



CASTLE ROCK CITY COUNCIL AGENDA

Regular Meeting: Monday, July 14, 2025
7:30 PM

Location

Castle Rock Senior Center
222 Second Ave SW
Castle Rock, WA 98611

AGENDA

To join this meeting from your computer, tablet or smartphone: <https://global.gotomeeting.com/join/201632365>

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1. CALL TO ORDER

- a. Pledge of Allegiance
- b. Roll Call
- c. Changes to Agenda

2. PROCLAMATIONS & PRESENTATIONS

3. CITIZEN COMMENTS - maximum 3 minutes

4. DEPARTMENT REPORTS

- City Attorney Nikki Thompson
- Police Chief Charlie Worley
- Public Works Director Dave Vorse
- City Engineer Tom Gower
- Clerk-Treasurer Carie Cuttonaro

5. COUNCIL AND AD HOC COMMITTEE REPORTS

- Mayor / Mayor Pro-Tempore / Councilmembers
- CRCDA Representative

6. PUBLIC HEARINGS

7. CONSENT AGENDA

- a. June 23, 2025 Regular Council Meeting Minutes (page 3-5)
- b. June 2025 invoices as described in the Fund Transaction Summary Report in the amount of \$450,511.06. (page 6-7)

8. OLD BUSINESS

- a. This item was previously tabled at the June 23rd, 2025 meeting and has been updated. Request approval to have specialized engineering and design work completed for installing cathodic protection at the Spirit Lake (504) Reservoir. (page 8-9)

9. NEW BUSINESS

- a. Preliminary Plat for 45 single family residential unit subdivision located in the 8.93 acres residential designated portion of the Landing on the Cowlitz (LOT) Master Plan. (page 10-502)

b. Bid Award to Slateco LLC for the 2025 ADA Improvements Project. The total amount is \$291,500. (page 503-506)

c. Authorization No. 2023-003; Amendment No. 1 in the amount of \$64,000; this amendment modifies the original agreement for engineering services executed January 9, 2023 from \$197,500 to \$261,500 for the Carpenter Road Water Pump Station and Powell Road Waterline Extension Project. (page 507-508)

d. Storage Building Construction Contract with Columbia Groundwork Inc, in an amount not to exceed \$115,000, not including sales tax. Contract is contingent on State of Washington Department of Commerce grant approval. (page 509-514)

e. Striping Proposal with All Stripes LLC for the 2025 Citywide Striping Project. The total amount is \$17,405.50. (page 515)

10. OTHER BUSINESS

11. ADJOURNMENT

NEXT REGULAR COUNCIL MEETINGS:

<u>3Q25</u>	<u>4Q25</u>	<u>1Q26</u>	<u>2Q26</u>
July 14	October 13	January 12	April 13
July 28	October 27	January 26	April 27
August 11	November 10	February 09	May 11
August 25	November 24	February 23	Tuesday, May 26
September 08	December 08	March 09	June 08
September 22	December 22	March 23	June 22

Non-Discrimination Statement: This institution is an equal opportunity provider and employer. If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form, found online at https://www.ascr.usda.gov/sites/default/files/Complain_combined_6_8_12_508_0.pdf or at any USDA office, or call 866.632.9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter by mail to USDA, Office of the Assistant Secretary for Civil Rights, 1400 Independence Ave, SW, Stop 9410, Washington, DC 20250-9410 or email to program.intake@usda.gov or by fax (202) 690-7442.

Title VI: The City of Castle Rock ensures compliance with Title VI of the Civil Rights Act of 1964 and American Disabilities Act of 1990 by prohibiting discrimination against any person on the basis of race, color, national origin, sex or disabilities in the provision of benefits and services from its federal assisted programs and activities. If you need special accommodations to participate in this meeting, please contact Carie Cuttonaro at 360.274.8181 by 9:00 a.m. three days prior to the meeting.

City Council may add and take action on other items not listed on this Agenda.

1. CALL TO ORDER

Mayor Pro Tem Lee Kessler called the regular meeting of the Castle Rock City Council to order at 7:30 PM.

a. Pledge of Allegiance

Mayor Pro Tem Kessler led the Pledge of Allegiance.

b. Roll Call

Councilmembers present: Art Lee, Lee Kessler (Mayor Pro Tem), John Whalen, Paul Simonsen, and Ellen Rose.

Staff present: Police Chief Charlie Worley, City Attorney Nikki Thompson, Public Works Director Dave Vorse, Public Works Senior Operator Tyler Stone, City Engineer Tom Gower, City Planner Rachel Granrath, and Clerk-Treasurer Carie Cuttonaro.

c. Changes to Agenda

2. PROCLAMATIONS & PRESENTATIONS

3. CITIZEN COMMENTS - maximum 3 minutes

4. DEPARTMENT REPORTS

- City Attorney Nikki Thompson
- Police Chief Charlie Worley
- Public Works Director Dave Vorse / Assistant Director Tyler Stone
Public Works Director Dave Vorse gave a verbal report.
- City Engineer Tom Gower
- Clerk-Treasurer Carie Cuttonaro

1. Expenditure, Revenue, Cash & Investments Reports

Clerk-Treasurer Carie Cuttonaro gave a verbal report.

5. COUNCIL AND AD HOC COMMITTEE REPORTS

- Mayor / Mayor Pro-Tempore / Councilmembers
- CRCDA Representative

6. PUBLIC HEARINGS

a. To take public testimony on the City's Six-Year Transportation Plan for fiscal years 2026-2031.

Mayor Pro Tem Kessler closed the Regular Council Meeting at 7:34 PM and opened the Public

Hearing at 7:34 PM.

City Engineer Tom Gower presented.

There was no public comment.

Mayor Pro Tem Kessler closed the Public Hearing at 7:40 PM and reopened the Regular Council Meeting at 7:40 PM.

7. CONSENT AGENDA

Councilmember Lee made a motion, seconded by Whalen, to approve the Consent Agenda as presented. Motion carried by roll call vote. Councilmembers Lee, Kessler, Whalen, Simonsen, and Rose voted 'Aye'.

a. June 9, 2025 Regular Council Meeting Minutes

8. OLD BUSINESS

9. NEW BUSINESS

a. Resolution No. 2025-04, a resolution relating to the Six-Year Transportation Improvement Plan.

Councilmember Whalen made a motion, seconded by Rose, to approve Resolution No. 2025-04. Motion carried by roll call vote. Councilmembers Lee, Kessler, Whalen, Simonsen, and Rose voted 'Aye'.

b. Estimated budget for Cathodic Protection Engineering, Materials & Installation on water reservoir, with a range of \$41,954 - \$44,954. Additional estimate for installation without tank drained is \$6,093.

This item was tabled.

c. Request approval to purchase two dump trucks from Cowlitz County Department of Public Works.

Assistant Public Works Director Tyler Stone presented.

Councilmember Rose made a motion, seconded by Whalen, to approve the purchase of two dump trucks from Cowlitz County Public Works. Motion carried by roll call vote. Councilmembers Lee, Kessler, Whalen, Simonsen, and Rose voted 'Aye'.

d. Staff Report: Substantial Shoreline Development Permit to Construct Stormwater Outfall

City Planner Rachel Granrath presented.

Councilmember Whalen made a motion, seconded by Rose, to approve the Substantial Shoreline Development Permit to Construct Stormwater Outfall with conditions. Motion carried by roll call vote. Councilmembers Lee, Kessler, Whalen, Simonsen, and Rose voted 'Aye'.

e. Special Event Permit #2025-0007; Castle Rock Fair Parade; July 17, 2025 at 6:00 PM. Insurance will be provided. Street closure request includes:

- Huntington Ave S
- Cowlitz St W
- 2nd Ave SW
- B St SW
- Front Ave S

Councilmember Rose made a motion, seconded by Whalen, to approve Special Event Permit #2025-0007 for the Castle Rock Fair Parad. Motion carried by roll call vote. Councilmembers Lee, Kessler, Whalen, Simonsen, and Rose voted 'Aye'.

