accordance with ASTM D 2488 and the classification chart listed in Key to Exploration Logs, Figure A-1. Logs of the borings are presented in Figures A-2 through A-9. The logs are based on interpretation of the field and laboratory data and indicate the depth at which subsurface materials or their characteristics change, although these changes might actually be gradual. Logs of DCP testing results are presented in Figures A-10 and A-11 and logs of infiltration testing results are presented in Figures A-12 and A-13.

Laboratory Testing

Soil samples obtained from the explorations were visually classified in the field and in our laboratory using the Unified Soil Classification System (USCS) and ASTM classification methods. ASTM Test Method D 2488 was used to visually classify the soil samples, while ASTM D 2487 was used to classify the soils, based on laboratory tests results. Moisture content tests were performed in general accordance with ASTM D 2216-05, moisture density tests of the ring samples were estimated in general accordance with ASTM Test Method D 7263, and Percent Passing the No. 200 Sieve tests were performed in general accordance with ASTM D 1140. Results of the laboratory testing are presented in the appropriate exploration logs at the respective sample depths.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point lead test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled	Start 7/14/2020	End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW / Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger
Surface Elevation (ft) / Vertical Datum	180 NAVD88		Hammer Data	Manual Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Buck Rogers 160 Trailer Rig
Latitude / Longitude	44° 59' 34.2996" 122° 59' 22.2792"		System Datum	OR Decimal Degrees NAD83 (feet)	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Brown top soil and brownish gray silty gravel with sand and organics (field grass) (medium stiff to stiff, moist)			Surface Conditions: Brownish gray silty gravel with sand and organics (field grass)
		18	19		S-1		ML	Brown silt with trace organics (grass rootlets) (very stiff, moist)			
175	5	18	14		S-2 MD			Without organics, with fine sand, becomes medium stiff			DD = 78.0 pcf
		18	15		S-3 SA					90.6	
170	10	18	15		S-4						
165	15	18	17		S-5			Becomes very stiff			

B-1 completed at 16.5' bgs

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-1

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-2
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 179 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 32.7696" Longitude 122° 59' 24.1008"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS ML	Brown silty top soil with organics (field grass) (medium stiff, moist)			Surface Conditions: Brown silty top soil with organics (field grass) Till zone extends from 1 to 1.5' bgs
175		18	15		S-1			Brown silt (stiff, moist)			
	5	18	11		S-2 MC			With occasional fine sand	28.3		
170		18	8		S-3			Becomes medium stiff to stiff			
	10	14	12		S-4			With fine sand, becomes stiff			
165											
	15	18	14		S-5						

B-2 completed at 16.5' bgs

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-2

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-3
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 183 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 32.1396" Longitude 122° 59' 20.4216"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS	Brown silty topsoil with organics (field grass) (medium stiff, moist)			Surface Conditions: Brown silty top soil with organics (field grass) Till zone extends from 1 to 1.5' bgs
180		18	21		S-1 MC		ML	Brown silt with occasional organics (grass rootlets) (very stiff, moist)	28.6		
	5	18	18		S-2			Without organics, grades with occasional fine sand			
175		18	11		S-3 DD			Becomes stiff			DD = 79.2 pcf
	10	14	14		S-4 SA			With fine sand		93.3	
170											
	15	18	13		S-5						

B-3 completed at 16.5' bgs

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-3

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-4
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 181 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 31.2216" Longitude 122° 59' 23.4096"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
180	0						TS ML	Brown silty top soil with organics (field grass) (medium stiff, moist)			Surface Conditions: Brown silty top soil with organics (field grass) Till zone extends from 1 to 1.5' bgs
		18	24		S-1 MC			Brown silt with trace organics (grass rootlets) (very stiff, moist)	27.6		
175	5	18	26		S-2			Without organics, with occasional fine sand			
		18	13		S-3			Becomes stiff			
170	10	18	16		S-4			With fine sand, becomes stiff to very stiff			
165	15	18	17		S-5			Becomes very stiff			

B-4 completed at 16.5' bgs

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-4

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-5
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 183 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 30.2388" Longitude 122° 59' 22.8912"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	0						TS ML	Brown silty top soil with organics (field grass) (medium stiff, moist)			Surface Conditions: Brown silty top soil with organics (field grass) Till zone extends from 1 to 1.5' bgs
180		18	26		S-1			Brown silt with occasional organics (grass rootlets) (very stiff, moist)			
	5	18	18		S-2			Without organics, with occasional fine sand			
175		18	11		S-3			Without fine sand, becomes stiff			
	10	18	14		S-4			With fine sand			
170											
	15	18	20		S-5			Becomes very stiff			
								B-5 completed at 16.5' bgs			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-5

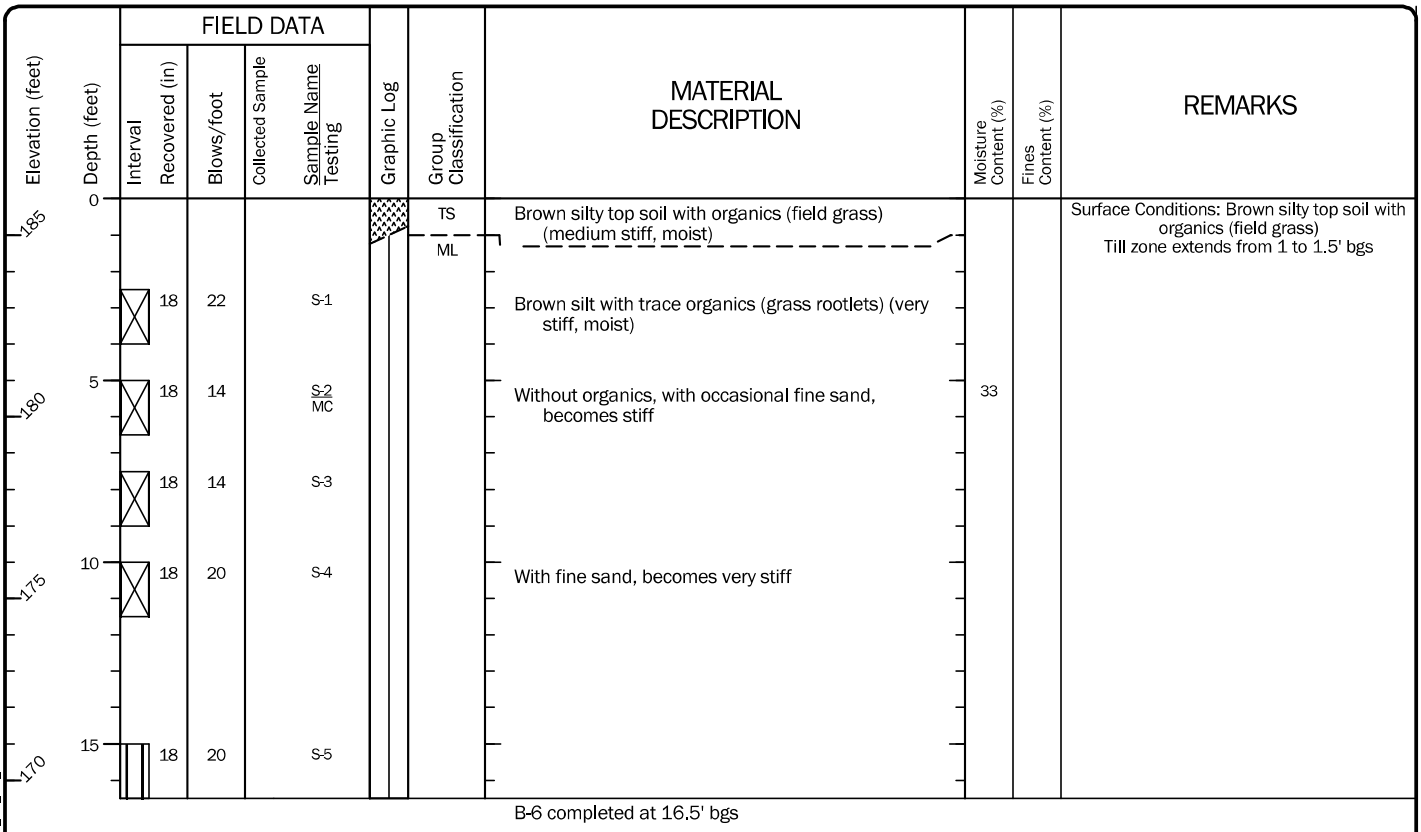
GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-6
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 16.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 186 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 30.2388" Longitude 122° 59' 20.6808"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-6

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-7
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled	Start 7/14/2020	End 7/14/2020	Total Depth (ft) 6.5	Logged By JJW / Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger
Surface Elevation (ft) / Vertical Datum	180 NAVD88		Hammer Data	Manual Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Buck Rogers 160 Trailer Rig
Latitude / Longitude	44° 59' 34.5516" 122° 59' 23.82"		System Datum	OR Decimal Degrees NAD83 (feet)	Groundwater not observed at time of exploration	

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
175	0						TS / ML	Brown top soil and brownish gray silty gravel with sand and organic (field grass) (medium stiff to stiff, moist) DCP-1 completed at 6" bgs			Surface Conditions: Brownish gray silty gravel with sand and organics (field grass)
		18	25		S-1 MC			Brown silt (very stiff, moist) IT-1 completed 2' south of B-7 at 3' bgs	30.1		
	5	18	15		S-2			Becomes medium stiff			
								B-7 completed at 6.5' bgs			

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Log of Boring B-7/DCP-1/IT-1

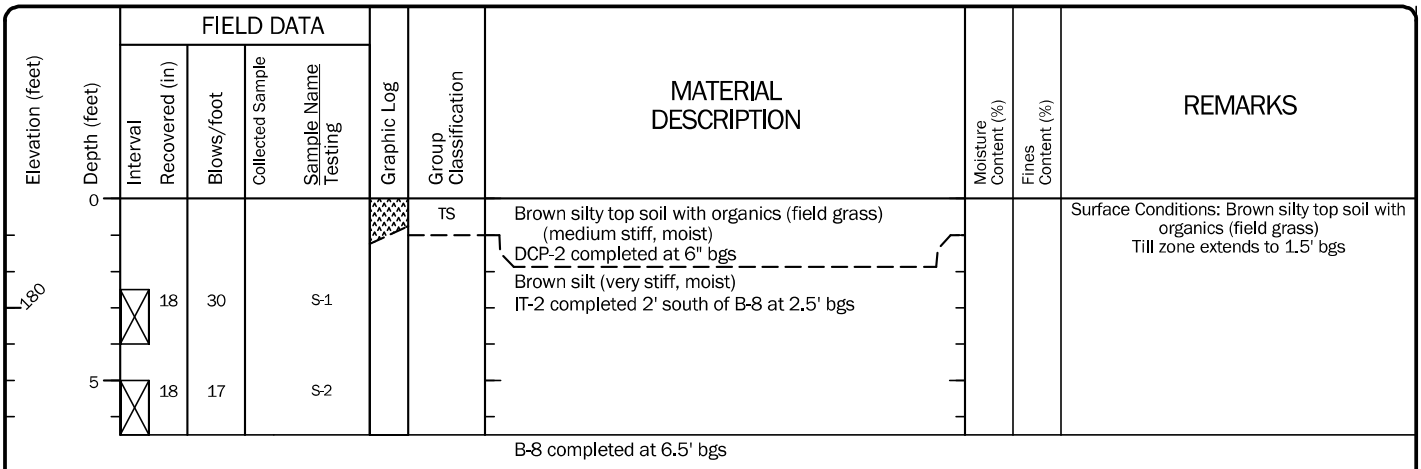
GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

Figure A-8
Sheet 1 of 1

Date:7/23/20 Path:P:\23\23830006\GINT\23830006GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Drilled Start 7/14/2020 End 7/14/2020	Total Depth (ft) 6.5	Logged By JJW Checked By BJH	Driller Dan Fischer Excavating	Drilling Method Solid-stem Auger	
Surface Elevation (ft) 183 Vertical Datum NAVD88		Hammer Data Manual Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Buck Rogers 160 Trailer Rig	
Latitude 44° 59' 31.5888" Longitude 122° 59' 21.1416"		System Datum OR Decimal Degrees NAD83 (feet)		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on Google Earth. Vertical approximated based on Google Earth.

Date:7/23/20 Path:P:\23\23830006\GINT\23830006000.GPJ DBLibrary/LibraryGEOENGINEERS_DF_STD_US_JUNE_2017.GLB/GEI8_GEOTECH_STANDARD_%F_NO_GW

Log of Boring B-8/DCP-2/IT-2

GeoEngineers

Project: Clutch Industries - Blossom Drive Apartments
Project Location: Salem, Oregon
Project Number: 23830-006-00

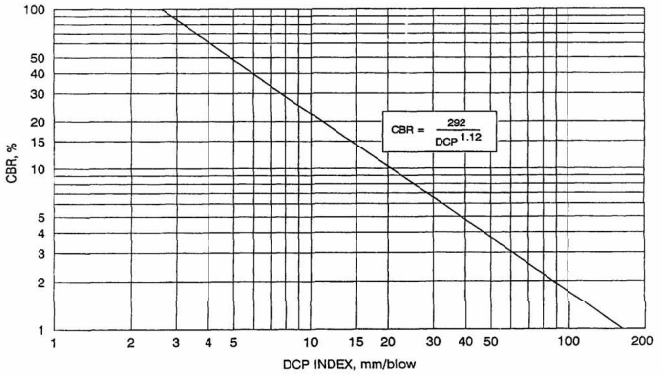
Location: Blossom Drive NE, Salem, OR
Depth to bottom: 43"
Tester's Name: Jason Weber
Tester's Company: GeoEngineers, Inc.

Date: 7/14/2020
Tester's Contact No: 605-380-8841

Test Hole Number: B-7 / DCP-1
Test Method: Dynamic Cone Penetration
GeoEngineers Job: 23830-006-00

Depth, feet	Soil Texture
0-12"	Brown silty top soil and brown-gray silty gravel with sand and organics (grass rootlets) (medium stiff to stiff, moist)
12"-43"	Brown silt (very stiff, moist)

Test increment	Number of blows	Cumulative blows	Depth below ground surface	Penetration per increment	Cumulative penetration	Cummulative Penetration	Penetration per blow set	Penetration per blow	Hammer blow factor	DCP Index	DCP Index	CBR	M_R
#	#	#	(in)	(mm)	(mm)	(in)	(in)	(in)	1 for 8-kg 2 for 4.6-kg hammer	in/blow	mm/blow	%	psi
1	4	4	7.0	25.4	25.4	1.0	1.0	0.25	2	0.50	12.70	17	6368
2	4	8	8.0	25.4	50.8	2.0	1.0	0.25	2	0.50	12.70	17	6368
3	3	11	9.0	25.4	76.2	3.0	1.0	0.33	2	0.67	16.93	12	5692
4	4	15	10.0	25.4	101.6	4.0	1.0	0.25	2	0.50	12.70	17	6368
5	3	18	11.0	25.4	127.0	5.0	1.0	0.33	2	0.67	16.93	12	5692
6	3	21	12.0	25.4	152.4	6.0	1.0	0.33	2	0.67	16.93	12	5692
7	2	23	13.0	25.4	177.8	7.0	1.0	0.50	2	1.00	25.40	8	4859
8	2	25	14.0	25.4	203.2	8.0	1.0	0.50	2	1.00	25.40	8	4859
9	2	27	15.0	25.4	228.6	9.0	1.0	0.50	2	1.00	25.40	8	4859
10	2	29	16.0	25.4	254.0	10.0	1.0	0.50	2	1.00	25.40	8	4859
11	2	31	17.0	25.4	279.4	11.0	1.0	0.50	2	1.00	25.40	8	4859
12	2	33	18.0	25.4	304.8	12.0	1.0	0.50	2	1.00	25.40	8	4859
13	2	35	19.0	25.4	330.2	13.0	1.0	0.50	2	1.00	25.40	8	4859
14	2	37	20.0	25.4	355.6	14.0	1.0	0.50	2	1.00	25.40	8	4859
15	2	39	21.0	25.4	381.0	15.0	1.0	0.50	2	1.00	25.40	8	4859
16	3	42	22.0	25.4	406.4	16.0	1.0	0.33	2	0.67	16.93	12	5692
17	3	45	23.0	25.4	431.8	17.0	1.0	0.33	2	0.67	16.93	12	5692
18	2	47	24.0	25.4	457.2	18.0	1.0	0.50	2	1.00	25.40	8	4859
19	3	50	25.0	25.4	482.6	19.0	1.0	0.33	2	0.67	16.93	12	5692
20	2	52	26.0	25.4	508.0	20.0	1.0	0.50	2	1.00	25.40	8	4859
21	2	54	27.0	25.4	533.4	21.0	1.0	0.50	2	1.00	25.40	8	4859
22	2	56	28.0	25.4	558.8	22.0	1.0	0.50	2	1.00	25.40	8	4859
23	2	58	29.0	25.4	584.2	23.0	1.0	0.50	2	1.00	25.40	8	4859
24	2	60	30.0	25.4	609.6	24.0	1.0	0.50	2	1.00	25.40	8	4859
25	2	62	31.0	25.4	635.0	25.0	1.0	0.50	2	1.00	25.40	8	4859
26	2	64	32.0	25.4	660.4	26.0	1.0	0.50	2	1.00	25.40	8	4859
27	2	66	33.0	25.4	685.8	27.0	1.0	0.50	2	1.00	25.40	8	4859
28	3	69	34.0	25.4	711.2	28.0	1.0	0.33	2	0.67	16.93	12	5692
29	3	72	35.0	25.4	736.6	29.0	1.0	0.33	2	0.67	16.93	12	5692
30	3	75	36.0	25.4	762.0	30.0	1.0	0.33	2	0.67	16.93	12	5692
31	2	77	37.0	25.4	787.4	31.0	1.0	0.50	2	1.00	25.40	8	4859
32	3	80	38.0	25.4	812.8	32.0	1.0	0.33	2	0.67	16.93	12	5692
33	3	83	39.0	25.4	838.2	33.0	1.0	0.33	2	0.67	16.93	12	5692
34	3	86	40.0	25.4	863.6	34.0	1.0	0.33	2	0.67	16.93	12	5692
35	2	88	41.0	25.4	889.0	35.0	1.0	0.50	2	1.00	25.40	8	4859
36	2	90	42.0	25.4	914.4	36.0	1.0	0.50	2	1.00	25.40	8	4859
37	2	92	43.0	25.4	939.8	37.0	1.0	0.50	2	1.00	25.40	8	4859