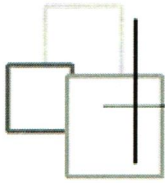
10. OTHER BUSINESS

11. ADJOURNMENT

There being no further business, Mayor Pro Tem Kessler adjourned the meeting at 7:52 PM.

Mayor Paul Helenberg

Clerk-Treasurer Carie Cuttonaro



Fund Transaction Summary

Transaction Type: Invoice

Fiscal: 2025 - Jun - Jul - City Council

System Types: Cash Management, Financials, Payroll, Resources, UB2, Utility Billing

Fund Number	Description	Amount
010	General Fund	\$156,953.09
100	Street Fund	\$20,749.34
115	Building Code Account Fund	\$1,295.69
120	Visitor Center Fund	\$522.00
130	Library Fund	\$448.65
145	Local Criminal Justice Fund	\$126.04
170	DOT Spoil Site Fund	\$9,876.02
320	Street Construction Capital Fund	\$31,074.17
400	Water/Sewer Operating Fund	\$152,323.21
410	Regional Water System Fund	\$30,187.25
420	Stormwater Management Fund	\$11,662.26
435	Muni Water Capital Improvement	\$20,753.78
470	Muni Sewer Capital Imprv Reserve	\$4,666.68
475	Boat Launch Facility Fund	\$7,817.48
634	State Custodial Pass-Thru Fund	\$2,055.40
	Count: 15	\$450,511.06

As of this date, 7/14/2025, the Council by a majority vote, does approve payment of the vouchers included in the Fund Transaction Summary Report, and further described as:

Payroll Expenditures

<u>Transaction Type</u>	<u>Description & Transactions</u>	<u>Amount</u>	<u>Payment Date</u>
Mid-Month Draw	Payroll Nacha # 1713818	24,150.00	6/16/2025
	Taxes ACH	5,250.00	
EOM Payroll	Payroll Nacha # 1729546	75,057.19	6/30/2025
	26845 - 26850	12,000.35	
	ACH	56,105.96	
	Benefits 26851 - 26853	3,867.62	
	Taxes ACH	46,923.19	
	Voided 26840	-	
Total Payroll Expenditures		223,354.31	

General Expenditures

<u>Transaction Type</u>	<u>Description</u>	<u>Amount</u>	<u>Payment Date</u>
Adjustment/EFT	EFT#1150-6/2025	362.93	6/1/2025
Adjustment/EFT	EFT#1151-6/2025	500.00	6/2/2025
Adjustment/EFT	EFT#1152-6/2025	188.59	6/4/2025
Adjustment/EFT	EFT#1153-6/2025	15,166.06	6/24/2025
Claims	Check 56293 - 56295	VOIDED	
Claims	Check 56296	2,043.40	6/9/2025
Claims	Check 56297 - 56299	3,606.12	6/12/2025
Claims	Check 56300 - 56304	534.25	6/16/2025
Claims	Check 56305 - 56306	1,154.82	6/23/2025
Claims	Check 56307	VOIDED	
Claims	Check 56308	1,567.42	6/30/2025
Claims	Check 56309 - 56382	202,033.16	6/30/2025
Total General Expenditures		227,156.75	

TBD Expenditures

<u>Transaction Type</u>	<u>Description</u>	<u>Amount</u>	<u>Payment Date</u>
Claims	Check		
Total TBD Expenditures		-	

Total Expenditures

	<u>Amount</u>	<u>Payment Date</u>
Total General and TBD Expenditures	227,156.75	6/1/2025 - 6/30/2025
Payroll Expenditures	223,354.31	
Grand Total Expenditures	450,511.06	
Fund Transaction Summary Report	450,511.06	
Balance Check (s/b -0-)	-	

Lee Kessler, Audit Committee Member

Art Lee, Audit Committee Member

Ellen Rose, Audit Committee Member

City of Castle Rock

Agenda Item Summary

Item Title

Cathodic protection engineering/design

Recommended Action

Recommend approval

City Attorney Review

Not Required

Summary Statement

Public Works requests approval to have specialized engineering/design work completed for installing cathodic protection at the Spirit Lake (504) reservoir. This is a specialized project to reduce corrosion on the 500k gallon reservoir. This is part of the regional water system and is budgeted in the 410 fund.

Staff Contact

Tyler Stone, Public Works

Attachments

1. Norton Corrosion Limited Quote



Norton Corrosion Limited, LLC

8820 222nd Street SE, Woodinville, WA 98077

Phone (425) 483-1616

Email: mhickey@nortoncorrosion.com

www.nortoncorrosion.com

June 24, 2025

City of Castle Rock
Mr. Tyler Stone
PO Box 370
Castle Rock, WA 98611
Email: tstone@ci.castle-rock.wa.us

(360) 751-8197

Subject: **CATHODIC PROTECTION ENGINEERING
WATER RESERVOIR – 516,000 GALLON, 24' HEIGHT
CITY OF CASTLE ROCK, WA**

Dear Tyler,

Norton Corrosion Limited (NCL) is pleased to provide you with this estimated budget for the design of a cathodic protection system for your 516K gallon water reservoir. This system will protect interior submerged metallic components. The design assumes the submerged metallic components are coated.

CP Engineering/Design

1. *At this time, we anticipate* the Cathodic Protection (CP) to be an impressed current cathodic protection (ICCP) system. This system will require AC power (ground level).
2. The CP system will be designed/engineered by an NCL licensed P.E. and/or a NACE CP Specialist. Design will include site specific CAD CP installation drawings and a bill of materials (no specification). The design budget is based on a one step design submittal. If a CP specification or additional submittal steps are needed, NCL can accommodate at an additional cost.
3. *This budget is for CP design only. If any electrical engineering is required for the AC power needs, this would be by others.*

Item	Quantity	Description	Rate	Ext. Rate
1	1 lot	CP Engineering/Design: Includes site specific CAD CP installation drawings and a bill of materials. Design is based on a one step design submittal. If a specification or additional submittal steps are needed, NCL can accommodate at an additional cost.	\$3,218.00	\$3,218.00
Total Cost				\$3,218.00

No taxes are included in the above pricing. Validity of proposal 60 days. NCL Terms: Net 30 days. NCL maintains \$3M/\$5M professional liability insurance; higher limits are available at additional cost. Lead time on design is 3 weeks from authorization.

Thank you for the opportunity to present this proposal. We look forward to your positive response.

Sincerely,

Miles VC Hickey
Technical Sales

Authorized by

Date

SC\PBC\Castle_Rock_Reservoir_Proposal

City of Castle Rock

PO Box 370
Castle Rock, WA 98611
(360) 274-7478



PUBLIC NOTICE

Notice of Preliminary Plat Public Meeting

Rivers Edge at Landing Subdivision

Lead Agency: City of Castle Rock, WA

Proponent: CT6, LLC

Project Name: Rivers Edge at Landing

Location: 2542 Larsen Lane SW (Parcel 308120300) adjusted per Boundary Line Adjustment (CR-BLA-24-01 – AFN#3762029), focused on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz Master Plan.

Description of proposal: The applicant has submitted a Preliminary Plat for 45 single family residential unit subdivision located in the 8.93 acres residential designated portion of the Landing on the Cowlitz (LOTIC) Master Plan. The development will be accessed by a single residential local access roadway connecting to the Standard Collector Road, with emergency access through Larsen Lane SW.

City Council Meeting Notice:

Date: July 14, 2025

Time: 7:30 pm

Location: Castle Rock Senior Center 222 2nd Ave SW, Castle Rock, WA 98611

Purpose: To review the proposed preliminary plat.

Agency Contact: City Contract Planner Rachel Granrath

Submit written comments to: Carie Cuttonaro, Clerk-Treasurer, City of Castle Rock, PO Box 370, Castle Rock, WA 98611 or to ccuttonaro@ci.castle-rock.wa.us.



STAFF REPORT Preliminary Plat Rivers Edge at the Landing Subdivision

To: Mayor Helenberg and Members of the City Council
From: Rachel Granrath, Contract Planner
Date: July 14, 2025
Subject: Rivers Edge at the Landing Subdivision

Summary of Request and Recommendation

The applicant has submitted a Preliminary Plat for a 45 single family residential unit subdivision located in the 8.93 acre residential designated portion of the Landing on the Cowlitz (LOT) Master Plan. The development will be accessed by a single residential local access roadway connecting to the Standard Collector Road. The Planning Commission is holding a public hearing and shall act in accordance with CRMC 16.12.070 to make findings of fact and provide a recommendation to the city council that this application be approved, disapproved, or approved with conditions.

Staff Recommendation: Staff recommends approval of this application, with conditions.

General Information

Location: 0 Larsen Lane SW (Parcel 308120300) adjusted per Boundary Line Adjustment (CR-BLA-24-01 – AFN#3762029), focused on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz Master Plan.

Proponent: CT6, LLC

Project Representative: Ingrid Friedberg, Special Projects Manager

Project Name: Rivers Edge at the Landing

Site Overview

Site/Proposal Description	Details
Total gross area	8.93 acres
Net area	7.82 acres
Right of way dedication	1.63 acres
Park and Open Space	48,162 SF (±1.11 AC)
Total proposed lots	45 single family lots

Vicinity Map

Parcel #308120300



Vicinity Map

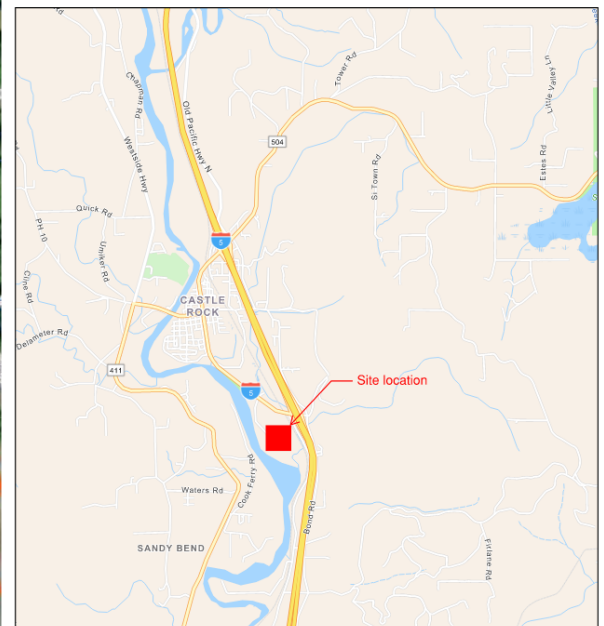


Figure 1: Vicinity Map- Subject Property



Figure 2: Phased Development for the Landing on the Cowlitz - Subject Property in Orange

Development Standards

Development activities in the Residential Land Use Area shall comply with the provisions of the High Density Residential (R-2) zoning district except as modified by these conditions of approval with the Landing on the Cowlitz Development Agreement and Master Plan, which was approved in 2021 and amended January 18, 2024. The following table outlines the applicable zoning district standards within the R-2 district as well for taking into

account the Master Planned Development requirements and the vested development, subdivision and zoning codes that were in effect on November 8, 2021.

Table 2: Development and Zoning Standard Requirement

Standard	Site Design	Reference Requirement	Requirement Met
Minimum lot area	4,500 sf	3,500 sf minimum lot per DA Section 6.1.1	Yes
Lot width	45 ft minimum	Per DA	Yes
Lot depth	100 ft minimum	Per DA	Yes
Front yard setback	20 ft	16.20.260 Minimum yards and 17.32.070	Yes
Side yard setback	5 ft	16.20.260 Minimum yards and 17.32.070	Yes
Rear yard setback	20 ft	16.20.260 Minimum yards and 17.32.070	Yes
Buffering for lots abutting Master Plan development	Landscape buffer - 20 ft Storm easement – 10 ft	17.32.080 and development agreement	Yes
Parking standards (on-site)	2 garage and 2 in driveway	16.20.150 Parking requirements requires 2 off street parking stalls 17.32.090 Off-street parking.	Yes, as conditioned
Parking standards (street)	21 on-street spaces available	17.52.020 Parking standards.	Yes, as conditioned
Sidewalks	Detached landscape utility easement buffer 4.5 ft and a 5 ft sidewalk	Chapter 16.20 Design and Layout Standards	Yes
Streetlights	16' high acorn LED pole	Streetlight illumination level for Collector - 16.20.140 Street lighting, per DA	Yes, as conditioned
Park/Playground	As depicted in <i>Exhibit A</i> , Tract E (7,925 sf) is dedicated park space with playground equipment	16.20.200 Public open spaces. And development agreement.	Yes, as conditioned
Open space	Tract D (36,914 sf)	16.20.200 Public open spaces., and development agreement	Yes, as conditioned
Monument signage area	Tract F (1,160 sf)	Development agreement	Yes, as conditioned
Critical Areas	Project involves fill and dirt work to remove portions of the site from the 100-year floodplain	Chapter 15.24 Flood Damage Prevention	Yes, as conditioned
Homeowners Association (HOA)	Draft HOA covenants	To maintain private driveway and access roads, stormwater, monument, open space and parks.	Yes, as conditioned
SEPA	SEPA Checklist was submitted	A SEPA MDNS was issued in with mitigation conditions	Yes, as conditioned



Figure 3: (Above) Original Application Materials - Park Dedication Location and Design



Figure 4: (Below) Revised Plat Layout with changed Park Location



Comprehensive Plan Consistency

Castle Rock Comprehensive Plan designates this property as Industrial on the future land use map. Neighboring uses include heavy commercial and light industrial, and commercial designations. However, the current land uses in place are lower density such as residential and religious institutions. As stated previously in this report, there is a governing Master Planned Development in place, which allocates a mixture of uses. For the purposes of this staff report and consideration we are only discussing the residential portion. As conditioned in this staff report, the following goals and policies illustrate the development’s consistency with the Castle Rock Comprehensive Plan.

Land Development/Subdivision Goals and Policies:

- Goal 1: Ensure that subdivisions and necessary public facilities are designed and constructed to meet existing and future needs.
- Goal 2: Encourage innovative techniques to residential and commercial land development that will be beneficial to the community and reflect sound planning.
- Goal 5: Incorporate the following principals into subdivision design; a sense of place, walkable, mixed transportation and housing, and affordability.
- Policy 1: If a preliminary subdivision plat represents a phase of a potentially larger development, the city should require that a master plan showing all phases of the development be submitted concurrently.
- Policy 3: Subdivisions should be site designed and constructed to preserve and enhance natural features and be compatible with aesthetic values of the area.
- Policy 5: Vehicle and pedestrian circulation patterns should be considered in the design of the subdivision for future connections.

Procedural Requirements

The process is outlined by the following steps in accordance with the Castle Rock Municipal Code (CRMC) 16.12 and 17.77.040 (6). The process is currently at the Public Hearing in the process.