(after Webster et al., 1992)
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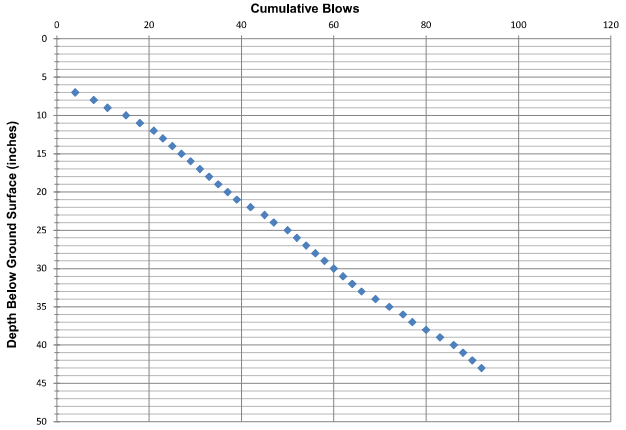


ODOT Pavement Design Guide. (2019). Pavement Sevices Unit, Oregon Department of Transportation.
$M_R = C_f \times 49023 \times S^{-0.39}$
M_R = resilient modulus (psi)
C_f = conversion coefficient
S = DCP Index (mm/blow)

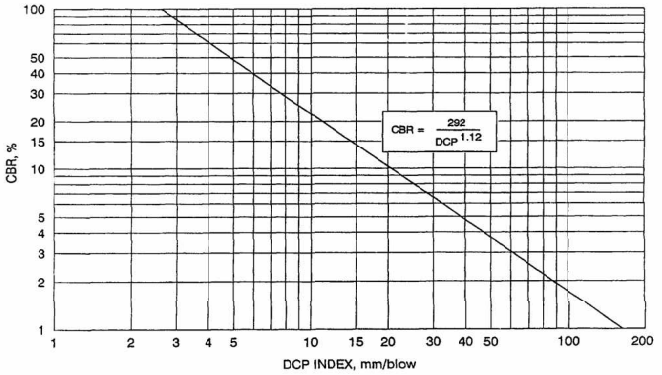
Location: Blossom Drive NE, Salem, OR
Depth to bottom: 42"
Tester's Name: Jason Weber
Tester's Company: GeoEngineers, Inc.

Date: 7/14/2020
Tester's Contact No: 605-380-8841

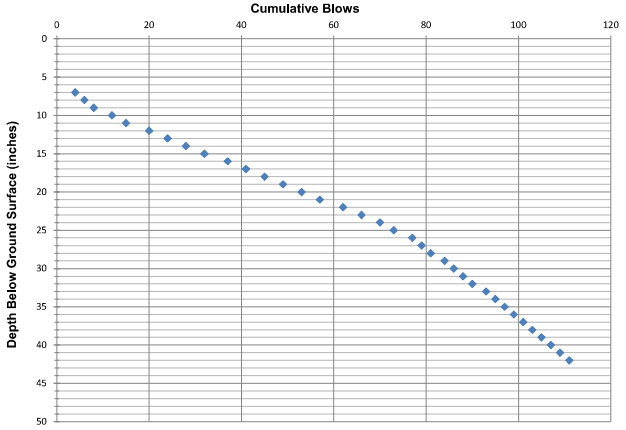
Test Hole Number: B-8 / DCP-2
Test Method: Dynamic Cone Penetration
GeoEngineers Job: 23830-006-00

Depth, feet	Soil Texture
0-12"	Brown silty top soil with organics (grass rootlets) (medium stiff to stiff, moist)
12"-42"	Brown silt (very stiff, moist)

Test increment	Number of blows	Cumulative blows	Depth below ground surface	Penetration per increment	Cumulative penetration	Cummulative Penetration	Penetration per blow set	Penetration per blow	Hammer blow factor	DCP Index	DCP Index	CBR	M_R
#	#	#	(in)	(mm)	(mm)	(in)	(in)	(in)	1 for 8-kg 2 for 4.6-kg hammer	in/blow	mm/blow	%	psi
1	4	4	7.0	25.4	25.4	1.0	1.0	0.25	2	0.50	12.70	17	6368
2	2	6	8.0	25.4	50.8	2.0	1.0	0.50	2	1.00	25.40	8	4859
3	2	8	9.0	25.4	76.2	3.0	1.0	0.50	2	1.00	25.40	8	4859
4	4	12	10.0	25.4	101.6	4.0	1.0	0.25	2	0.50	12.70	17	6368
5	3	15	11.0	25.4	127.0	5.0	1.0	0.33	2	0.67	16.93	12	5692
6	5	20	12.0	25.4	152.4	6.0	1.0	0.20	2	0.40	10.16	22	6947
7	4	24	13.0	25.4	177.8	7.0	1.0	0.25	2	0.50	12.70	17	6368
8	4	28	14.0	25.4	203.2	8.0	1.0	0.25	2	0.50	12.70	17	6368
9	4	32	15.0	25.4	228.6	9.0	1.0	0.25	2	0.50	12.70	17	6368
10	5	37	16.0	25.4	254.0	10.0	1.0	0.20	2	0.40	10.16	22	6947
11	4	41	17.0	25.4	279.4	11.0	1.0	0.25	2	0.50	12.70	17	6368
12	4	45	18.0	25.4	304.8	12.0	1.0	0.25	2	0.50	12.70	17	6368
13	4	49	19.0	25.4	330.2	13.0	1.0	0.25	2	0.50	12.70	17	6368
14	4	53	20.0	25.4	355.6	14.0	1.0	0.25	2	0.50	12.70	17	6368
15	4	57	21.0	25.4	381.0	15.0	1.0	0.25	2	0.50	12.70	17	6368
16	5	62	22.0	25.4	406.4	16.0	1.0	0.20	2	0.40	10.16	22	6947
17	4	66	23.0	25.4	431.8	17.0	1.0	0.25	2	0.50	12.70	17	6368
18	4	70	24.0	25.4	457.2	18.0	1.0	0.25	2	0.50	12.70	17	6368
19	3	73	25.0	25.4	482.6	19.0	1.0	0.33	2	0.67	16.93	12	5692
20	4	77	26.0	25.4	508.0	20.0	1.0	0.25	2	0.50	12.70	17	6368
21	2	79	27.0	25.4	533.4	21.0	1.0	0.50	2	1.00	25.40	8	4859
22	2	81	28.0	25.4	558.8	22.0	1.0	0.50	2	1.00	25.40	8	4859
23	3	84	29.0	25.4	584.2	23.0	1.0	0.33	2	0.67	16.93	12	5692
24	2	86	30.0	25.4	609.6	24.0	1.0	0.50	2	1.00	25.40	8	4859
25	2	88	31.0	25.4	635.0	25.0	1.0	0.50	2	1.00	25.40	8	4859
26	2	90	32.0	25.4	660.4	26.0	1.0	0.50	2	1.00	25.40	8	4859
27	3	93	33.0	25.4	685.8	27.0	1.0	0.33	2	0.67	16.93	12	5692
28	2	95	34.0	25.4	711.2	28.0	1.0	0.50	2	1.00	25.40	8	4859
29	2	97	35.0	25.4	736.6	29.0	1.0	0.50	2	1.00	25.40	8	4859
30	2	99	36.0	25.4	762.0	30.0	1.0	0.50	2	1.00	25.40	8	4859
31	2	101	37.0	25.4	787.4	31.0	1.0	0.50	2	1.00	25.40	8	4859
32	2	103	38.0	25.4	812.8	32.0	1.0	0.50	2	1.00	25.40	8	4859
33	2	105	39.0	25.4	838.2	33.0	1.0	0.50	2	1.00	25.40	8	4859
34	2	107	40.0	25.4	863.6	34.0	1.0	0.50	2	1.00	25.40	8	4859
35	2	109	41.0	25.4	889.0	35.0	1.0	0.50	2	1.00	25.40	8	4859
36	2	111	42.0	25.4	914.4	36.0	1.0	0.50	2	1.00	25.40	8	4859



(after Webster et al., 1992)
Webster, S. L., Grau, R. H., and Williams, T. P. (1992). Description and application of dual mass dynamic cone penetrometer. Department of the Army Waterways Equipment Station, No. GL-92-3.



ODOT Pavement Design Guide. (2019). Pavement Sevices Unit, Oregon Department of Transportation.
$M_R = C_f \times 49023 \times S^{-0.39}$
M_R = resilient modulus (psi)
C_f = conversion coefficient
S = DCP Index (mm/blow)

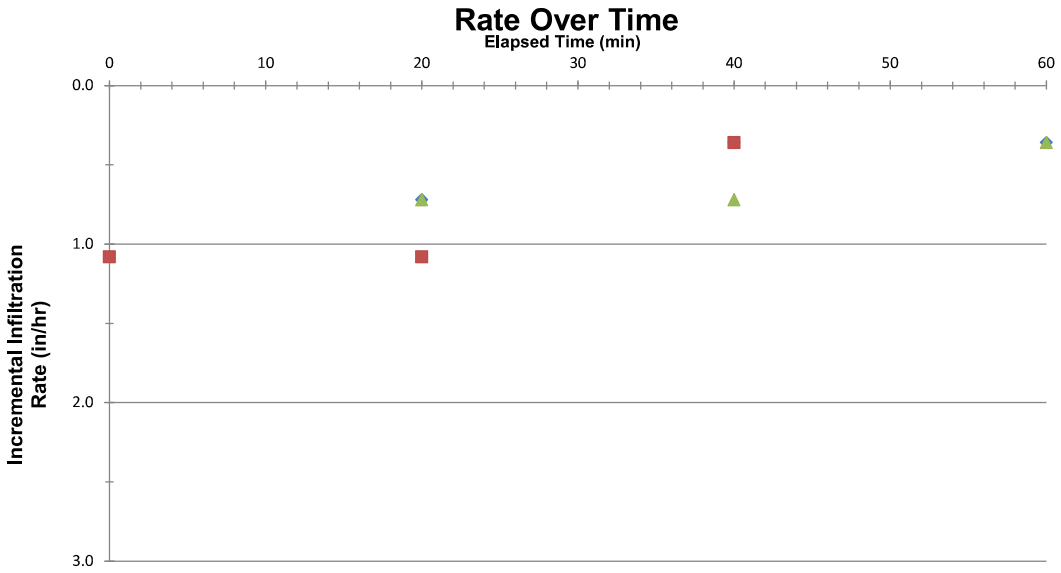
Location: Blossom Drive, Salem, OR
Depth to bottom: 3'
Tester's Name: Jason Weber
Tester's Company: GeoEngineers

Date: 7/14/2020
Dimension: 6-inch diameter
Tester's Contact No: 605-380-8841

Test Hole Number: B-7 / IT-1
Test Method: Encased Falling Head
GeoEngineers Job: 23830-006-00

	Depth	Soil Texture
	0-1'	Brown silty top soil with organics (grass rootlets) (medium stiff to stiff, moist)
	1' - 3'	Brown silt (very stiff, moist)

Time of Day	Time Interval (min)	Total Time (min)	Depth to Water from Top of Pipe (inches)	Dist. Interval (inches)	Infiltration (inches/hour)	
7/14/2020 7:52	0	0	26.0			Initial test
7/14/2020 8:39	47	47	26.8	0.7	0.9	(Saturation)
7/14/2020 13:00	0	0	16.8			
7/14/2020 13:20	20	20	17.2	0.4	1.1	Test #1
7/14/2020 13:40	20	40	17.5	0.4	1.1	
7/14/2020 14:00	20	60	17.6	0.1	0.4	
7/14/2020 14:00	0	0	17.6			
7/14/2020 14:20	20	20	17.9	0.2	0.7	Test #2
7/14/2020 14:40	20	40	18.1	0.2	0.7	
7/14/2020 15:00	20	60	18.2	0.1	0.4	
7/14/2020 15:00	0	0	18.2			
7/14/2020 15:20	20	20	18.5	0.2	0.7	Test #3
7/14/2020 15:40	20	40	18.6	0.1	0.4	
7/14/2020 16:00	20	60	18.7	0.1	0.4	



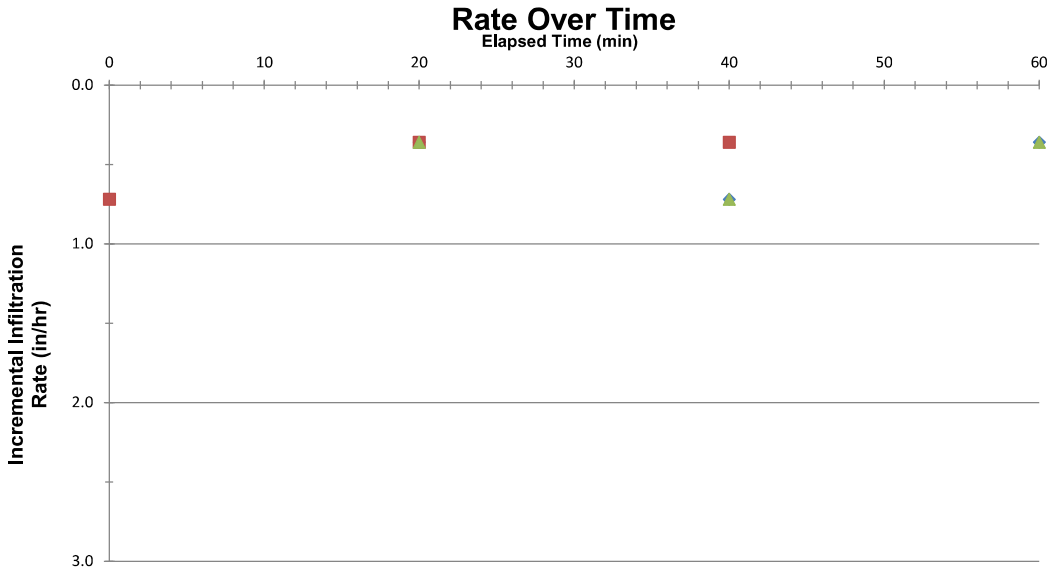
Location: Blossom Drive, Salem, OR
Depth to bottom: 2.5'
Tester's Name: Jason Weber
Tester's Company: GeoEngineers

Date: 7/14/2020
Dimension: 6-inch diameter
Tester's Contact No: 605-380-8841

Test Hole Number: B-8 / IT-2
Test Method: Encased Falling Head
GeoEngineers Job: 23830-006-00

	Depth	Soil Texture
	0-1'	Brown silty top soil with organics (grass rootlets) (medium stiff to stiff, moist)
	1' - 2.5'	Brown silt (very stiff, moist)

Time of Day	Time Interval (min)	Total Time (min)	Depth to Water from Top of Pipe (inches)	Dist. Interval (inches)	Infiltration (inches/hour)	
7/14/2020 9:22	0	0	26.8			Initial test
7/14/2020 10:24	62	62	27.8	1.1	1.0	(Saturation)
7/14/2020 13:04	0	0	17.0			
7/14/2020 13:24	20	20	17.3	0.2	0.7	Test #1
7/14/2020 13:44	20	40	17.4	0.1	0.4	
7/14/2020 14:04	20	60	17.5	0.1	0.4	
7/14/2020 14:04	0	0	17.5			
7/14/2020 14:24	20	20	17.6	0.1	0.4	Test #2
7/14/2020 14:44	20	40	17.9	0.2	0.7	
7/14/2020 15:04	20	60	18.0	0.1	0.4	
7/14/2020 15:04	0	0	18.0			
7/14/2020 15:24	20	20	18.1	0.1	0.4	Test #3
7/14/2020 15:44	20	40	18.4	0.2	0.7	
7/14/2020 16:04	20	60	18.5	0.1	0.4	



APPENDIX B
Report Limitations and Guidelines for Use

APPENDIX B
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Read These Provisions Closely

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) rely on professional judgment and opinion to a greater extent than other engineering and natural science disciplines, where more precise and/or readily observable data may exist. To help clients better understand how this difference pertains to our services, GeoEngineers includes the following explanatory "limitations" provisions in its reports. Please confer with GeoEngineers if you need to know more how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for Clutch Industries, Inc., and their agents for the Project specifically identified in the report. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this report is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the Project, and its schedule and budget, our services have been executed in accordance with our Agreement with Clutch Industries, Inc. dated June 4, 2020, and generally accepted geotechnical practices in this area at the time this report was prepared. We do not authorize, and will not be responsible for, the use of this report for any purposes or projects other than those identified in the report.