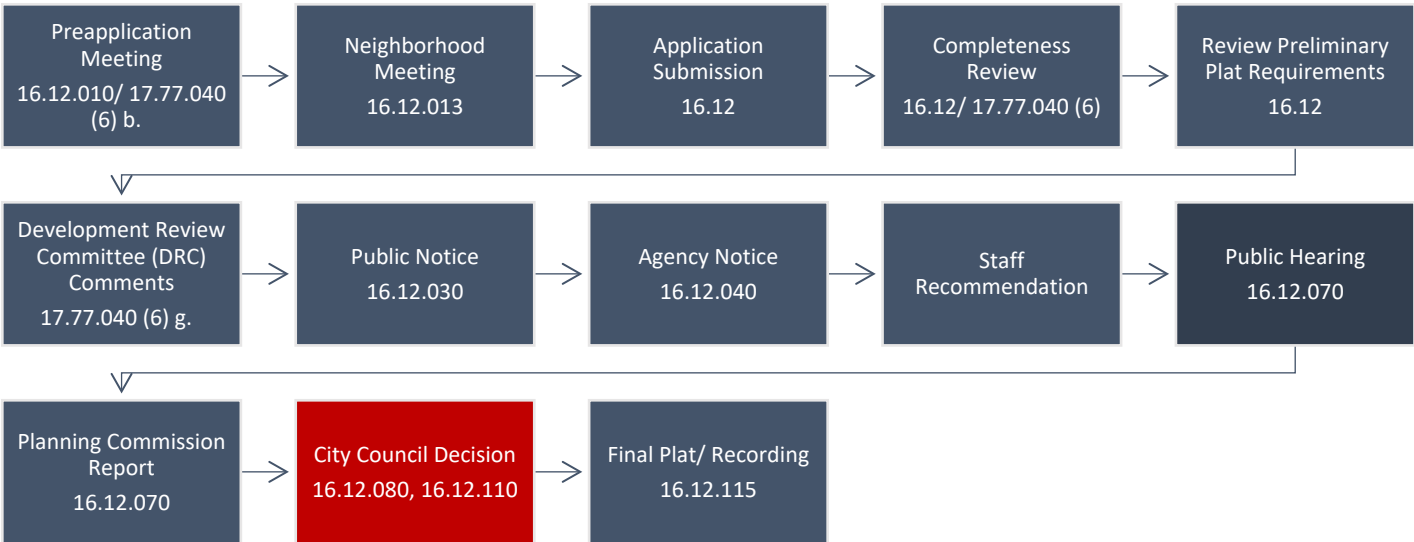


Table 3: Subdivision Procedure: Key Dates and Milestones

Procedure Action Item	Date
-----------------------	------

Pre-Application Meeting	November 6, 2024
Application Submittal	March 31, 2025
Letter of Complete	April 28, 2025
Development Review Committee (DRC)	April 28 – May 10, 2025
Agency Notice	May 21, 2025
Agency Comment Period	May 21 – June 6, 2025
SEPA/Public Notice	Issued June 3, 2025 – Comment period ends June 17
Public Hearing	Tuesday, June 17, 2025
Planning Commission Report	Issued June 18, 2025
City Council Public Notice	10 days before hearing
City Council Meeting	Monday, July 14, 2025

Agency and Public Comment

The Development Review Committee reviewed the application materials and received detailed comments from Tom Gower, City Engineer. The comments are summarized below and included in the conditions of approval. Agency comment was issued on May 21st, two comments were received in June 16, from the Department of Archeology and Historic Preservation (DAHP) and the Department of Ecology, comments summarized below. Both agency comments are reflected in the recommended conditions of approval. Public comment was issued on June 3rd and the comment period ends the date of the public hearing. At the time of this report, staff has received two public comments, summarized below.

Table 4: Public and Agency Comments Received

Commenter	Nature of Comment(s)
Tom Gower, Gibbs & Olson – City Engineer	Redlined comments to the plat. Phasing of utilities with Phase 1 & 2. Comments on parks and bollard with capped roadways.
Sheryl Adams – Public Comment	Concern on Larsen Lane use and traffic through existing development. Concern on public access to river and impact to wildlife.
Roy Henson – Public Comment	Concerns about drainage and stormwater flow with subdivision and outfall
Jessica Stone, Assistant State Archeologist – Department of Archeology and Historic Preservation	Site is within an area marked “Very High Risk” for encountering archaeology by our Archaeological Risk Assessment Model. Recommend an Inadvertent Discovery Plan (IDP) be created and kept on site.
Department of Ecology Southwest Regional Office	Hazardous waste and toxics reduction with removing existing structures, to be managed prior to demolition. Letter of Map Change process with FEMA associated with filling and revising grade with base flood elevation. Solid waste management with all grading and fill must be clean and any removal of debris at an approved site.

Conclusions

Staff finds that the application materials have met the requirements outlined in CRMC 16.12.045, CRMC 16.12.050 Preliminary Plat Decision Criteria, and as conditioned Chapter 16.20 Design and Layout Standards and Castle Rock Engineering Standards for Public Works Construction.

City Council Action

The criteria for City Council Action is outlined in CRMC 16.12.110 Preliminary Plat – Approval criteria for city council, the codes are quoted below.

16.12.110 Preliminary plat – Approval criteria for city council.

A. The city council shall consider the same factors as set forth in CRMC [16.12.090](#) when considering approval, disapproval or approval with conditions. If the city council finds the proposed plat meets the appropriate provisions for public health, safety and general welfare and for such open spaces, drainageways, streets, alleys and other public ways, water supplies, sanitary waste, parks, playgrounds, sites for schools and school grounds, and that the public use and interest will be served by platting of such subdivision, then it shall be approved. If it finds that the proposed plat does not make such appropriate provisions or that the public use and interest will not be served, the city council may disapprove the proposed plat or approve the plat with conditions. Dedication of land to any public body may be required as a condition of subdivision approval and shall be clearly shown on the final plat.

B. The city council shall consider the physical characteristics of the proposed subdivision site and may disapprove a proposed plat because of any severe natural limitations, including, but not limited to, slope stability and steepness, soil conditions, flooding, inundation, swamp conditions or drainage problems. Construction of protective improvements may be required as a condition of approval and such improvements shall be noted on the final plat. No plat shall be approved by the city council when such land is situated in a flood-controlled zone as provided in Chapter [86.16](#) RCW without prior written approval of the Department of Ecology of the state. No plat which lies in whole or in part in an irrigation district organized pursuant to Chapter [87.03](#) RCW shall be approved unless such plat meets the requirements of RCW [58.17.310](#). Pursuant to Chapter [36.70A](#) RCW, no plat which lies, in whole or in part, within or adjacent to a critical area shall be processed or approved unless such plat meets the requirements of Chapter 18.10 CRMC and a critical area permit is obtained in accordance with CRMC [18.10.080](#).

Planning Commission Recommendation

The Commission voted 4-0 to recommend approval, adopting the staff-recommended findings of fact and conditions of approval in accordance with CRMC 16.12.070. Discussion included the future of Larsen Lane and the need for clarification from the City regarding any anticipated uses or connections beyond the required emergency access. Additional discussion focused on park and open space provisions, previously designated as Tract D, in original application materials depicted in *Exhibit B*. The applicant noted that the proposed park would connect with the adjacent church property to serve as a shared amenity. Staff presented proposed an alternative layout idea —expanding Tract E and incorporating additional lots into Tract D—to create a more accessible and functional park space for subdivision residents. The Commission also considered public comments and held discussions related to the clarity of the subdivision layout and the potential future phases of development.

Parks Board Meeting

See *Exhibit F* for the recommendations from the Park Board. In summary, the Park Board voted to recommend approval of the revised planned park location at Lot E within the Rivers Edge subdivision as shown in the most recent developers' plans.

Staff Recommendation

As conditioned below, the application does not appear to be detrimental to the general public health, safety or welfare and meets the basic intent and criteria in Castle Rock Municipal Code, City Engineering and Public Works Standards, and the Master Planned Development Agreement.

Recommended Findings of Fact

1. CT6, LLC submitted an application for a 45-lot preliminary plat (subdivision) on one (1) parcel totaling 8.93 acres of land.
2. The Comprehensive Plan Land Use Designation is Industrial for the subject property.
3. The subject property is zoned Industrial.
4. The property includes an approved Mixed-Use Master Planned Development, approved by Ordinance No. 2021-10, as well as the associated Development Agreement amended in February 20, 2024. The property is vested under the November 8, 2021, City Ordinances. The subject property is within the Residential land use designated area of the approved Landing on the Cowlitz Master Plan.
5. A Preliminary Plat application was submitted to the City of Castle Rock Building and Planning Department on March 31, 2025. The application was deemed complete on April 28, 2025. The Development Review Committee pursuant to CRMC 17.77.040 (6) g reviewed and commented on the application, comments were due May 10, 2025. Agency Notice was sent out on May 21 and ended June 6, 2025. Public Notice along with SEPA MDNS issuance was published on June 3, 2025, and the comment period ends the date of this public hearing on June 17, 2025.
6. SEPA review was conducted and an MDNS was issued on June 3, 2025.
7. The proposal is consistent with the goals and policies of the City of Castle Rock Comprehensive Plan. The proposed subdivision as conditioned will have adequate services.
8. This proposal, as conditioned, is consistent with Title 17 CRMC Zoning, CRMC 16.12 Subdivision and CRMC 16.20 Design and Layout.
9. This proposal, as conditioned, will meet Standards and Castle Rock Engineering Standards for Public Works Construction.

Recommended Conditions of Approval

1. **Parks and Open Space:**
 - a. Applicant has submitted a revised layout as illustrated in *Exhibit A*, changing the park location from Tract D to Tract E. The applicant will submit full revised plan sets with this layout and address all components of the DA relating to the park development.
 - b. Lighting shall be included in the park.
2. **Transportation:**

- a. **SR-411 Intersection Mitigation:** At 70% build-out of the Landing Master Plan Development, the intersection of SR411/Westside Highway and PH10, is projected to fall below the designated Level of Service (LOS) "C". To address the impacts of this and other incremental development on the site, the applicant shall be responsible for funding and implementing mitigation improvements—either at 70% build-out or when LOS falls below “C,” whichever occurs first. All mitigation measures must be approved by the City of Castle Rock and WSDOT.
 - b. **Larsen Lane:** Per the Castle Rock Landing on the Cowlitz Conditions of Master Site Plan Approval, Item #13: The City may install reasonable measures to prevent the use of Larsen Lane SW in its existing condition to access the Master Planned Development. This may include, but is not limited to, signage, a gate or bollards with a lockbox, and a cul-de-sac or turnaround for vehicles attempting to enter the Master Planned Development.
 - c. Tract A, B and C are private roads, the minimum width for access roads shall be 25 feet, with a 5’ sidewalk and 20’ drive aisle, and no parking shall be allowed within these Tracts. Applicants will work with the public works department and the city engineer to address street standards.
 - d. All stubbed streets shall have a gate, bollards, or turnaround for vehicles.
 - e. All roads within the subdivision shall be named and addressed in accordance with the City’s addressing and road naming standards, subject to approval by the appropriate addressing authority prior to final plat approval.
3. **Cultural Resources:** Should ground disturbing or other activities related to the proposed subdivision result in the inadvertent discovery of cultural resources or archaeological materials, work shall be stopped in the immediate area and contact be made with the Washington State Department of Archaeology and Historic Preservation (DAHP) and the Cowlitz Indian Tribe. Per the letter dated June 16, 2025, from Department of Archeology and Historic Preservation, an Inadvertent Discovery Plan (IDP) shall be created and kept on site. Work shall remain suspended until the findings are assessed, and appropriate consultation is conducted. Should human remains be inadvertently discovered, as dictated by Washington State RCW 27.44.055, work shall be immediately halted in the area and contact made with the coroner and local law enforcement in the most expeditious manner possible.
 4. **Frequently Flooded Areas:** Due to the proposed site fill and grading, the site will be raised to 50.3 feet which is above the base flood elevation (BFE) of 48 for the site. As proposed by the applicant all structures shall be required to be raised one- (1) foot above the BFE. This proposal has been designed to facilitate the inclusion of building pads at 51.8 feet. All structures shall be a minimum of 1-foot above the BFE. Applicant shall submit a flood elevation certificate at the conclusion of grading and fill work. All building applications shall submit an elevation certificate illustrating compliance with FEMA regulations and Building Codes. Per June 16, 2025, comment letter from the Department of Ecology, Matt Gerlach notes that a letter of map change process with FEMA will need to be obtained at the time of base flood elevation change.
 5. **Solid Waste Management:** Per comments from the Department of Ecology letter dated June 16, 2025, all grading and filling of land must utilize only clean fill, and any debris removed must be disposed at an approved site.
 6. **Hazardous Waste and Toxics Reduction:** Per comments from the Department of Ecology letter dated June 16, 2025, Removal of existing structure(s) shall ensure that any required asbestos abatement procedures or any other potentially hazardous materials are removed prior to demolition.

7. HOA Covenants:

- a. The City has approved a reduced street width for this subdivision, contingent upon each lot providing a minimum of four (4) off-street parking spaces. To ensure ongoing compliance, the following restriction shall be clearly stated on the final plat and HOA Covenants and within the deed for each lot: the garage shall not be converted to living space and must remain available for the parking of vehicles.
- b. Prior to final plat approval, the applicant shall amend the draft Covenants, Conditions, and Restrictions (CC&Rs) to clearly identify the ownership and maintenance responsibilities of the Homeowners Association. The amended CC&Rs shall align with the final plat and specifically detail each tract, buffer, parks, open space, easement, and beautification element (including but not limited to streetlights and monument signs) within the development. As an example, the HOA shall maintain and filter the treatment catch basins.

8. **Signage Plan:** The plat denotes a monument sign, as conditioned in the Master Site Plan Approval, condition 17 states the project sponsor shall prepare and submit a Master Signage Plan to guide the design and locations of the signs throughout the site. This is a condition that shall be addressed prior to submittal of final plat.
9. Comments from Tom Gower, Gibbon & Olson– City Engineer, dated May 7, 2025, on the “River’s Edge at the Landing Subdivision Preliminary Land Use Plans” dated 3/27/2025 consisting of 23 drawings and the “River’s Edge at the Landing Preliminary Technical Information Report” dated March 26, 2025 consisting of 241 pages shall be addressed in revised preliminary plat design, exhibits, and the preliminary technical information report.
10. The applicant is responsible for compliance with all applicable local, state, and federal rules and regulations, and must obtain all appropriate permits and approvals.
11. All conditions of the SEPA MDNS issued on June 3, 2025, shall be met.

Exhibits:

Exhibit A: Revised Plat Layout

Exhibit B: Original Application Materials

1. Subdivision Application Submittals Overview
2. Signed Master Application Forms
3. Application Narrative
4. SEPA Checklist
5. Preliminary Plat Application Plan Set
6. Preliminary Stormwater Drainage Report
7. Transportation Compliance Letter
8. SR-411 & Westside Hwy Mitigation Memorandum dated January 14, 2025
9. Draft Master Plan Conditions, Covenant and Restrictions (CC&Rs)
10. Title Report (Guarantee/Certificate Number: 622-173054)
11. Neighborhood Meeting Materials
12. Pre-Application Notes (CR-PA-24-06)