A Geotechnical Engineering or Geologic Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed Blossom Drive Apartments project in Salem, Oregon. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;

If changes occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

Environmental Concerns Are Not Covered

Unless environmental services were specifically included in our scope of services, this report does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, new information or technology that becomes available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our report or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this report for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted, or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions at other locations. Actual subsurface conditions may differ, sometimes significantly, from the opinions presented in this report. Our report, conclusions and interpretations are not a warranty of the actual subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

We have developed the following recommendations based on data gathered from subsurface investigation(s). These investigations sample just a small percentage of a site to create a snapshot of the subsurface conditions elsewhere on the site. Such sampling on its own cannot provide a complete and accurate view of subsurface conditions for the entire site. Therefore, the recommendations included in this report are preliminary and should not be considered final. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for the recommendations in this report if we do not perform construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the

explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective means of managing the risks associated with unanticipated conditions. If another party performs field observation and confirms our expectations, the other party must take full responsibility for both the observations and recommendations. Please note, however, that another party would lack our project-specific knowledge and resources.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the report, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable, but separating logs from the report can create a risk of misinterpretation.

Give Contractors a Complete Report and Guidance

To help reduce the risk of problems associated with unanticipated subsurface conditions, GeoEngineers recommends giving contractors the complete geotechnical engineering or geologic report, including these "Report Limitations and Guidelines for Use." When providing the report, you should preface it with a clearly written letter of transmittal that:

- advises contractors that the report was not prepared for purposes of bid development and that its accuracy is limited; and
- encourages contractors to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and adjacent properties.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

GeoEngineers

APPENDIX E

OPERATIONS AND MAINTENANCE

Appendix B to 109-011 – Facility Maintenance Forms

2. Rain Garden

A rain garden is a **vegetated infiltration basin** or depression created by excavation, berms, or small dams to provide for short-term ponding of surface water until it percolates into the soil. The basin should infiltrate stormwater within 24 hours.

Inspections

All facility components and vegetation shall be inspected for proper operations and structural stability. *These inspections shall occur, at a minimum, quarterly for the first two years from the date of installation, and two times per year thereafter.* It is recommended that a visual inspection be made within 48 hours after each major storm event to ensure proper function. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:

Date: ____/____/_____ Inspector's Name: _____

Basin inlet shall ensure unrestricted stormwater flow to the vegetated basin.

- □ Sources of erosion shall be identified and controlled when native soil is exposed or erosion channels are present.
- □ Inlet shall be kept clear at all times.
- □ Rock splash pads shall be replenished to prevent erosion.

Inspection Comments: _____

_____

Embankment, dikes, berms, and side slopes retain water in the infiltration basin.

- □ Structural deficiencies shall be corrected upon discovery.
- □ Slopes shall be stabilized using appropriate erosion control measures when soil is exposed/flow channels are forming.
- □ Sources of erosion damage shall be identified and controlled.

Inspection Comments: _____

_____

Overflow or emergency spillway conveys flow exceeding reservoir capacity to an approved stormwater receiving system.

- □ Overflow shall be kept clear at all times.
- □ Sources of erosion damage shall be identified and controlled when soil is exposed.
- □ Rocks or other armament shall be replaced when only one layer of rock exists.

Inspection Comments: _____

_____

Amended soils shall allow stormwater to percolate uniformly through the infiltration basin. If water remains 36 hours after a storm, sources of possible clogging shall be identified and corrected.

- □ Basin shall be raked and, if necessary, soil shall be excavated and cleaned or replaced.

Inspection Comments: _____

_____

2. Rain Garden (continued)

Sediment/Basin debris management shall prevent loss of infiltration basin volume caused by sedimentation.

- □ Sediment exceeding 3 inches in depth, or so thick as to damage or kill vegetation, shall be removed.
- □ Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures.

Inspection Comments: _____

_____

Debris and litter shall be removed to ensure stormwater infiltration and to prevent clogging of overflow drains and interference with plant growth.

- □ Restricted sources of sediment and debris, such as discarded lawn clippings, shall be identified and prevented.

Inspection Comments: _____

_____

Vegetation shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion. Proper horticultural practices shall be employed to ensure that plants are vigorous and healthy.

- □ Mulch shall be replenished as needed, but not inhibiting water flow.
- □ Vegetation, large shrubs, or trees that interfere with rain garden operation shall be pruned.
- □ Fallen leaves and debris from deciduous plant foliage shall be raked and removed.
- □ Nuisance or prohibited vegetation from the City of Salem Non-Native Invasive Plant list shall be removed when discovered. Invasive vegetation shall be removed immediately upon discovery.
- □ Dead vegetation shall be removed upon discovery.
- □ Vegetation shall be replaced as soon as possible to maintain cover density and control erosion where soils are exposed.

Inspection Comments: _____

_____

Spill prevention measures shall be exercised when handling substances that contaminate stormwater.

- □ Releases of pollutants shall be corrected as soon as identified.

Inspection Comments: _____

Training and/or written guidance information for operating and maintaining vegetated infiltration basins shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement.

Inspection Comments: _____

Access to the infiltration basin shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable.

- □ Obstacles preventing maintenance personnel and/or equipment access to the infiltration basin shall be removed.
- □ Gravel or ground cover shall be added if erosion has occurred.

Inspection Comments: _____

_____

2. Rain Garden (continued)

Nuisance insects and rodents shall not be harbored in the infiltration basin. Pest control measures shall be taken when nuisance insects/rodents are found to be present.

- □ Holes in the ground located in and around the infiltration basin shall be filled.

Inspection Comments: _____

_____

If used at this site, the following will be applicable:

Fences shall be maintained to preserve their functionality and appearance.

- □ Collapsed fences shall be restored to an upright position.
- □ Jagged edges and damaged fences shall be repaired or replaced.

Inspection Comments: _____

_____

APPENDIX F

CIVIL DRAWINGS

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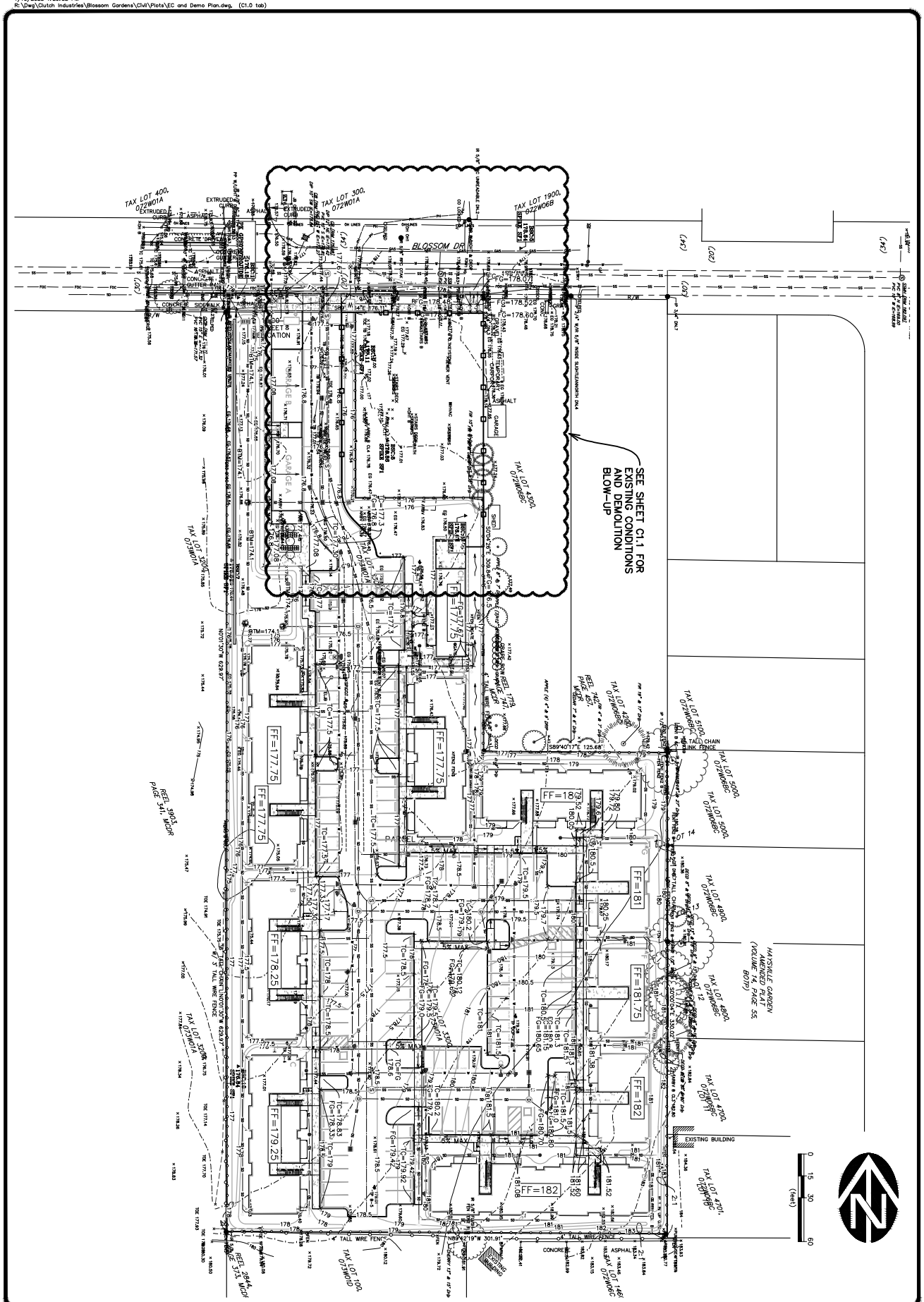

BLOSSOM GARDENS APARTMENTS LLC BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS EXISTING CONDITIONS AND DEMOLITION PLAN	WESTECH ENGINEERING, INC. CONSULTING ENGINEERS AND PLANNERS 3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302 Phone: (503) 585-2474 Fax: (503) 585-3986 E-mail: westech@westech-eng.com	REGISTERED PROFESSIONAL ENGINEER OREGON JULY 12, 2005 WILLIAM J. WELLS RENEWS: 6/30/2026 DIGITALLY SIGNED

DRAWING C1.0
JOB NUMBER 3366.1000.0

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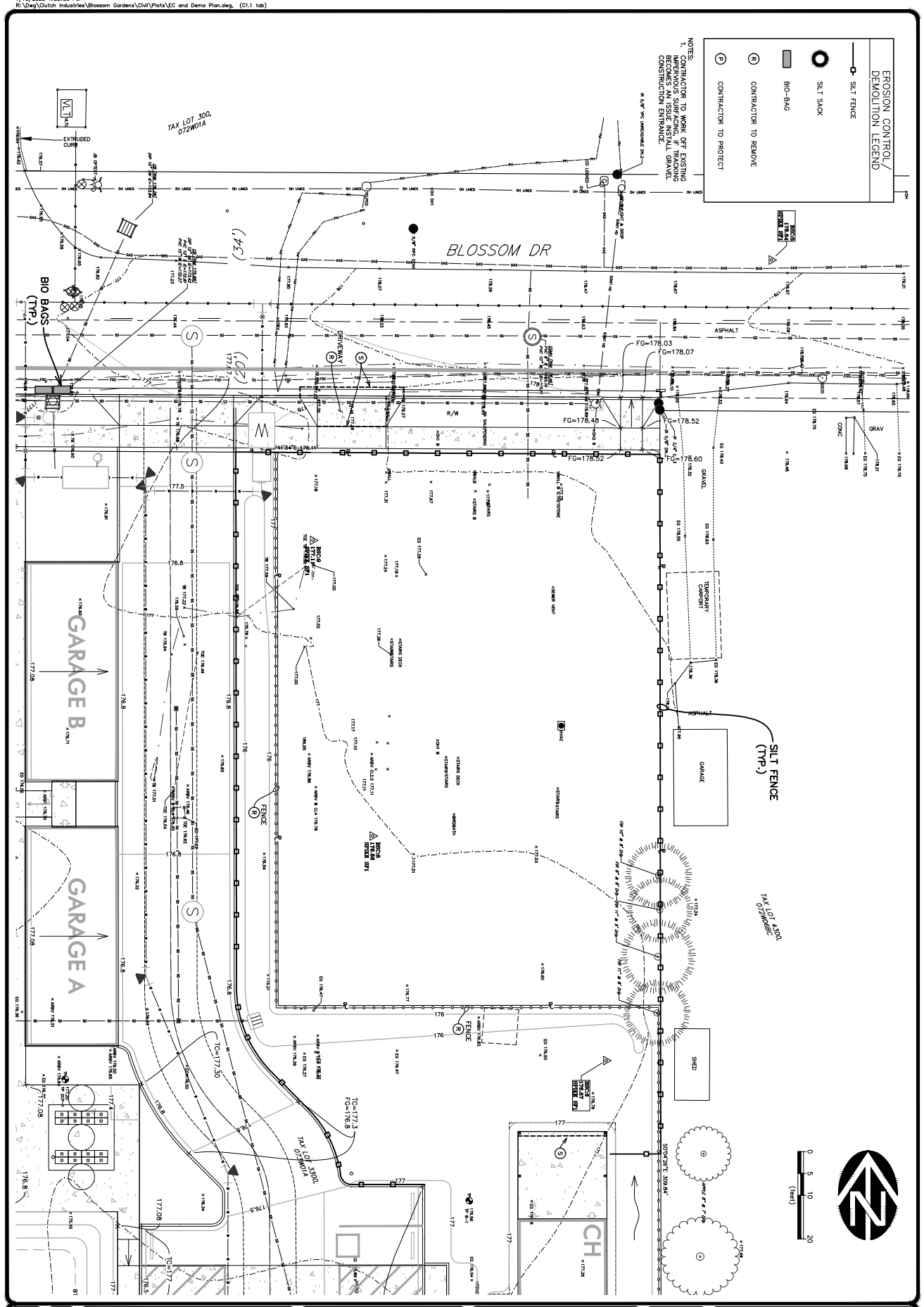

BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EXISTING CONDITIONS AND DEMOLITION BLOW-UP PLAN

DRAWING C1.1

JOB NUMBER 3366.1000.0

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
E-mail: westech@westech-eng.com

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 12, 2005 — WILLIAM A. M. WELLS — 76415PE — RENEWS: 6/30/2026

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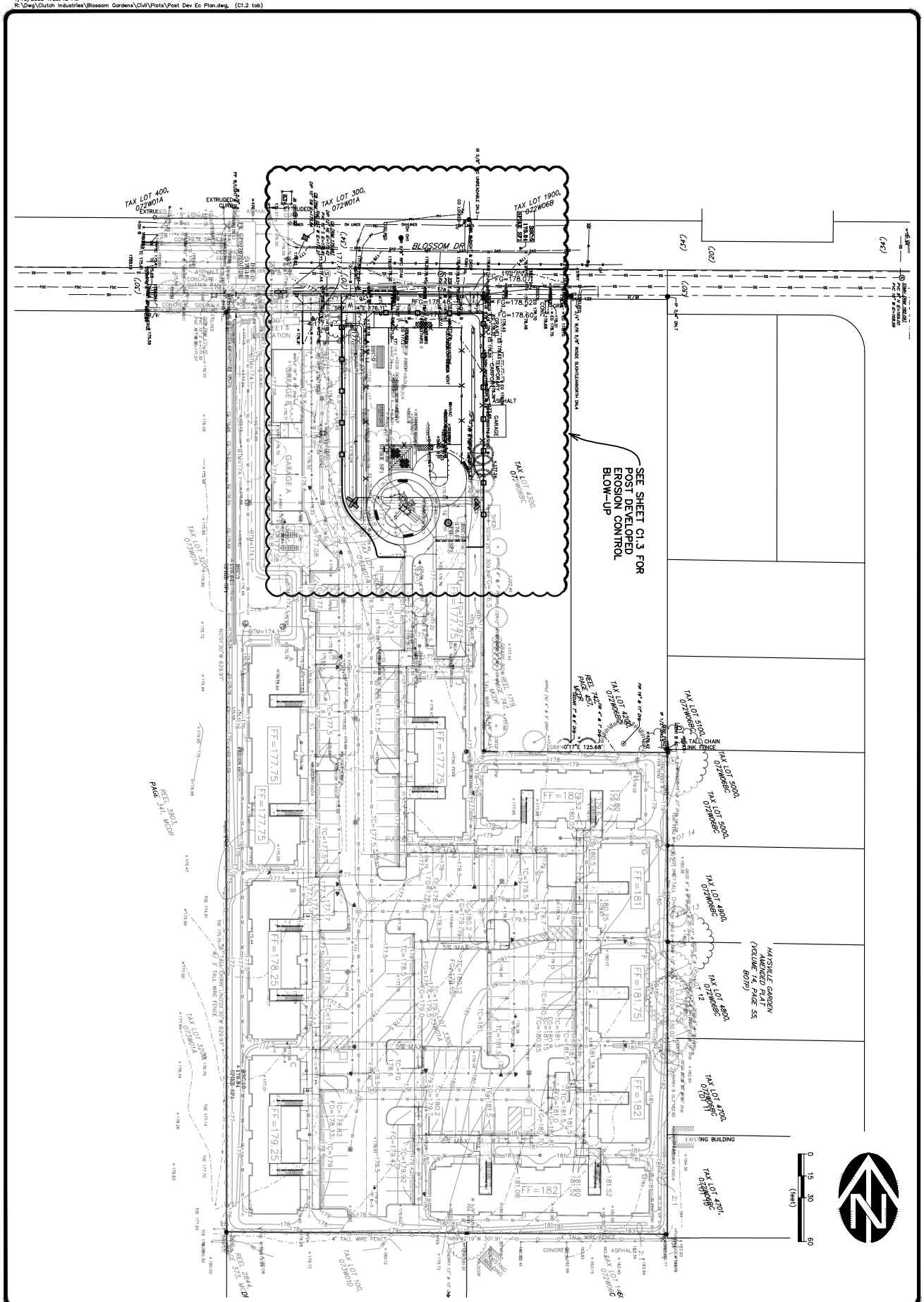

BLOSSOM GARDENS APARTMENTS LLC	
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS	
POST-DEVELOPED EROSION CONTROL PLAN	
DRAWING	C1.2
JOB NUMBER	3366.1000.0

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
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REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 12, 2005 — WILLIAM J. WELLS — 76415PE — RENEWS: 6/30/2026
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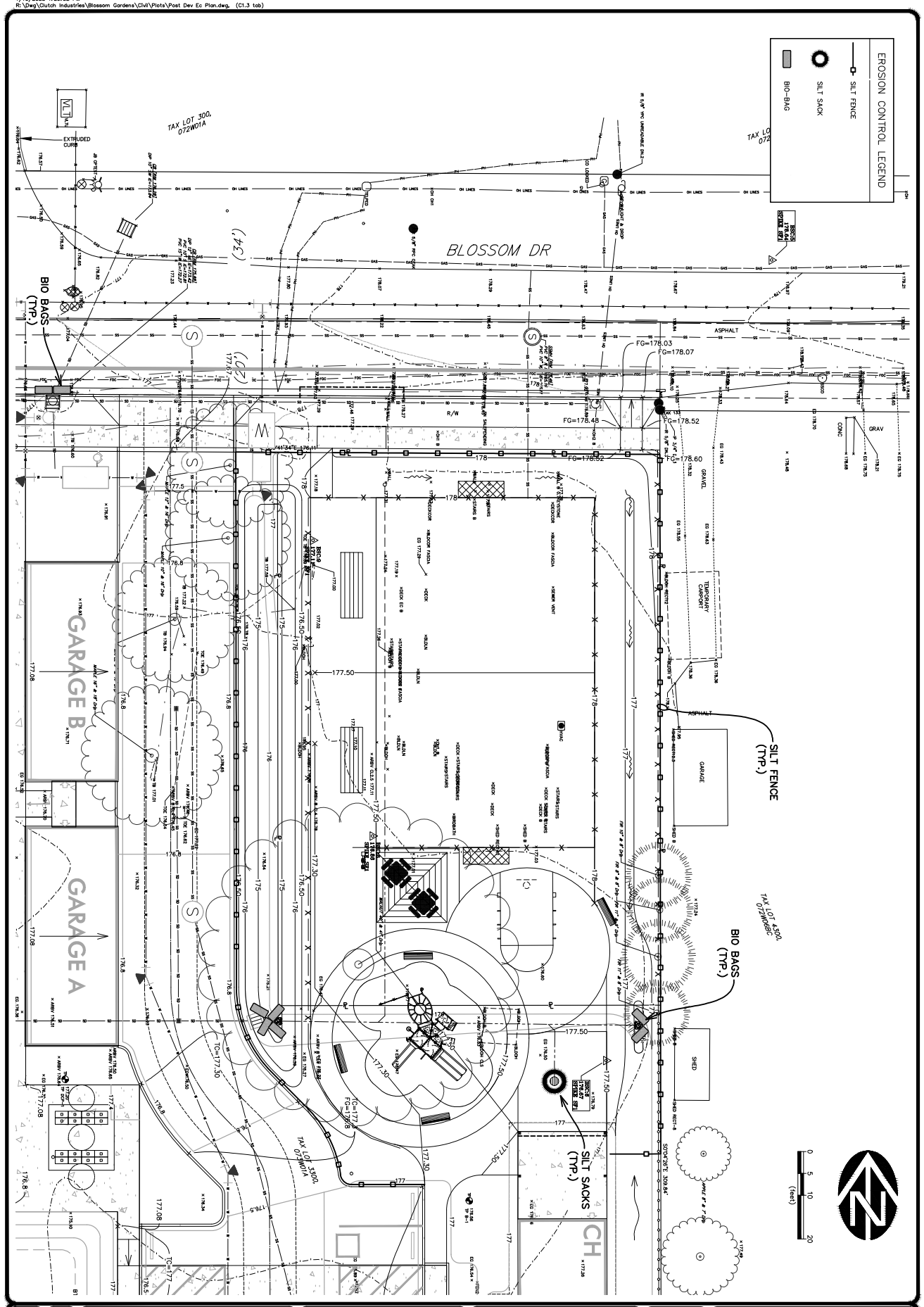

BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

POST-DEVELOPED EROSION CONTROL BLOW-UP PLAN

DRAWING C1.3

JOB NUMBER 3366.1000.0

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
E-mail: westech@westech-eng.com

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 12, 2005 — WILLIAM M. WELLS — 76415PE — RENEWS: 6/30/2026

DIGITALLY SIGNED

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DATE:	01/2025

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

DEQ EROSION CONTROL STANDARD NOTES:

1. Hold a pre-construction meeting of project construction personnel that includes the inspector to discuss erosion and sediment control measures and construction limits. (Schedule A.8.c.i.(3))
2. All inspections must be made in accordance with DEQ 1200-C permit requirements. (Schedule A.12.b and Schedule B.1)
3. Inspection logs must be kept in accordance with DEQ's 1200-C permit requirements. (Schedule B.1.c and B.2)
4. Retain a copy of the ESCP and all revisions on site and make it available on request to DEQ, Agent, or the local municipality. During inactive periods of greater than seven (7) consecutive calendar days, the above records must be retained by the permit registrant but do not need to be at the construction site. (Schedule B.2.c)
5. All permit registrants must implement the ESCP. Failure to implement any of the control measures or practices described in the ESCP is a violation of the permit. (Schedule A B.a)
6. The ESCP must be accurate and reflect site conditions. (Schedule A.12.c.i)
7. Submission of all ESCP revisions is not required. Submittal of the ESCP revisions is only under specific conditions. Submit all necessary revision to DEQ or Agent within 10 days. (Schedule A.12.c.iv. and v)
8. Phase clearing and grading to the maximum extent practical to prevent exposed inactive areas from becoming a source of erosion. (Schedule A.7.a.iii)
9. Identify, mark, and protect (by construction fencing or other means) critical riparian areas and vegetation including important trees and associated rooting zones, and vegetation areas to be preserved. Identify vegetative buffer zones between the site and sensitive areas (e.g., wetlands), and other areas to be preserved, especially in perimeter areas. (Schedule A.8.c.i.(1) and (2))
10. Preserve existing vegetation when practical and re-vegetate open areas. Re-vegetate open areas when practicable before and after grading or construction. Identify the type of vegetative seed mix used. (Schedule A.7.a.v)
11. Maintain and delineate any existing natural buffer within the 50-feet of waters of the state. (Schedule A.7.b.i.and (2(a)(b))
12. Install perimeter sediment control, including storm drain inlet protection as well as all sediment basins, traps, and barriers prior to land disturbance. (Schedule A.8.c.i.(5))
13. Control both peak flow rates and total stormwater volume, to minimize erosion at outlets and downstream channels and streambanks. (Schedule A.7.c)
14. Control sediment as needed along the site perimeter and at all operational internal storm drain inlets at all times during construction, both internally and at the site boundary. (Schedule A.7.d.i)
15. Establish concrete truck and other concrete equipment washout areas before beginning concrete work. (Schedule A.8.c.i.(6))
16. Apply temporary and/or permanent soil stabilization measures immediately on all disturbed areas as grading progresses. Temporary or permanent stabilizations measures are not required for areas that are intended to be left unvegetated, such as dirt access roads or utility pole pads.(Schedule A.8.c.ii.(3))
17. Establish material and waste storage areas, and other non-stormwater controls. (Schedule A.8.c.i.(7))
18. Prevent tracking of sediment onto public or private roads using BMPs such as: construction entrance, graveled (or paved) exits and parking areas, gravel all unpaved roads located onsite, or use an exit tire wash. These BMPs must be in place prior to land-disturbing activities. (Schedule A 7.d.ii and A.8.c.i(4))
19. When trucking saturated soils from the site, either use water-tight trucks or drain loads on site. (Schedule A.7.d.ii.(5))
20. Control prohibited discharges from leaving the construction site, i.e., concrete wash-out, wastewater from cleanout of stucco, paint and curing compounds. (Schedule A.6)
21. Use BMPs to prevent or minimize stormwater exposure to pollutants from spills; vehicle and equipment fueling, maintenance, and storage; other cleaning and maintenance activities; and waste handling activities. These pollutants include fuel, hydraulic fluid, and other oils from vehicles and machinery, as well as debris, fertilizer, pesticides and herbicides, paints, solvents, curing compounds and adhesives from construction operations. (Schedule A.7.e.i.(2))
22. Implement the following BMPs when applicable: written spill prevention and response procedures, employee training on spill prevention and proper disposal procedures, spill kits in all vehicles, regular maintenance schedule for vehicles and machinery, material delivery and storage controls, training and signage, and covered storage areas for waste and supplies. (Schedule A. 7.e.iii.)
23. Use water, soil-binding agent or other dust control technique as needed to avoid wind-blown soil. (Schedule A 7.a.iv)
24. The application rate of fertilizers used to reestablish vegetation must follow manufacturer's recommendations to minimize nutrient releases to surface waters. Exercise caution when using time-release fertilizers within any waterway riparian zone. (Schedule A.9.b.iii)
25. If an active treatment system (for example, electro-coagulation, flocculation, filtration, etc.) for sediment or other pollutant removal is employed, submit an operation and maintenance plan (including system schematic, location of system, location of inlet, location of discharge, discharge dispersion device design, and a sampling plan and frequency) before operating the treatment system. Obtain plan approval before operating the treatment system. Operate and maintain the treatment system according to manufacturer's specifications. (Schedule A.9.d)
26. Temporarily stabilize soils at the end of the shift before holidays and weekends, if needed. The registrant is responsible for ensuring that soils are stable during rain events at all times of the year. (Schedule A 7.b)
27. As needed based on weather conditions, at the end of each workday soil stockpiles must be stabilized or covered, or other BMPs must be implemented to prevent discharges to surface waters or conveyance systems leading to surface waters. (Schedule A 7.e.ii.(2))
28. Construction activities must avoid or minimize excavation and bare ground activities during wet weather. (Schedule A.7.a.i)
29. Sediment fence: remove trapped sediment before it reaches one third of the above ground fence height and before fence removal. (Schedule A.9.c.i)
30. Other sediment barriers (such as biobags): remove sediment before it reaches two inches depth above ground height and before BMP removal. (Schedule A.9.c.i)
31. Catch basins: clean before retention capacity has been reduced by fifty percent. Sediment basins and sediment traps: remove trapped sediments before design capacity has been reduced by fifty percent and at completion of project. (Schedule A.9.c.iii& iv)
32. Within 24 hours, significant sediment that has left the construction site, must be remediated. Investigate the cause of the sediment release and implement steps to prevent a recurrence of the discharge within the same 24 hours. Any in-stream clean-up of sediment shall be performed according to the Oregon Division of State Lands required timeframe. (Schedule A.9.b.i)
33. The intentional washing of sediment into storm sewers or drainage ways must not occur. Vacuuming or dry sweeping and material pickup must be used to cleanup released sediments. (Schedule A.9.b.ii)
34. The entire site must be temporarily stabilized using vegetation or a heavy mulch layer, temporary seeding, or other method should all construction activities cease for 30 days or more. (Schedule A.7.f.i)
35. Provide temporary stabilization for that portion of the site where construction activities cease for 14 days or more with a covering of blown straw and a tackifier, loose straw, or an adequate covering of compost mulch until work resumes on that portion of the site. (Schedule A.7.f.iii)
36. Do not remove temporary sediment control practices until permanent vegetation or other cover of exposed areas is established. Once construction is complete and the site is stabilized, all temporary erosion controls and retained soils must be removed and disposed of properly, unless doing so conflicts with local requirements. (Schedule A.8.c.iii(1) and D.3.c.ii and iii)

Rev. 12/15/15 By: Krista Ratliff

YEAR: / MONTH:	'25 03	'25 04	'25 05	'25 06	'25 07	'25 08	'25 09	'25 10	'25 11	'25 12	'26 01	'25 02
CLEARING	X	X	X									
EXCAVATION	X	X	X	X	X	X	X	X	X			
GRADING	X	X	X	X	X	X	X	X	X			
CONSTRUCTION												
SEDIMENT CONTROLS:												
Silt Fencing	X	X	X	X	X	X	X	X	X	X	X	X
Sediment Traps												
Sediment Basins												
Storm Inlet Protection	X	X	X	X	X	X	X	X	X	X	X	X
Drainage Swales												
Check Dams												
Contour Furrows												
Terracing												
Pipe Slope Drains												
Rock Outlet Protection												
Gravel Construction Entrance												
Grass-lined Channel (Turf Reinforcement Mats)												
Protection of trees with construction fences												
Temporary Seeding and Planting												
Permanent Seeding and Planting											X	X
Other:												

CONTROL MEASURE	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Silt Fencing	X	X	X	X	
Construction Entrance	X	X			
Sediment Traps			X	X	
Storm Inlet Protection	X	X	X	X	
Concrete Washout					
Rock Outlet Protection					
Permanent Seeding and Planting					X

Phase 1: Prior to Ground Disturbance
Phase 2: After Completion of Rough Grading
Phase 3: After Installation of Storm Facilities
Phase 4: After Paving & Construction
Phase 5: After Project Completion and Cleanup

INSPECTION FREQUENCY FOR BMP

Site Condition	Minimum Frequency
1. Active period	Daily when stormwater runoff, including runoff from snowmelt, is occurring. At least once every 14 days, regardless of whether stormwater runoff is occurring.
2. Prior to the site becoming inactive or in anticipation of site inaccessibility.	Once to ensure that erosion and sediment control measures are in working order. Any necessary maintenance and repair must be made prior to leaving the site.
3. Inactive periods greater than seven (14) consecutive calendar days	Once every month.
4. Periods during which the site is inaccessible due to inclement weather	If practical, inspections must occur daily at a relevant and accessible discharge point or downstream location.
5. Periods during which discharge is unlikely due to frozen conditions	Monthly. Resume monitoring immediately upon melt, or when weather conditions make discharge likely.

BMP Rationale

A comprehensive list of available Best Management Practices (BMP) options based on DEQ's 1200-C Permit Application and ESCP Guidance Document has been reviewed to complete this Erosion and Sediment Control Plan. Some of the above listed BMPs were not chosen because they were determined to not effectively manage erosion prevention and sediment control for this project based on specific site conditions, including soil conditions, topographic constraints, accessibility to the site, and other related conditions. As the project progresses and there is a need to revise the ESCP, an Action Plan will be submitted.

SOIL TYPE(S): PER MARION CO. SOIL SURVEY THE SITE SOILS INCLUDE, "WOOBURN SILT LOAM, 0-3% SLOPES."