13. Traffic Analysis Clarification for Pre-Application (CR-PA-24-06)

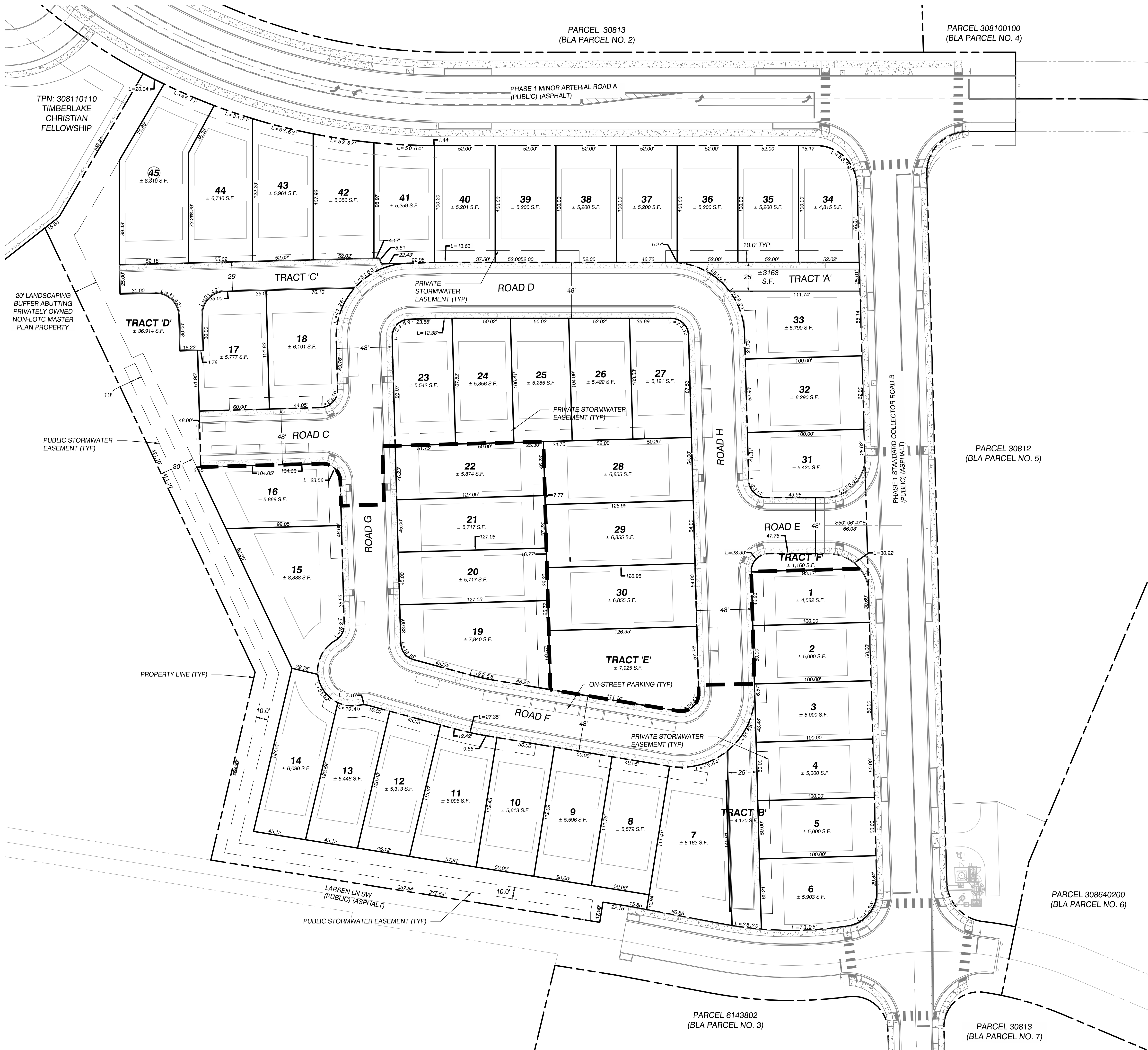
Exhibit C: Noticing Materials

Exhibit D: SEPA MDNS

Exhibit E: Comments Received

Exhibit F: Parks Board Recommendation

Exhibit A: Revised Plat Layout



SITE STATISTICS	
APPLICABLE ZONING DISTRICT STANDARDS:	R-2
GROSS AREA:	±388,630 SF (±8.93 AC)
PARK/OPEN SPACE:	±44,839 SF (±1.03 AC)
NET AREA:	±343,791 SF (±7.89 AC)
TOTAL ROW DEDICATION:	±71,361 SF (±1.64 AC)
TOTAL PROPOSED LOTS:	45 LOTS
MINIMUM LOT AREA:	4,500 SF

DEVELOPMENT STANDARDS	
MINIMUM LOT SIZE:	3,500 SF
MINIMUM LOT WIDTH/DEPTH:	NONE PURSUANT TO LOTC CONDITION OF APPROVAL 5.A.

MINIMUM REQUIRED SETBACKS	
FRONT YARD/GARAGE:	20 FEET
SIDE YARD:	5 FEET
REAR YARD:	20 FEET

PARKING:	90 OFF-STREET PARKING SPACES (2 OFF-SITE PARKING SPACES PER DWELLING UNIT)
----------	--

PARK AREA:	7,830 SF(174 SF PER LOT)
------------	--------------------------

LANDSCAPING:	20-FOOT LANDSCAPE BUFFER ABUTTING PRIVATELY-OWNED PROPERTIES NOT INCLUDED IN THE LOTC MASTER PLAN
--------------	---

PROPOSED IMPROVEMENTS	
LOT AREA:	4,500 SF MINIMUM
LOT WIDTH:	45 FEET MINIMUM
LOT DEPTH:	100 FEET MINIMUM

LOT SETBACKS	
FRONT YARD/GARAGE:	20 FEET
SIDE YARD:	5 FEET
REAR YARD:	20 FEET

LANDSCAPE BUFFER FOR LOTS ABUTTING PRIVATELY OWNED NON-LOTC MASTER PLAN PROPERTY:	20 FEET
---	---------

STORM EASEMENT FOR LOTS ABUTTING PRIVATELY OWNED NON-LOTC MASTER PLAN PROPERTY :	10 FEET
--	---------

PARKING :	EACH LOT HAS BEEN SIZED TO ACCOMMODATE 4 CARS (2 IN GARAGE AND 2 IN DRIVEWAY, EACH SIZED UP TO 9 FEET WIDE BY 19 FEET LONG)
	23 ON-STREET PARKING SPACES (SIZED UP TO 8 FEET WIDE BY 20 FEET LONG WITH A FOOT GAP BETWEEN EACH)

TRACT	PURPOSE	AREA
TRACT A	PRIVATE DRIVEWAY	±3,163 SF
TRACT B	PRIVATE DRIVEWAY	±4,170 SF
TRACT C	PRIVATE DRIVEWAY	±6,596 SF
TRACT D	OPEN SPACE	±36,914 SF
TRACT E	PARK	±7,925 SF
TRACT F	MONUMENT SIGNAGE AREA	±1,160 SF

- NOTES:
- ALL PROPOSED STORMWATER EASEMENTS ARE TO BE DEDICATED TO THE CITY OF CASTLE ROCK
 - FOR PROPOSED ROAD SECTIONS, SEE SHEET C3.2.
 - ALL PUBLIC ROADS SHOWN ON THIS PLAN TO BE DEDICATED TO THE CITY OF CASTLE ROCK.
 - MAINTENANCE FOR ALL PRIVATE DRIVEWAY TRACTS ON THIS PLAN TO BE MAINTAINED BY AN HOA
 - OPEN SPACE TRACT D WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA.

Exhibit B: Application Materials

1. Subdivision Application Submittals Overview
2. Signed Master Application Forms
3. Application Narrative
4. SEPA Checklist
5. Preliminary Plat Application Plan Set
6. Preliminary Stormwater Drainage Report
7. Transportation Compliance Letter
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11. Neighborhood Meeting Materials
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13. Traffic Analysis Clarification for Pre-Application (CR-PA-24-06)



SUBMITTAL OVERVIEW

CT6, LLC

DATE: March 27, 2025

PROJECT NO.: 163.3
CITY PROJECT NO.:
RECEIVED BY:

SUBMITTAL TITLE: River's Edge at the Landing Subdivision Application
SUBMITTED BY: Ingrid Friedberg, Special Projects Manager
CT6, LLC
P.O. Box 1419
Battle Ground, WA 98604
SUBMITTED VIA: Online Share Drive | One Full-Size Plans Delivered to City Hall
SUBMITTED TO: **City of Castle Rock**
Attn. Karlene Akesson, Building/Planning Clerk
P.O. Box 370
Castle Rock, WA 98611

SUBMITTAL CONTENTS: In conformance with City of Castle Rock Municipal Code §16.12.045, this application contains the required application contents as itemized below.

ITEM NO.	DESCRIPTION	RECEIVED
1.	Subdivision Application Submittals Overview	☐
2.	Signed Master Application Forms	☐
3.	Application Narrative	☐
4.	SEPA Checklist	☐
5.	Preliminary Plat Application Plan Set (one digital and one full-size copy)	☐
	Cover Sheet	☐
	Sheet Index Plan	☐
	Existing Conditions	☐
	Preliminary Plat	☐
	Grading and Erosion Control Plan (Phase 1)	☐
	Grading and Erosion Control Plan (Phase 2)	☐
	Street and Storm Plan (Phase 1)	☐
	Street and Storm Plan (Phase 2)	☐
	Street Sections	☐
	Main Circulation Street and Storm Profile	☐
	Road C and Road E Street and Storm Profiles	☐
	Sewer and Water Plan (Phase 1)	☐
	Sewer and Water Plan (Phase 2)	☐
	Main Circulation Sewer Profile	☐
	Road C and Road E Sewer Profiles	☐
	Preliminary Master Phasing Plan	☐
	Preliminary Master Signage Plan	☐
	Preliminary Master Parks, Recreation, and Open Space Plan	☐
	Landscape Planting Plan	☐
	Planting Specifications and Details	☐
	Irrigation Specifications	☐
	Street Photometrics	☐
	Fixture Specifications	☐



SUBMITTAL OVERVIEW

CT6, LLC

SUBMITTAL
CONTENTS
CONTINUED:

- | | | |
|-----|---|--------------------------|
| 6. | Preliminary Stormwater Drainage Report | ☐ |
| 7. | Transportation Compliance Letter | ☐ |
| 8. | SR-411 & Westside Hwy Mitigation Memorandum dated January 14, 2025 | ☐ |
| 9. | Draft Master Plan Conditions, Covenant and Restrictions (CC&Rs) | ☐ |
| 10. | Title Report (Guarantee/Certificate Number: 622-173054) | ☐ |
| 11. | Neighborhood Meeting Materials | ☐ |
| 12. | Pre-Application Notes (CR-PA-24-06) | ☐ |
| 13. | Traffic Analysis Clarification for Pre-Application (CR-PA-24-06) | ☐ |
| 14. | Application Fee in the amount of \$14,050 made payable to the City of Castle Rock | ☐ |



City of Castle Rock

Department Of Building and Planning

City Hall, PO Box 370 / 141 'A' St SW, Castle Rock, WA 98611
Phone: 360.274.8181 / Email: finance@ci.castle-rock.wa.us

CR

PLEASE PRINT IN INK OR
TYPE

MASTER APPLICATION

PROPERTY INFORMATION

Project Address: _____ City: Castle Rock Parcel #: 308120300
Short Plat/Subdivision: River's Edge at the Landing Block: _____ Lot: _____

OWNER/APPLICANT INFORMATION

Applicant/Authorized Agent: Shane Tapani on behalf of CT6, LLC Phone: 360.687.1148
Mailing Address: PO Box 1419 City: Battle Ground State: WA Zip: 98604
Property Owner: Same as Applicant. Phone: _____ Same as Same as
Mailing Address: Same as Applicant. City: Same as Applicant. State: Applicant. Zip: Applicant.
Contractor: Tapani Inc. Lic #: TAPANI*883OE Phone: _____
Mailing Address: PO Box 1900 City: Battle Ground State: WA Zip: 98604
Lender Name: N/A Phone: _____
Lender's Address: _____

PROJECT INFORMATION

Building/Construction

- ☐ Building Permit
☐ Excavation & Grading Permit
☐ Manufactured/Structure Placement
☐ Mechanical Permit
☐ Plumbing Permit
☐ Roofing Permit
☐ Signage Permit
☐ Other _____

Planning

- ☐ Critical Areas
☐ Flood Plain
☐ Master Plan
☐ Mobile Home Park
☒ Plat (Preliminary)
☐ Plat (Final)
☐ Short Plat
☐ Site Plan (Preliminary)
☐ Site Plan (Final)

Environmental

- ☐ Critical Areas
☐ Flood Plain Permits
☒ SEPA
☐ Surface Mining
☐ Other _____

PROJECT DESCRIPTION

Occupancy Group: N/A Type of Construction: N/A Sq. Ft. N/A No. of Stories: N/A No. of Bedrooms: N/A

Is there any grading, filling, or excavation associated with this project? Yes Quantity (cubic yards): _____
(Including grading for road construction, site preparation, and landscaping.) **NO SITE WORK MAY BE DONE PRIOR TO CRITICAL AREAS DETERMINATION.**

Water Supply: Public Sewage Disposal: Public Type of Heat: _____ Fair Market Value: _____

Does project involve Asbestos? ☐ YES ☒ NO

PLEASE PROVIDE A BASIC DESCRIPTION OF THE PROPOSED PROJECT:

This proposal involves the construction of a 45 detached single-family residential subdivision within the residential land use area of the approved Landing on the Cowlitz Master Plan.

I hereby certify that I am the owner or duly authorized agent of the owner for the purposes of this application. Further, I grant permission from the owner to any and all employees and representatives of the City of Castle Rock and other governmental agencies to enter upon and inspect said property as reasonably necessary to process this application. I further certify that I have read and examined this application and know the same to be true and correct. If any of the information provided on this application is incorrect, the permit or approval may be revoked.

APPLICANT'S SIGNATURE: Shane Tapani DATE: 3/13/2025 | 2:10 PM PDT
8ADCFO136D1B439...

APPLICATION ACCEPTED BY: _____ DATE: _____

APPLICATION APPROVED BY: _____ DATE: _____

PERMIT NUMBER
CR _____



City of Castle Rock

Building & Planning Department

General Land Use Application

141 A St SW / PO Box 370
Castle Rock, WA 98611
Phone: (360) 274-8181
finance@ci.castle-rock.wa.us

OFFICIAL USE ONLY

Case # _____ Related File # CR-PA-24-06 Received By: _____

One or more of the following **Supplements** must be attached to this **General Land Use Application**:

TITLE 16 SUBDIVISIONS

- ☐ Binding Site Plan
- ☐ Boundary Line Adjustment
- ☐ Condominium Subdivision
- ☐ Final Plat (Subdivision)
- ☐ Final Short Plat
- ☒ Preliminary Plat (Subdivision)
- ☐ Preliminary Short Plat

TITLE 18 ENVIRONMENTAL PROTECTION

- ☐ Critical Areas Determination
- ☐ Critical Areas Permit
- ☐ Environmental Questionnaire
- ☒ SEPA Checklist
- ☐ Shorelines Conditional Use
- ☐ Shorelines Substantial Development
- ☐ Shorelines Variance

TITLE 17 ZONING

- ☐ Annexation
- ☐ Bed & Breakfast – (CUP)
- ☐ Comprehensive Plan Amendment
- ☐ Conditional Use Permit = (CUP)
- ☐ Home Occupancy Business License
- ☐ Home Occupancy in an Accessory Building – (CUP)
- ☐ Manufactured Home Park
- ☐ Recreational Vehicle Park – (CUP)
- ☐ Request for Clarification
- ☐ Rezone
- ☐ Similar Use Authorization
- ☐ Special Use Permit
- ☐ Variance

OTHER

- ☐ Request for Pre-Application Meeting
- ☐ Wireless Communications Facilities - (CUP)
- ☐ Other _____

Project Name: River's Edge at the Landing Subdivision

Project Address: 2542 Larsen Lane SW

Castle Rock, WA 98611

Applicant: CT6, LLC

Phone : (360) 687-1148

E-mail Address: shanet@tapani.com | ingridf@tapani.com

Mailing Address: PO Box 1519, Battle Ground WA 98604

Owner: Same as Applicant.

(If other than applicant)

Phone : _____

E-mail Address: _____

Mailing Address: Same as Applicant.

Other Authorized Representative (if any): N/A

Mailing Address: _____

Phone: _____

E-mail Address: _____

Project Description: This proposal involves the construction of a 45 detached single-family residential subdivision within the residential land use area of the approved Landing on the Cowlitz Master Plan.Size of Project Site: ±8.93 acresAssessor Tax Parcel Number(s): 308120300Full Legal Description of Subject Property (Attached 

Zoning: City: Industrial | Land Use Designated Area of the Landing on the Cowlitz Master Plan: Residential

Special Areas On or Near Site (show areas on site plan):

☐ Creek, Stream or River (name): _____

☐ Wetland ☒ Flood Hazard Area _____

☐ Steep Slopes/Draw/Gully/Ravine ☐ None

Water Service

Existing pipe size and material: _____

Proposed pipe size and material: 8" C900 PVC

Sewage Disposal

Existing: Each lot will have a 4" PVC sewer lateral leading to an 8" gravity sewer main within the subdivision parcel. The system will

Proposed: connect to a an 8" stub at the entrance to the subdivision that leads to the LOTC sewer pump station.

Access

Name of Street(s) from which access will be gained: _____

Owner's Consent and Authorization

I affirm that I am the owner of the subject site and all answers, statements, and information submitted with this application are correct and accurate to the best of my knowledge. Further, I grant permission from the owner to any and all employees and representatives of the City of Castle Rock and other governmental agencies to enter upon and inspect said property as reasonably necessary to process this application.

I agree to pay all fees of the City that apply to this application.

Shane Tapani on behalf of CT6, LLC

Owner's Name (Print Name)

DocuSigned by:

Shane Tapani

8ADBCE0138D1B439...