EROSION HAZARD: PER MARION CO. SOIL SURVEY EROSION HAZARD RANGE IS "SLIGHT"

SITE AREA: 0.25 Ac

DISTURBANCE AREA: 0.25 Ac

SUPPLEMENTAL WESTECH NOTES:

1. Erosion control measures shall be maintained in such a manner as to ensure that sediment and sediment-laden water does not enter the drainge system, roadways, or violate applicable water quality standards.
2. The erosion control construction, maintenance, replacement and upgrading of the erosion control facilities is the responsibility of the Contractor until all construction is completed and approved, and permanent erosion control (i.e. vegetation/landscaping) is established on all disturbed areas.
3. All recommended erosion control procedures are dependent on construction methods, staging, site conditions, weather and scheduling. During the construction period, erosion control facilities shall be upgraded as necessary due to unexpected storm events and to ensure that sediment and sediment laden water does not leave the site.
4. The Contractor is responsible for control of sediment transport within project limits. If an installed erosion control system does not adequately contain sediment on site, then the erosion control measures shall be adjusted or supplemented by the Contractor as necessary to ensure that sediment laden water does not leave the site. Additional measures shall be provided as required to ensure that all paved areas are kept clean for the duration of the project. Additional interim measures will include, at a minimum, installation of silt fences in accordance with the details shown on the drawings. These measures shall be installed along all exposed embankments and cut slopes to prevent sediment transport.
5. All existing and newly constructed storm inlets and drains shall be protected until pavement surfaces are completed and/or vegetation is established.
6. Erosion control facilities and sediment fences on active sites shall be inspected by the Contractor at least daily during any period with measurable precipitation. Any required repairs or maintenance shall be completed immediately. The erosion control facilities on inactive sites shall be inspected and maintained by the Contractor a minimum of once a month or within 24 hours following the start of a storm event.
7. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system. The Contractor shall remove all accumulated sediment from all impacted catch basins and storm pipes prior to acceptance by the Owner.
8. The Contractor is solely responsible for protection of all adjacent property and downstream facilities from erosion and siltation during project construction. Any damage resulting from such erosion and siltation shall be corrected at the sole expense of the Contractor.
9. The Contractor shall provide site watering as necessary to prevent wind erosion of fine-grained soils.
10. Unless otherwise indicated on the drawings, all temporary erosion control facilities, including sediment fences, silt sacks, bio-bags, etc. shall be removed by the Contractor within 30 days after permanent landscaping/vegetation is established.
11. Sediment fences shall be constructed of continuous filter fabric to avoid use of joints. When joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6-inch overlap, and both ends securely fastened to a post.
12. Sediment fence shall be installed per drawing details. Sediment fences shall have adequate support to contain all silt and sediment captured.
13. The standard strength filter fabric shall be fastened securely to stitched loops installed on the upslope side of the posts, and 6 inches of the fabric shall be extended into the trench. The fabric shall not extend more than 30 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
14. Bio-filter bags shall be clean 100 percent wood product waste. Bags shall be 18-inch x 18-inch x 30-inch, weigh approximately 45 lbs., and be contained in a bag made of 1/2-inch plastic mesh.
15. Sediment barriers shall be maintained until the up-slope area has been permanently stabilized. At no time shall more than 10-inches of sediment be allowed to accumulate behind sediment fences. No more than 2 inches of sediment shall be allowed to accumulate behind bio-filter bags. Sediment shall be removed prior to reaching the above stated depths. New sediment barriers shall be installed uphill as required to control sediment transport.
16. Stabilized construction entrances shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures may be required to ensure that all paved areas are kept clean for the duration of the project.
17. The Contractor shall verify that all trucks are well sealed when transporting saturated soils from the site. Water drippage from trucks transporting saturated soils must be reduced to less than 1 gallon per hour prior to leaving the site.
18. The entrance shall be maintained in a condition that will prevent tracking or flow of mud onto the public right-of-way or approved access point. The entrance may require periodic top dressing as conditions demand, and repair and/or cleanout of any structures used to trap sediment.
19. All materials spilled, dropped, washed, or tracked from vehicles onto roadways or into storm drains must be removed immediately, and the Contractor shall provide protection of downstream inlets and catch basins to ensure sediment laden water does not enter the storm drain system.
20. Temporary grass cover measures must be fully established by October 15th, or other cover measures (ie. erosion control blankets with anchors, 3-inches minimum of straw mulch, 6 mil HDPE plastic sheet, etc.) shall be in place over all disturbed soil areas until April 30th. To establish an adequate grass stand for controlling erosion by October 15th, it is recommended that seeding and mulching occur by September 1st. Straw mulch, if used, shall not leave any bare ground visible through the straw.
21. Minimum wet weather slope protection. For slopes steeper than 3H:1V but less than 2H:1V, use Tensar/North American Green Type S150 erosion control blanket. For slopes 2H:1V or steeper, use Tensar/North American Green Type SC150 erosion control blanket. Use a minimum of 2-inches straw mulch or Tensar/North American Green Type S150 for slopes flatter than 3H:1V. Slope protection shall be placed on all disturbed areas immediately after completion of each section of construction activity, until the erosion control seeding has been established. As an option during temporary or seasonal work stoppages, a 6-mil HDPE plastic sheet may be placed on exposed slopes. The plastic sheet shall be provided with an anchor trench at the top and bottom of the slope, and shall be sandbagged on the slopes as required to prevent damage or displacement by wind.
22. Permanent erosion control vegetation on all embankments and disturbed areas shall be re-established as soon as construction is completed.
23. Soil preparation. Topsoil should be prepared according to landscape plans, if available, or recommendations of grass seed supplier. It is recommended that slopes be textured before seeding by rack walking (ie. driving a crawling tractor up and down the slopes to leave a pattern of cleat imprints parallel to slope contours) or other method to provide stable areas for seeds to rest.
24. When used, hydromulch shall be applied with grass seed at a rate of 2000 lbs. per acre between April 30 and June 10, or between September 1 and October 1. On slopes steeper than 10 percent, hydroseed and mulch shall be applied with a bonding agent (tackifier). Application rate and methodology to be in accordance with seed supplier recommendations.
25. When used in lieu of hydromulch, dry, loose, weed free straw used as mulch shall be applied at a rate of 4000 lbs. per acre (double the hydromulch application requirement). Anchor straw by working in by hand or with equipment (rollers, cleat trackers, etc.). Mulch shall be spread uniformly immediately following seeding.
26. When conditions are not favorable to germination and establishment of the grass seed, the Contractor shall irrigate the seeded and mulched areas as required to establish the grass cover.
27. Seeding. Recommended erosion control grass seed mix is as follows. Dwarf grass mix (low height, low maintenance) consisting of dwarf perennial ryegrass (80 % by weight), creeping red fescue (20 % by weight). Application rate shall be 100 lbs. per acre minimum.
28. Grass seed shall be fertilized at a rate of 10 lbs. per 1000 S.F with 16- 16-16 slow release type fertilizer. Development areas within 50 feet of water bodies and wetlands must use a non-phosphorous fertilizer.
29. Prior to starting construction contractor shall acquire the services of a DEQ Certified Erosion and Sediment Control Inspector and shall submit an "Action Plan" to DEQ indentifying their names, contact information, training and experience as required in Schedule A.6.b.i-ii of the 1200-C Permit
30. Contractor shall submit "Notice of Termination" to DEQ to end the 1200-C permit coverage once all soil disturbance activities have been completed and final stabilization of exposed soils has occured.

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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DRN. IH
CKD. JW
DATE: 01/2025

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474, Fax: (503) 585-3986
E-mail: westech@westech-eng.com

BLOSSOM GARDENS APARTMENTS LLC
BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EROSION CONTROL NOTES

DRAWING
C1.4

JOB NUMBER
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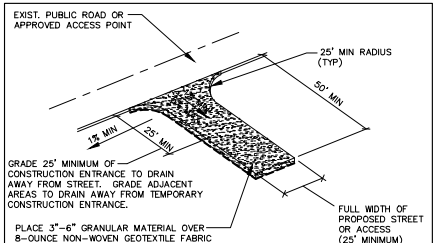


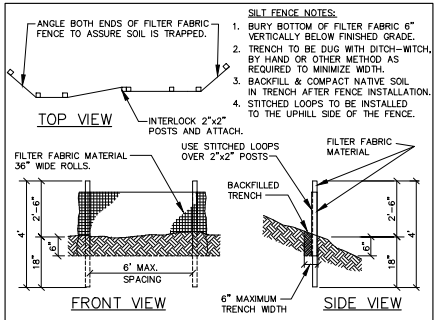
CONSTRUCTION NOTES:

1. THE AREA OF THE CONSTRUCTION ENTRANCE SHALL BE STRIPPED OF ALL TOPSOIL, VEGETATION, ROOTS, AND OTHER NON–COMPACTABLE MATERIAL.
2. SUBGRADE SHALL BE COMPACTED AND PROOFROLLED PRIOR TO PLACEMENT OF GRANULAR MATERIAL. FAILURE TO PASS PROOFROLL WILL REQUIRE USE OF WET WEATHER SECTION.
3. FAILURE OR PUMPING OF THE DRY WEATHER SECTION WILL REQUIRE REMOVAL OF THE GRANULAR MATERIAL AND INSTALLATION OF THE WET WEATHER SECTION.

MAINTENANCE NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 3"–6" INCH STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN–OUT OF STRUCTURES USED TO TRAP SEDIMENT.
2. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
3. ALL TRUCKS TRANSPORTING SATURATED SOILS SHALL BE WELL SEALED. WATER DRIPPAGE FROM TRUCKS MUST BE REDUCED TO 1 GALLON PER HOUR PRIOR TO LEAVING THE SITE.

LAST REVISION DATE:	JO #:
MAY 2013	STANDARD
TEMPORARY CONSTRUCTION ENTRANCE (NTS)	
WESTECH ENG.	DETAIL NO. 6100



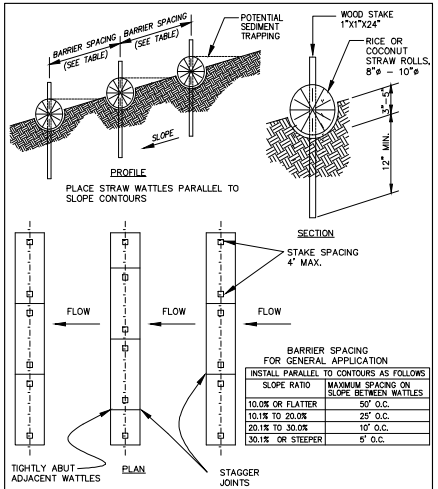
SILT FENCE NOTES:

1. BURY BOTTOM OF FILTER FABRIC 6" VERTICALLY BELOW FINISHED GRADE.
2. TRENCH TO BE DUG WITH DITCH–WITCH, BY HAND OR OTHER METHOD AS REQUIRED TO MINIMIZE WIDTH.
3. BACKFILL & COMPACT NATIVE SOIL IN TRENCH AFTER FENCE INSTALLATION.
4. STITCHED LOOPS TO BE INSTALLED TO THE UPHILL SIDE OF THE FENCE.

MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

LAST REVISION DATE:	JO #:
APRIL 2014	STANDARD
SEDIMENT BARRIERS (NTS)	
WESTECH ENG.	DETAIL NO. 6110



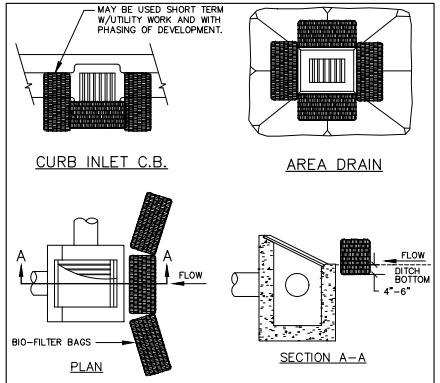
BARRIER SPACING FOR GENERAL APPLICATION

INSTALL PARALLEL TO CONTOURS AS FOLLOWS	
SLOPE RATIO	MAXIMUM SPACING ON SLOPE BETWEEN WATTLES
10.0% OR FLATTER	50' O.C.
10.1% TO 20.0%	25' O.C.
20.1% TO 30.0%	10' O.C.
30.1% OR STEEPER	5' O.C.

NOTES:

1. ALL MATERIAL SHALL CONFORM TO OSSC (ODOT/APWA) SPECIFICATIONS, CURRENT EDITION.
2. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
3. AT NO TIME SHALL SEDIMENT BE ALLOWED TO ACCUMULATE ABOVE THE TOP OF THE STRAW WATTLE.
4. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

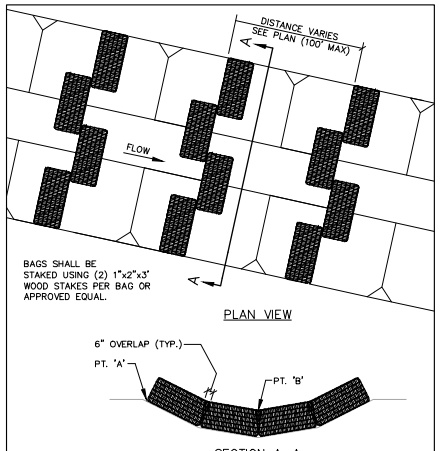
LAST REVISION DATE:	JO #:
JUNE 2015	STANDARD
STRAW WATTLE SEDIMENT BARRIER (NTS)	
WESTECH ENG.	DETAIL NO. 6120



MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND SEDIMENT FENCES OR BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.

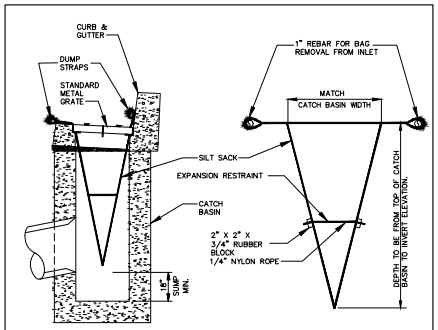
LAST REVISION DATE:	JO #:
APRIL 2014	STANDARD
INLET SEDIMENT CONTROL (NTS)	
WESTECH ENG.	DETAIL NO. 6130



MAINTENANCE NOTES:

1. SEDIMENT BARRIERS SHALL BE MAINTAINED UNTIL UP–SLOPE AREA IS PERMANENTLY STABILIZED.
2. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE BEHIND BIOFILTER BAGS.
3. NEW SEDIMENT BARRIERS SHALL BE INSTALLED UPHILL AS REQUIRED TO CONTROL SEDIMENT TRANSPORT.
4. PT. 'A' SHALL BE 6" MIN. HIGHER THAN PT. 'B'.

LAST REVISION DATE:	JO #:
APRIL 2014	STANDARD
DITCH AND SWALE EROSION PROTECTION (NTS)	
WESTECH ENG.	DETAIL NO. 6140



NOTES:

1. EMPTY SILT SACK AS NECESSARY.
2. SILTSACK SEDIMENT CONTROL DEVICE AS MANUFACTURED BY ACF ENVIRONMENTAL AND SUPPLIED BY ACF WEST (503) 771–5115 OR APPROVED EQUAL.

LAST REVISION DATE:	JO #:
OCT 2002	STANDARD
SILTSACK INLET DETAIL (NTS)	
WESTECH ENG.	DETAIL NO. 6150

BY	DESCRIPTION	NO.	DATE
	REVISIONS		

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY
1"
DSN. JW
DRN. IH
CKD. JW
DATE: 01/2025

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2025
WILLIAM J. WELLS
RENEWS: 6/30/2026

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585–2474, Fax: (503) 585–3986
E–mail: westech@westech–eng.com

BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

EROSION CONTROL DETAILS

DRAWING
C1.5

JOB NUMBER
3366.1000.0

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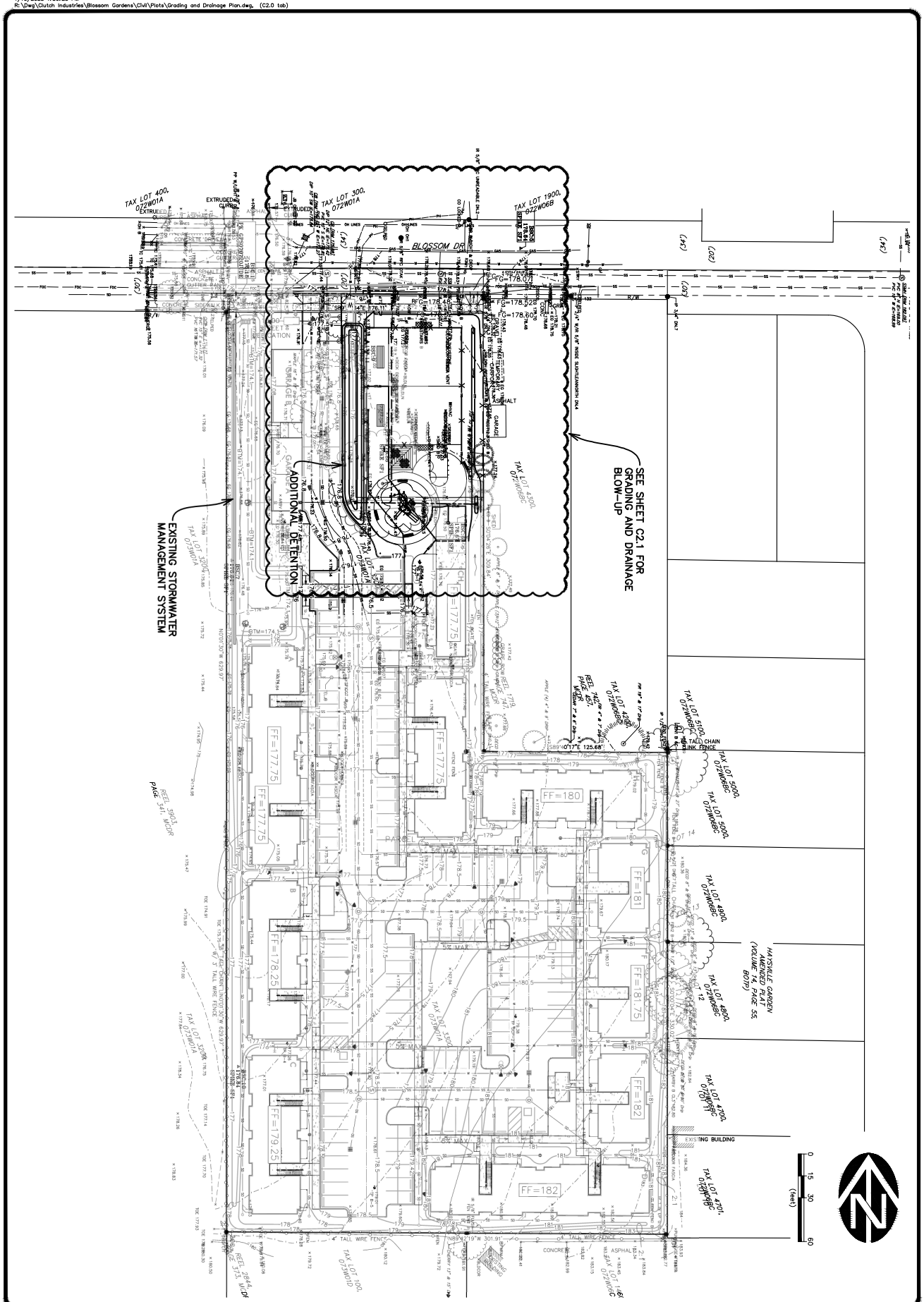
K:\Dwg\Blossom Gardens\Civil\Plots\EC Notes and Details.dwg, (C1.5 tab)

1/10/2025 1:30:25 PM
R:\Dwg\Clutch Industries\Blossom Gardens\Civil\Plots\Grading and Drainage Plan.dwg, (C2.0 tab)



BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

GRADING AND DRAINAGE PLAN

DRAWING C2.0

JOB NUMBER 3366.1000.0

WESTECH ENGINEERING, INC.
CONSULTING ENGINEERS AND PLANNERS
3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302
Phone: (503) 585-2474 Fax: (503) 585-3986
E-mail: westech@westech-eng.com

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 12, 2005
WILLIAM A. WELLS
75415PE
RENEWS: 6/30/2026
DIGITALLY SIGNED

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

DSN. JW
DRN. IH
CKD. JW
DATE: 01/2025

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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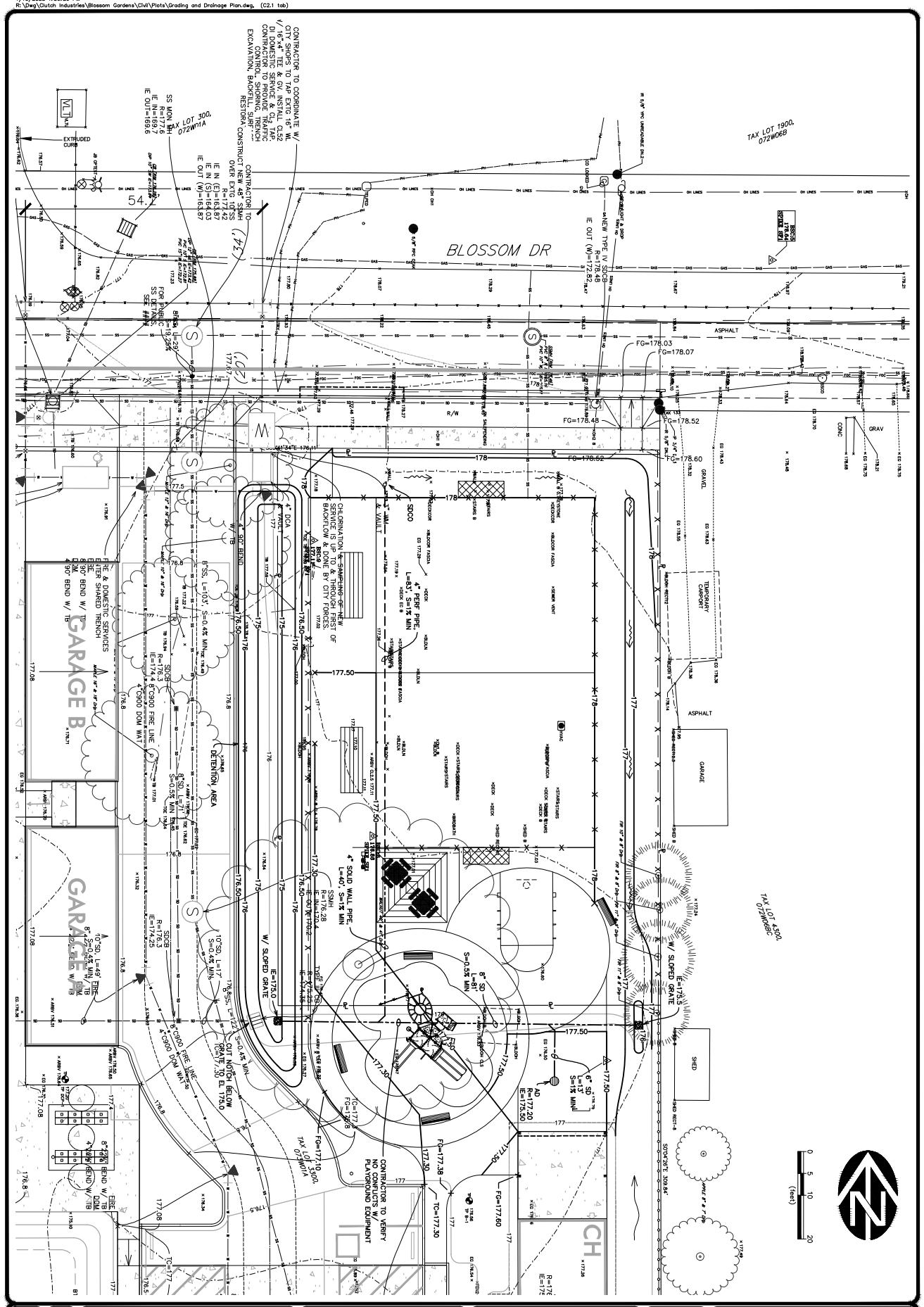
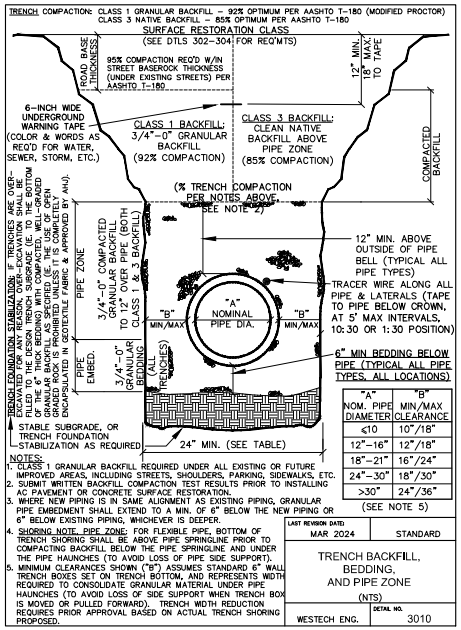
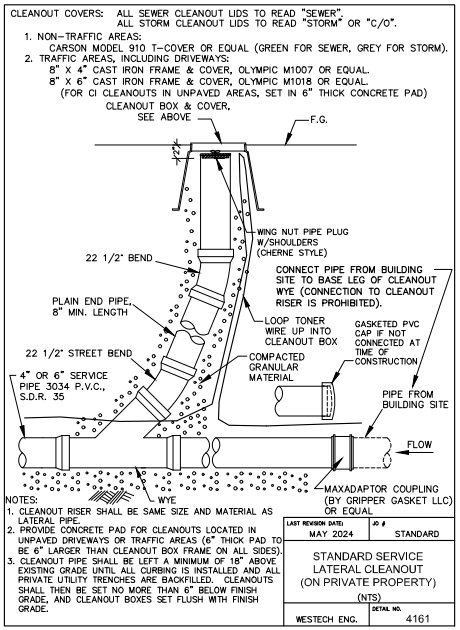


BLOSSOM GARDENS APARTMENTS LLC BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS GRADING AND DRAINAGE BLOW-UP PLAN	WESTECH ENGINEERING, INC. CONSULTING ENGINEERS AND PLANNERS 3841 Fairview Industrial Dr. S.E., Suite 100, Salem, OR 97302 Phone: (503) 585-2474 Fax: (503) 585-3986 E-mail: westech@westech-eng.com	REGISTERED PROFESSIONAL ENGINEER OREGON JULY 12, 2005 WILLIAM J. WELLS DIGITALLY SIGNED RENEWS: 6/30/2026	VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY DSN. JW DRN. IH CKD. JW DATE: 01/2025

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

DRAWING C2.1
JOB NUMBER 3366.1000.0





NO.	DATE	DESCRIPTION	BY
		REVISIONS	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY
1"
DSN. JW
DRN. IH
CKD. JW
DATE: 01/2025

REGISTERED PROFESSIONAL ENGINEER
76415PE
DIGITALLY SIGNED
OREGON
NOV. 12, 2024
WILLIAM J. WELLS
RENEWS: 6/30/2026

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CONSULTING ENGINEERS AND PLANNERS
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Phone: (503) 585-2474, Fax: (503) 585-3986
E-mail: westech@westech-eng.com

BLOSSOM GARDENS APARTMENTS LLC

BLOSSOM APARTMENTS PLAYGROUND IMPROVEMENTS

CONSTRUCTION DETAILS

DRAWING
C4.0

JOB NUMBER
3366.1000.0

1/10/2025 1:30:34 PM
R:\Dwg\Civil\Westech\Blossom Gardens\Civil\Plots\Notes and Details.dwg, (C4.0 tab)

Exhibit I – Landscaping Plans

BLOSSOM GARDENS
PLAYGROUND IMPROVEMENTS

3480 BLOSSOM DRIVE NE
SALEM, OREGON

DRAWINGS FOR:

BLOSSOM GARDENS APARTMENTS LLC
360 BELMONT ST NE
SALEM, OR 97301
CONTACT: CHRIS ANDERSON
503 . 932 . 3179
CHRISA@CLUTCHINDUSTRIES.COM

LANDSCAPE ARCHITECT:

LAURUS DESIGNS, LLC
LAURA ANTONSON, RLA, ASLA
1012 PINE STREET
SILVERTON, OREGON 97381
503 . 784 . 6494
LAURA@LAURUSDESIGNS.COM

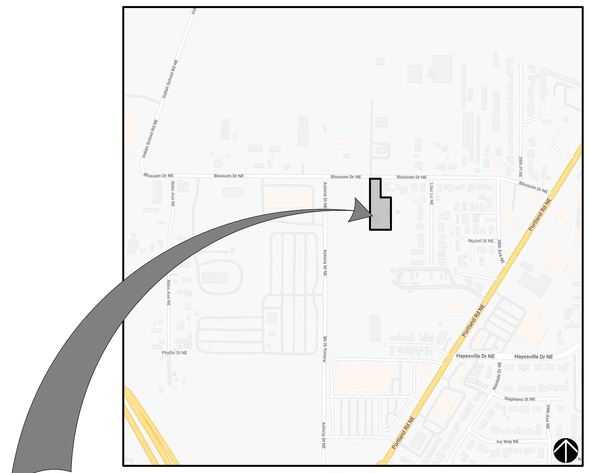
CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
811
OR
1.800.332.2344
www.callbeforeyoudig.org

SHEET INDEX:

SITE INFORMATION:

TAX LOT: 073W01A003301
ZONE: RM2

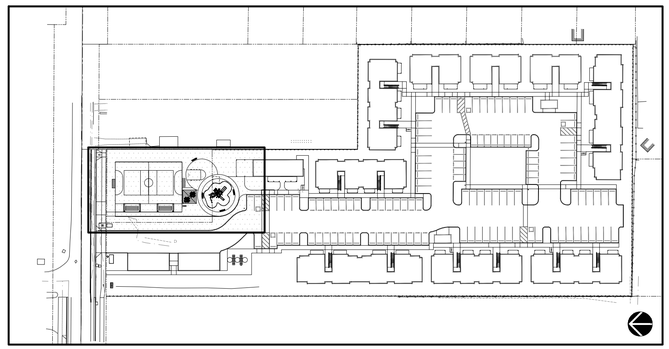
VICINITY MAP:



MAP COURTESY OF GOOGLE

PROJECT SITE

KEY MAP:



Laurus Designs, LLC
1012 Pine Street
Silverton, Oregon 97381
503.784.6494
laurusdesigns.com

BLOSSOM GARDENS PLAYGROUND IMPROVEMENTS

BLOSSOM DRIVE
SALEM, OREGON

REGISTERED 643 PRELIMINARY LAURA A. ANTONSON OREGON 11/16/2007 LANDSCAPE ARCHITECT

COVER SHEET

JANUARY 23RD, 2025

REVISIONS

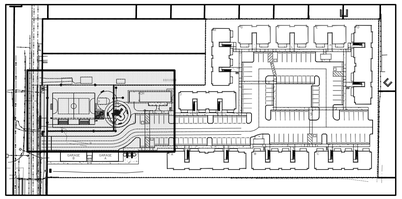
#	DATE	NOTES	INITIALS

L0.0

SHEET 1 OF 5

PROJECT #: 1487R

KEY MAP:

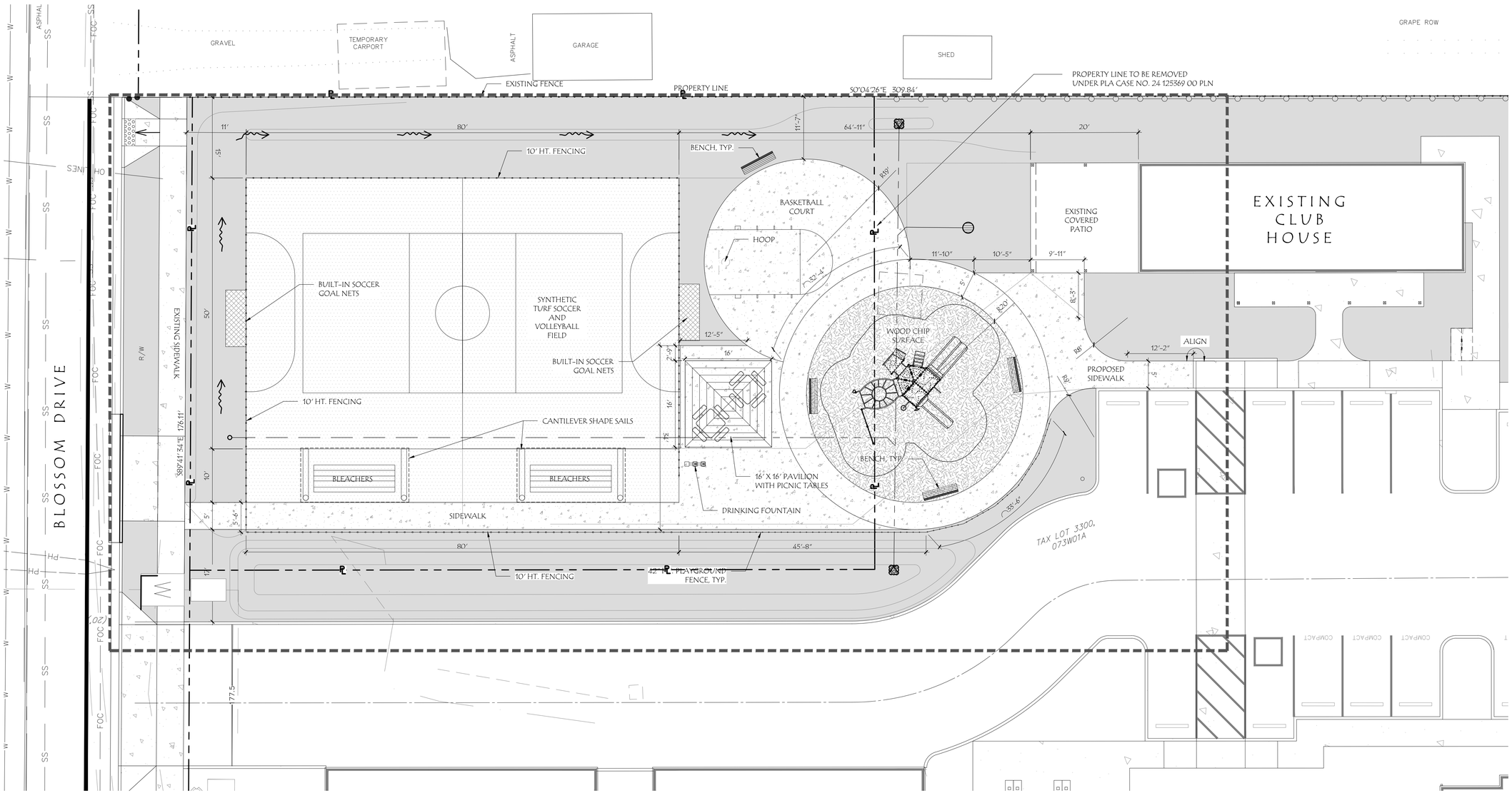


LEGEND:

- LIMITS OF LANDSCAPE
- PLANTER AREAS
- CONCRETE, SCORE AS SHOWN, EQUAL SPACES WHERE POSSIBLE, ALIGN JOINTS AS SHOWN, EXPANSION JOINTS AT STRUCTURES AND SEPARATE CONCRETE FEATURES, LIGHT BROOM FINISH, NO SHINERS
- SYNTHETIC SPORTS TURF
- PLAY AREA SURFACE. CHILDREN'S PLAY AREA AND WOODCHIP PLAY SURFACE TO CONFORM TO CPSC AND ASTM PLAYGROUND STANDARD AND GUIDELINES. PLAY EQUIPMENT TO BE SELECTED.
- 10' HEIGHT BALL FENCING
- 42" HEIGHT PLAYGROUND FENCING
- DRINKING FOUNTAIN
- PICNIC TABLE
- BENCH
- BLEACHERS
- 16' X 16' PAVILION
- CANTILEVER SHADE SAIL

NOTES:

1. PRELIMINARY LANDSCAPE PLANS, NOT FOR CONSTRUCTION OR BIDDING.
2. SEE CIVIL DRAWINGS FOR UTILITIES, GRADING, AND STORMWATER.
3. PLAYGROUND TO HAVE A 42" HEIGHT NON-SIGHT OBSCURING FENCE AND 12" MINIMUM WOODCHIP SURFACE. WOODCHIPS AND EQUIPMENT WILL CONFORM TO CPSC AND ASTM PLAYGROUND STANDARDS AND GUIDELINES.
4. EXISTING APPROVED PLANTING PLAN SEE SHEET L2.1.
5. PROPOSED PLANTING PLAN SEE SHEETS L2.2 AND L2.3.
6. SITE TO BE IRRIGATED BY WATER EFFICIENT UNDERGROUND AUTOMATIC IRRIGATION SYSTEMS.
7. PROPERTY



Laurus Designs, LLC

1012 Pine Street
Silverton, Oregon 97381

503.784.6494
laurusdesigns.com

BLOSSOM GARDENS PLAYGROUND IMPROVEMENTS

BLOSSOM DRIVE
SALEM, OREGON

REGISTERED
643
PRELIMINARY
LAURA A. ANTONSON
OREGON
11/16/2007
LANDSCAPE ARCHITECT

AMENITY SITE PLAN

SCALE: 1" = 10' - 0"

0' 5' 10' 20'
SCALE

JANUARY 23RD, 2025

REVISIONS

#	DATE	NOTES	INITIALS

L1.1

SHEET 2 OF 5

PROJECT #: 14887R

APPROVED EXISTING PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
	2	ACER CIRCINATUM / VINE MAPLE	1" CAL., B&B
	4	CARPINUS BETULUS 'FASTIGIATA' / PYRAMIDAL EUROPEAN HORNBEAN	1 ¾" CAL., B&B STREET TREE
	5	CEDRUS DEODARA `KARL FUCHS` / KARL FUCHS DEODAR CEDAR	6'-8' HT., B&B
	15	CERCIS CANADENSIS / EASTERN REDBUD	1 ½" CAL., B&B
	9	CHAMAECYPARIS NOOTKATENSIS `GLAUCA PENDULA` / WEEPING NOOTKA FALSE CYPRESS	6'-8' HT., B&B
	5	CHAMAECYPARIS OBTUSA `GRACILIS` / SLENDER HINOKI CYPRESS	6'-8' HT., B&B
	21	NYSSA SYLVATICA `WILDFIRE` / BLACK GUM	1 ½" CAL., B&B
	13	PARROTIA PERSICA 'VANESSA' / VANESSA PERSIAN PARROTIA	1 ½" CAL., B&B
	6	ULMUS PARVIFOLIA 'EMER II' TM / ALLEE LACEBARK ELM	1 ½" CAL., B&B
	8	ZELKOVA SERRATA `GREEN VASE` / SAWLEAF ZELKOVA	1 ½" CAL., B&B

RAIN GARDEN PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
	10	CORNUS NUTTALII X FLORIDA 'EDDIE'S WHITE WONDER' / EDDIE'S WHITE WONDER DOGWOOD	1 1/2" CAL., B&B
SMALL TREE/LARGE SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
	32	OEMLERIA CERASIFORMIS / INDIAN PLUM	3 GAL.
SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
K	40	CORNUS SERICEA `KELSEYI` / KELSEYI DOGWOOD	1 GAL.
G	76	MAHONIA AQUIFOLIUM / OREGON GRAPE	1 GAL.
F	20	RIBES SANGUINEUM / RED FLOWERING CURRANT	1 GAL.
S	65	SYMPHORICARPOS ALBUS / COMMON SNOWBERRY	1 GAL.
GROUND COVERS	QTY	BOTANICAL / COMMON NAME	SIZE
ZONE1 (2,561 sf)	1314 1314 1314 1314	CAREX DENSA / DENSE SEDGE JUNCUS ENSIFOLIUS / DAGGER-LEAF RUSH JUNCUS TENUIS / SLENDER RUSH SCIRPUS MICROCARPUS / SMALL FRUITED BULRUSH	PLUG, MIN. 1" X 6"
ZONE2 (2,735 sf)	1800 550 550 250	FRAGARIA VIRGINIANA / WILD STRAWBERRY ACHILLEA MILLEFOLIUM / WESTERN YARROW POTENTILLA GRACILIS / SLENDER CINQUEFOIL LUPINUS MICRANTHUS / SMALL-FLOWERED LUPINE	1 GAL.

RAIN GARDEN PLANTING REQUIREMENTS

FACILITY NUMBER	FACILITY SF	TREES	SMALL TREES/ LARGE SHRUBS	SMALL SHRUBS	GROUND COVERS
1	5,346 SF (176' CONTOUR)	12	32	201	5,296 SF

REQUIREMENTS PER 100 SF

1 TREE –OR–

4 LARGE SHRUBS –OR–

6 SMALL SHRUBS

GRASSES, HERBS AND GROUND COVER FOR COMPLETE COVERAGE

2" PEA GRAVEL ZONE 1

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
	64	ABELIA X GRANDIFLORA `KALEIDOSCOPE` / KALEIDOSCOPE ABELIA	2 GAL.
	49	ABELIA X GRANDIFLORA `SHERWOODII` / SHERWOOD GLOSSY ABELIA	2 GAL.
	9	CAMELLIA JAPONICA 'APRIL DAWN' / APRIL DAWN CAMELLIA	3 GAL.
	89	EUONYMUS ALATUS `COMPACTUS` / COMPACT BURNING BUSH	5 GAL.
	88	EUONYMUS JAPONICUS 'SILVER KING' / SILVER KING EUONYMUS	3 GAL.
	18	ILEX CRENATA `SKY PENCIL` / SKY PENCIL JAPANESE HOLLY	24"-30" HT.
	4	LEUCOTHOE FONTANESIANA `RAINBOW` / RAINBOW LEUCOTHOE	3 GAL.
	11	LEUCOTHOE FONTANESIANA 'ZEBLID' / SCARLETTA® DROOPING LEUCOTHOE	2 GAL.
	58	LIGUSTRUM JAPONICUM 'TEXANUM' / TEXAS JAPANESE PRIVET	5 GAL.
	62	LONICERA PILEATA / PRIVET HONEYSUCKLE	2 GAL.
G	50	MAHONIA AQUIFOLIUM / OREGON GRAPE	2 GAL.
	62	NANDINA DOMESTICA `GULF STREAM` TM / GULF STREAM HEAVENLY BAMBOO	2 GAL.
	26	NANDINA DOMESTICA 'ATROPURPUREA NANA' / DWARF HEAVENLY BAMBOO	2 GAL.
	12	OSMANTHUS HETEROPHYLLUS `GOSHIKI` / GOSHIKI HOLLY OLIVE	5 GAL.
	47	PRUNUS LAUROCERASUS `MOUNT VERNON` / MOUNT VERNON LAUREL	1 GAL.
	54	RHAPHIOLEPIS INDICA 'BALLERINA' / BALLERINA INDIAN HAWTHORN	2 GAL.
	60	RHAPHIOLEPIS UMBELLATA `MINOR` / YEDDA HAWTHORN	2 GAL.
	82	SARCOCOCCA CONFUSA / SWEETBOX	2 GAL.
	31	SPIRAEA JAPONICA 'GOLDFLAME' / GOLDFLAME JAPANESE SPIREA	2 GAL.

GRASSES / PERENNIALS	QTY	BOTANICAL / COMMON NAME	SIZE
	48	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER` / KARL FOERSTER FEATHER REED GRASS	1 GAL.
	11	HEMEROCALLIS SPP. / DAYLILY	1 GAL.
	41	PENNISETUM ALOPECUROIDES `HAMELN` / HAMELN DWARF FOUNTAIN GRASS	1 GAL.

GROUND COVERS		QTY	BOTANICAL / COMMON NAME	SIZE
KINN		382 (2,257 sf)	ARCTOSTAPHYLOS UVA-URSI `MASSACHUSETTS` / MASSACHUSETTS MANZANITA	1 GAL.
LOWF		72 (1,087 sf)	COTONEASTER DAMMERI `LOWFAST` / LOWFAST BEARBERRY COTONEASTER	1 GAL.
STRW		342 (1,308 sf)	FRAGARIA VIRGINIANA / VIRGINIA STRAWBERRY	4" POT
PACH		340 (734 sf)	PACHYSANDRA TERMINALIS 'SILVER EDGE' / SILVER EDGE JAPANESE PACHYSANDRA	4" POT
RASP		59 (841 sf)	RUBUS CALYCINOIDES `EMERALD CARPET` / EMERALD CARPET CREEPING RASPBERRY	1 GAL.
LAWN		12,102 sf	PROTIME PT301 WATER SMARTER FESCUE OR EQUAL	SEED @ RATE OF 7-10 LBS PER 1,000 SF

GENERAL NOTES:

1. PLANTING PLAN THIS SHEET FROM APPROVED PERMITTED LANDSCAPE PLANS DATED MARCH 18TH, 2023 WITH FINAL REVISION DATE OF JUNE 12TH, 2023.
2. PLANTS INSTALLED AND INSPECTED BY LANDSCAPE ARCHITECT IN OCTOBER 2024.
3. APPROVED PLANT SCHEDULE SEE THIS SHEET.
4. APPROVED PLANTING REQUIREMENTS SEE PLAN FOR SETBACKS AND NOTES BELOW FOR PARKING THIS SHEET.

MULTIFAMILY LANDSCAPE REQUIREMENTS

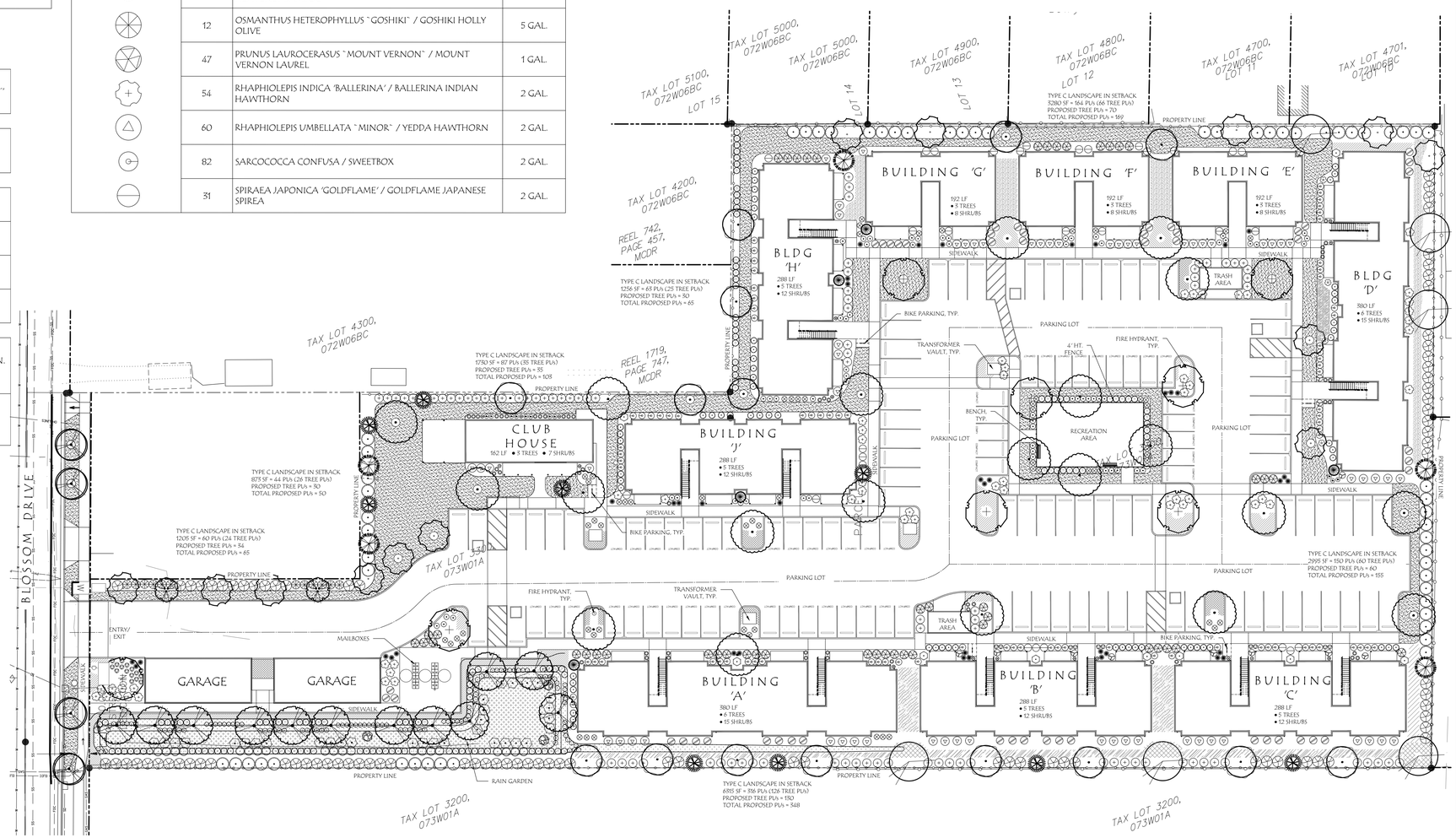
CONDITIONS OF APPROVAL #7 = 71 REQUIRED TREES
PROPOSED = 92 TREES

OPEN SPACE REQUIRED: 30% MINIMUM, INCLUDING ACTIVE AND PASSIVE RECREATION, PRIVATE SPACE
OPEN SPACE PROVIDED: 37% (18,400 SF) INCLUDING LAWN AREAS, SPORTS COURT, CLUB HOUSE PATIO

BUILDING PERIMETER: 1 TREE (10 UNITS) PER 60 LF OF BUILDING WALL (WITHIN 25' OF BUILDING)
1 SHRUB (1 PLANT UNIT) PER 15 LF
2 PLANT UNITS AT ENTRY WAYS

TYPE C IN ALL PERIMETER SETBACKS: SEE PLAN FOR CALCULATIONS

PARKING: 1 CANOPY TREE PER 50 FEET OF PARKING PERIMETER (WITHIN 10' OF PARKING PERIMETER)



Laurus Designs, LLC

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Silverton, Oregon 97381

503.784.6494
laurusdesigns.com

BLOSSOM GARDENS PLAYGROUND IMPROVEMENTS

BLOSSOM DRIVE
SALEM, OREGON

REGISTERED 643 PRELIMINARY LAURA A. ANTONSON OREGON 11/16/2007 LANDSCAPE ARCHITECT

EXISTING APPROVED PLANTING PLAN

SCALE: 1" = 30' - 0"

0' 15' 30' 60'

SCALE

JANUARY 23RD, 2025

REVISIONS

#	DATE	NOTES	INITIALS

L2.1

SHEET 3 OF 5

PROJECT #: 14878

EXISTING TO REMAIN PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
	6	CARPINUS BETULUS 'FASTIGIATA' / PYRAMIDAL EUROPEAN HORNBEAN	1 ¾" CAL., B&B STREET TREE
	5	CEDRUS DEODARA `KARL FUCHS` / KARL FUCHS DEODAR CEDAR	6'-8' HT., B&B
	15	CERCIS CANADENSIS / EASTERN REDBUD	1 ½" CAL., B&B
	7	CHAMAECYPARIS NOOTKATENSIS `GLAUCA PENDULA` / WEEPING NOOTKA FALSE CYPRESS	6'-8' HT., B&B
	5	CHAMAECYPARIS OBTUSA `GRACILIS` / SLENDER HINOKI CYPRESS	6'-8' HT., B&B
	21	NYSSA SYLVATICA `WILDFIRE` / BLACK GUM	1 ½" CAL., B&B
	8	PARROTIA PERSICA 'VANESSA' / VANESSA PERSIAN PARROTIA	1 ½" CAL., B&B
	6	ULMUS PARVIFOLIA 'EMER II' TM / ALLEE LACEBARK ELM	1 ½" CAL., B&B
	8	ZELKOVA SERRATA `GREEN VASE` / SAWLEAF ZELKOVA	1 ½" CAL., B&B

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
	64	ABELIA X GRANDIFLORA `KALEIDOSCOPE` / KALEIDOSCOPE ABELIA	2 GAL.
	49	ABELIA X GRANDIFLORA `SHERWOOD11` / SHERWOOD GLOSSY ABELIA	2 GAL.
	9	CAMELLIA JAPONICA 'APRIL DAWN' / APRIL DAWN CAMELLIA	3 GAL.
	75	EUONYMUS ALATUS `COMPACTUS` / COMPACT BURNING BUSH	5 GAL.
	88	EUONYMUS JAPONICUS 'SILVER KING' / SILVER KING EUONYMUS	3 GAL.
	18	ILEX CRENATA `SKY PENCIL` / SKY PENCIL JAPANESE HOLLY	24"-30" HT.
	4	LEUCOTHOE FONTANESIANA `RAINBOW` / RAINBOW LEUCOTHOE	3 GAL.
	11	LEUCOTHOE FONTANESIANA 'ZEBLID' / SCARLETTA® DROOPING LEUCOTHOE	2 GAL.
	50	LIGUSTRUM JAPONICUM 'TEXANUM' / TEXAS JAPANESE PRIVET	5 GAL.
	62	LONICERA PILEATA / PRIVET HONEYSUCKLE	2 GAL.
	50	MAHONIA AQUIFOLIUM / OREGON GRAPE	2 GAL.
	62	NANDINA DOMESTICA `GULF STREAM` TM / GULF STREAM HEAVENLY BAMBOO	2 GAL.
	26	NANDINA DOMESTICA 'ATROPURPUREA NANA' / DWARF HEAVENLY BAMBOO	2 GAL.
	47	PRUNUS LAUROCERASUS `MOUNT VERNON` / MOUNT VERNON LAUREL	1 GAL.
	53	RHAPHIOLEPIS INDICA 'BALLERINA' / BALLERINA INDIAN HAWTHORN	2 GAL.
	60	RHAPHIOLEPIS UMBELLATA `MINOR` / YEDDA HAWTHORN	2 GAL.
	82	SARCOCOCCA CONFUSA / SWEETBOX	2 GAL.
	31	SPIRAEA JAPONICA 'GOLDFLAME' / GOLDFLAME JAPANESE SPIREA	2 GAL.

GRASSES / PERENNIALS	QTY	BOTANICAL / COMMON NAME	SIZE
	48	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / KARL FOERSTER FEATHER REED GRASS	1 GAL.
	11	HEMEROCALLIS SPP. / DAYLILY	1 GAL.
	41	PENNISETUM ALOPECUROIDES `HAMELN` / HAMELN DWARF FOUNTAIN GRASS	1 GAL.

GROUND COVERS		QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
	KINN	575 (2,218 sf)	ARCTOSTAPHYLOS UVA-URSI `MASSACHUSETTS` / MASSACHUSETTS MANZANITA	1 GAL.	30" o.c.
	LOWF	72 (1,087 sf)	COTONEASTER DAMMERI `LOWFAST` / LOWFAST BEARBERRY COTONEASTER	1 GAL.	48" o.c.
	STRW	342 (1,308 sf)	FRAGARIA VIRGINIANA / VIRGINIA STRAWBERRY	4" POT	24" o.c.
	PACH	340 (734 sf)	PACHYSANDRA TERMINALIS 'SILVER EDGE' / SILVER EDGE JAPANESE PACHYSANDRA	4" POT	18" o.c.
	RASP	55 (784 sf)	RUBUS CALYCINOIDES `EMERALD CARPET` / EMERALD CARPET CREEPING RASPBERRY	1 GAL.	48" o.c.
	LAWN	8,353 sf	PROTIME PT301 WATER SMARTER FESCUE OR EQUAL	SEED @ RATE OF 7-10 LBS PER 1,000 SF	

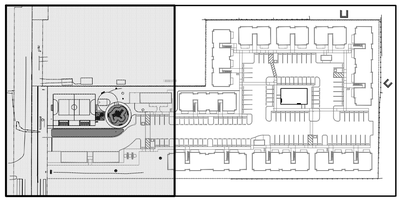
PROPOSED PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE	NOTES
	3	ACER CIRCINATUM / VINE MAPLE	1" CAL., B&B,	RELOCATE EXISTING
	1	CARPINUS BETULUS 'FASTIGIATA' / PYRAMIDAL EUROPEAN HORNBEAN	1 ¾" CAL., B&B STREET TREE	
	2	CEDRUS DEODARA `KARL FUCHS` / KARL FUCHS DEODAR CEDAR	6'-8' HT., B&B	RELOCATE EXISTING
	2	CHAMAECYPARIS NOOTKATENSIS `GLAUCA PENDULA` / WEEPING NOOTKA FALSE CYPRESS	6'-8' HT., B&B	RELOCATE EXISTING
	6	NYSSA SYLVATICA `WILDFIRE` / BLACK GUM	1 ½" CAL., B&B	
	3	PARROTIA PERSICA 'VANESSA' / VANESSA PERSIAN PARROTIA	1 ½" CAL., B&B	RELOCATE EXISTING
	6	THUJA PLICATA 'FASTIGIATA' / FASTIGIATE WESTERN RED CEDAR	6'-8' HT., B&B	

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE	
	61	ABELIA X GRANDIFLORA `SHERWOOD11` / SHERWOOD GLOSSY ABELIA	2 GAL.	
	89	EUONYMUS JAPONICUS 'SILVER KING' / SILVER KING EUONYMUS	3 GAL.	
	64	LIGUSTRUM JAPONICUM 'TEXANUM' / TEXAS JAPANESE PRIVET	5 GAL.	RELOCATE EXISTING
	12	OSMANTHUS HETEROPHYLLUS `GOSHIKI` / GOSHIKI HOLLY OLIVE	5 GAL.	RELOCATE EXISTING

GROUND COVERS		QTY	BOTANICAL / COMMON NAME	SIZE	SPACING
	KINN	184 (1,100 sf)	ARCTOSTAPHYLOS UVA-URSI `MASSACHUSETTS` / MASSACHUSETTS MANZANITA	1 GAL.	30" o.c.
	LOWF	23 (346 sf)	COTONEASTER DAMMERI `LOWFAST` / LOWFAST BEARBERRY COTONEASTER	1 GAL.	48" o.c.
	EUON	42 (634 sf)	EUONYMUS FORTUNEI `MOONSHADOW` TM / MOONSHADOW EUONYMUS	1 GAL.	48" o.c.
	RASP	45 (665 sf)	RUBUS CALYCINOIDES `EMERALD CARPET` / EMERALD CARPET CREEPING RASPBERRY	1 GAL.	48" o.c.
	LAWN	1,182 sf	PROTIME PT301 WATER SMARTER FESCUE OR EQUAL	SEED @ RATE OF 7-10 LBS PER 1,000 SF	

KEY MAP:



LEGEND:

PROPOSED STORMWATER FACILITY, TO BE PLANTED TO SALEM STANDARDS

PLAY AREA SURFACE, CHILDREN'S PLAY AREA AND WOODCHIP PLAY SURFACE TO CONFORM TO CPSC AND ASTM PLAYGROUND STANDARD AND GUIDELINES. PLAY EQUIPMENT TO BE SELECTED.

LIMITS OF LANDSCAPE

MULTIFAMILY LANDSCAPE REQUIREMENTS

SITE AREA SQUARE FOOTAGE (SF): 152,517 SF
1 TREE PER 2000 SF GROSS AREA = 77 TREES
PROPOSED = 95 TREES

OPEN SPACE REQUIRED: 30% MINIMUM, INCLUDING ACTIVE AND PASSIVE RECREATION, PRIVATE SPACE
LANDSCAPE OPEN SPACE PROVIDED: 29,406 SF INCLUDING LAWN AREAS, SPORTS COURT, CLUB HOUSE PATIO, DOES NOT INCLUDE PRIVATE PATIO SPACE

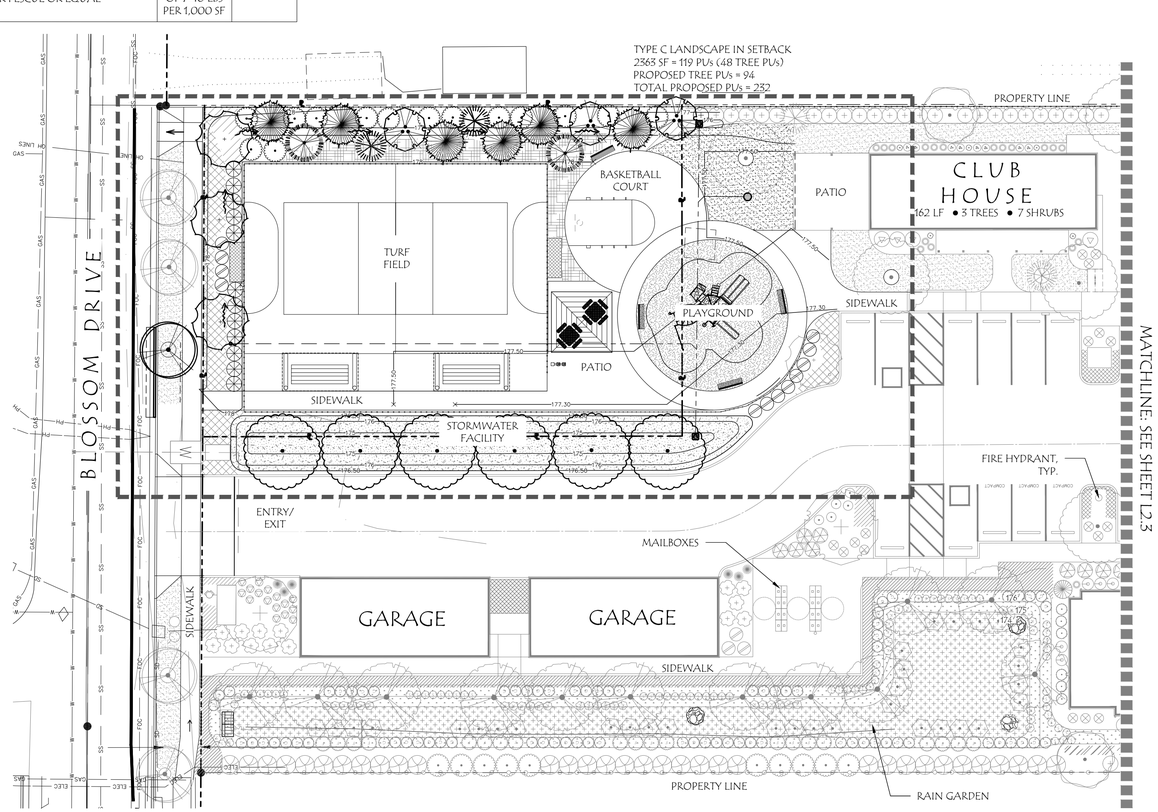
BUILDING PERIMETER: 1 TREE (10 UNITS) PER 60 LF OF BUILDING WALL (WITHIN 25' OF BUILDING)
1 SHRUB (1 PLANT UNIT) PER 15 LF
2 PLANT UNITS AT ENTRY WAYS

TYPE C IN ALL PERIMETER SETBACKS: SEE PLAN FOR CALCULATIONS

PARKING: 1 CANOPY TREE PER 50 FEET OF PARKING PERIMETER (WITHIN 10' OF PARKING PERIMETER)

GENERAL NOTES:

1. DRAWINGS ARE PRELIMINARY, NOT FOR CONSTRUCTION OR BIDDING.
2. SITE PLAN SEE SHEET L1.1.
3. SEE CIVIL DRAWINGS FOR GRADING, UTILITIES, AND STORMWATER INFORMATION.
4. PLANTS TO BE SIZED ACCORDING TO SALEM REQUIREMENTS FOR GENERAL PLANTING. RELOCATE EXISTING PLANTS WHERE POSSIBLE. SEE SCHEDULE FOR MORE INFORMATION.
5. STORMWATER FACILITY PLANTINGS TO FOLLOW SALEM STORMWATER PLANTING REQUIREMENTS. PLANTS TO BE SELECTED FROM APPROVED PLANT LIST .
7. ADDITIONAL STREET TREE TO BE SELECTED FROM SALEM APPROVED STREET TREE LIST.
8. LANDSCAPE TO BE IRRIGATED BY AN AUTOMATIC UNDERGROUND SYSTEM AND CONNECTED TO EXISTING SYSTEM.
9. EXISTING PLANTS INSTALLED AND INSPECTED BY LANDSCAPE ARCHITECT IN OCTOBER 2024. SEE EXISTING PLANTING SHEET L2.1.
10. EXISTING PLANTS TO REMAIN PLANT SCHEDULE AND PROPOSED PLANT SCHEDULE SEE THIS SHEET.
11. APPROVED PLANTING REQUIREMENTS SEE PLAN FOR SETBACKS AND NOTES BELOW FOR PARKING THIS SHEET.



Laurus Designs, LLC

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BLOSSOM GARDENS PLAYGROUND IMPROVEMENTS

BLOSSOM DRIVE
SALEM, OREGON

REGISTERED 643 PRELIMINARY LAURA A. ANTONSON OREGON 11/16/2007 LANDSCAPE ARCHITECT

PROPOSED PLANTING PLAN

SCALE: 1" = 20' - 0"

0' 10' 20' 40'

SCALE

JANUARY 23RD, 2025

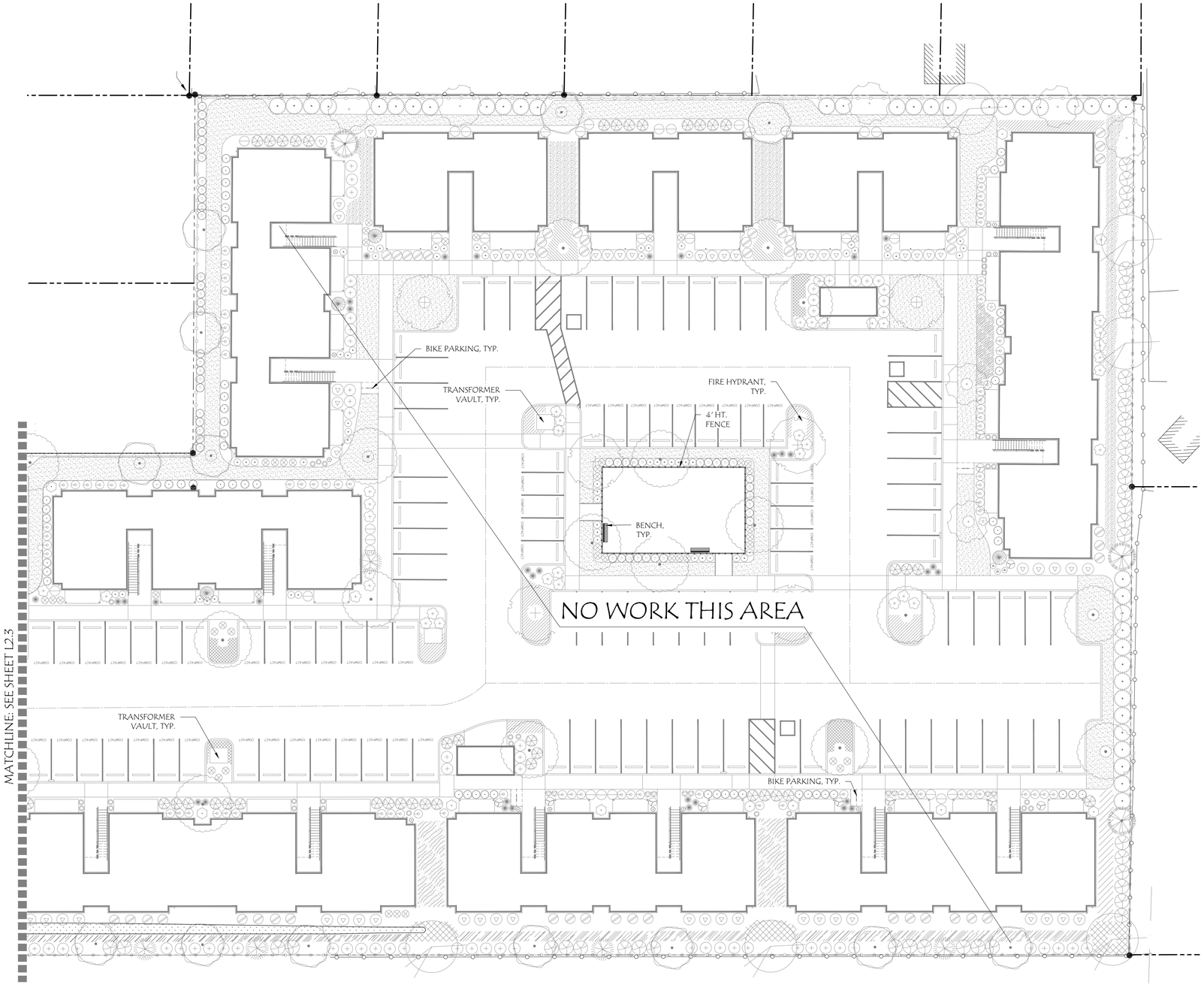
REVISIONS

#	DATE	NOTES	INITIALS

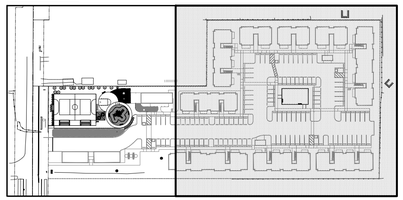
L2.2

SHEET 4 OF 5

PROJECT #: 14187R



KEY MAP:



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10. EXISTING PLANTS TO REMAIN PLANT SCHEDULE AND PROPOSED PLANT SCHEDULE SEE SHEET L2.2.
11. APPROVED PLANTING REQUIREMENTS SEE PLAN FOR SETBACKS AND NOTES BELOW FOR PARKING THIS SHEET.

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BLOSSOM GARDENS PLAYGROUND IMPROVEMENTS

BLOSSOM DRIVE
SALEM, OREGON

REGISTERED
643
PRELIMINARY
LAURA A. ANTONSON
OREGON
11/16/2007
LANDSCAPE ARCHITECT

PROPOSED PLANTING PLAN

SCALE: 1" = 20' - 0"

0' 10' 20' 40'
SCALE

JANUARY 23RD, 2025

REVISIONS

#	DATE	NOTES	INITIALS

L2.3

SHEET 5 OF 5

PROJECT #: 14878