Owner's Signature

3/13/2025 | 2:10 PM PDT

Date

General Land Use Application

Page 2 of 2
Page 29 of 515

CHICAGO TITLE INSURANCE COMPANY

GUARANTEE/CERTIFICATE NO. 622-173054

ISSUING OFFICE:		
Title Officer: James R. Copeland Chicago Title Company of Washington 655 W. Columbia Way, Suite 200 Vancouver, WA 98660 Phone: 360-601-4370 Fax: 877-334-2993 Main Phone: (360)696-0551 Email: James.Copeland@ctt.com		

SCHEDULE A

Liability	Premium	Tax
\$1,000.00	\$350.00	\$30.10

Effective Date: January 22, 2025 at 08:00 AM

The assurances referred to on the face page are:

That, according to those public records which, under the recording laws, impart constructive notice of matter relative to the following described property:

For [APN/Parcel ID\(s\): 308120300](#)

A PARCEL OF PROPERTY LOCATED IN A PORTION OF THE BENJAMIN HUNTINGTON D.L.C. AND THE SOUTH HALF OF SECTION 14, AND THE NORTH HALF OF SECTION 23, TOWNSHIP 9 NORTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN IN THE CITY OF CASTLE ROCK, COWLITZ COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CORNER COMMON TO SECTION 13, 14, 23 AND 24, TOWNSHIP 9 NORTH, RANGE 2 WEST, AS SHOWN ON RECORD-OF-SURVEY RECORDED IN VOLUME 43, PAGES 120-121 OF THE WILLAMETTE MERIDIAN, COWLITZ COUNTY, WASHINGTON;

THENCE NORTH 01°42'22" EAST, ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 14, A DISTANCE OF 742.50 FEET TO THE NORTH LINE OF THE SOUTH HALF OF THE BENJAMIN HUNTINGTON DONATION LAND CLAIM;

THENCE NORTH 88°18'14" WEST, ALONG SAID NORTH LINE, 1915.35 FEET;

THENCE SOUTH 01°33'06" WEST 26.70 FEET TO THE NORTHWEST CORNER OF "PARCEL I" AS CONVEYED TO CT6, LLC BY DEED RECORDED UNDER AUDITOR'S FILE NUMBER 3682681, COWLITZ COUNTY RECORDS AND THE TRUE POINT OF BEGINNING;

THENCE SOUTH 88°09'15" EAST ALONG THE NORTH LINE OF SAID PARCEL I, A DISTANCE OF 88.61 FEET;

THENCE NORTH 68°26'31" EAST ALONG THE NORTH LINE OF SAID PARCEL I, A DISTANCE OF 93.90 FEET TO A NON-TANGENT 530.00 FOOT RADIUS CURVE TO THE LEFT, FROM WHICH THE RADIUS POINT BEARS NORTH 67°48'33" EAST;

THENCE ALONG SAID 530.00 FOOT NON-TANGENT CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 22°53'04" (LONG CHORD BEARS SOUTH 38°40'15" WEST 210.28 FEET) AN ARC DISTANCE OF 211.69 FEET;

THENCE SOUTH 50°06'47" EAST 328.61 FEET TO A 35.00 FOOT RADIUS CURVE TO THE RIGHT;

THENCE ALONG SAID 35.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 88°23'02" AN ARC DISTANCE OF 53.99 FEET;

CHICAGO TITLE INSURANCE COMPANY**GUARANTEE/CERTIFICATE NO. 622-173054****SCHEDULE A**

(continued)

THENCE SOUTH 38°16'16" WEST 604.48 FEET TO A 30.00 FOOT RADIUS CURVE TO THE RIGHT;

THENCE ALONG SAID 30.00 FOOT RADIUS CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 82°46'20" AN ARC DISTANCE OF 43.34 FEET TO A POINT 30.00 FEET NORTHERLY OF, WHEN MEASURED RADially TO, THE CENTERLINE OF LARSEN LANE AS SHOWN ON SAID RECORD OF SURVEY, VOLUME 43, PAGES 120-121 AND A 313.53 FOOT RADIUS COMPOUND CURVE TO THE RIGHT;

THENCE PARALLEL WITH SAID LARSEN LANE CENTERLINE AND ALONG SAID 313.53 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 19°31'25", AN ARC DISTANCE OF 106.94 FEET:

THENCE NORTH 39°25'59" WEST, PARALLEL WITH SAID CENTERLINE 82.70 FEET;
 THENCE NORTH 41°01'19" WEST, PARALLEL WITH SAID CENTERLINE 22.20 FEET;
 THENCE SOUTH 48°56'17" WEST 17.50 FEET TO THE NORTH RIGHT-OF-WAY LINE OF SAID LARSEN LANE, SAID NORTH RIGHT OF WAY LINE BEING 12.50 FEET NORTHERLY OF, WHEN MEASURED PERPENDICULAR TO, SAID CENTERLINE;

THENCE NORTH 41°01'19" WEST, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE 337.54 FEET TO THE WEST LINE OF "PARCEL I" AS CONVEYED TO CT6, LLC BY DEED RECORDED UNDER AUDITOR'S FILE NUMBER 3682681, COWLITZ COUNTY RECORDS;

THENCE NORTH 53°08'46" EAST, LEAVING SAID NORTHERLY RIGHT-OF-WAY LINE AND ALONG THE WEST LINE OF SAID "PARCEL I" A DISTANCE OF 165.33 FEET;

THENCE NORTH 14°33'38" EAST, ALONG SAID WEST LINE 393.71 FEET TO THE TRUE POINT OF BEGINNING.

Title to said real property is [vested in:](#)

CT6, LLC, a Washington limited liability company

subject to the matters shown below under Exceptions, which Exceptions are not necessarily shown in the order of their priority.

END OF SCHEDULE A

RIVER'S EDGE AT THE LANDING SUBDIVISION
APPLICATION NARRATIVE

CITY OF CASTLE ROCK

March 27, 2025

PROPERTY OWNER & APPLICANT:

CT6, LLC

P.O. Box 1419

Battle Ground, WA 98604-1419

Contact: Ingrid Friedberg, Special Projects Manager

Email: ingridf@tapani.com

Phone: 360.553.9144

APPLICATION ENGINEERING AND SURVEY CONSULTANT:

MacKay Sposito

18405 SE Mill Plain Blvd., Suite 100

Vancouver, WA 98683

Contact: Taylor Wilson, PE

Email: twilson@mackaysposito.com

Phone: 360.695.3411



TABLE OF CONTENTS

I. DEVELOPMENT SUMMARY INFORMATION.....1

II. PROPOSED DEVELOPMENT2

III. EXISTING CONDITIONS2

IV. CONFORMANCE WITH CITY OF CASTLE ROCK SUBDIVISION APPROVAL CRITERIA2

 TITLE 16 SUBDIVISIONS3

 TITLE 17 ZONING10

 TITLE 15 BUILDINGS AND CONSTRUCTION.....17

 TITLE 18 ENVIRONMENTAL PROTECTION.....18

V. CONFORMANCE WITH MITIGATION MEASURES AS OUTLINED IN THE MODIFIED MDNS19

VI. CONCLUSION.....23

I. DEVELOPMENT SUMMARY INFORMATION

Property Owner & Applicant:	CT6, LLC P.O. Box 1419 Battle Ground, WA 98604-1419 Contact: Ingrid Friedberg, Special Projects Manager Email: ingridf@tapani.com Phone: 360.553.9144
Applicant’s Engineering & Surveying Consultant:	MacKay Sposito 18405 SE Mill Plain Blvd., Suite 100 Vancouver, WA 98683 Contact: Taylor Wilson, PE Email: twilson@mackaysposito.com Phone: 360.695.3411
Request:	Approval of a 45-lot detached single-family residential subdivision within the approved Landing on the Cowlitz Master Plan (LOTC)
Parcel ID:	308640100
Area:	± 8.93 acres (±388,991 square feet)
Zoning Designation:	Industrial
LOTC Land Use Designation:	Residential

II. PROPOSED DEVELOPMENT

The Applicant, CT6, LLC, wishes to subdivide an approximately 8.93-acre property into forty-five (45) single-family detached residential lots within property which shall be associated with 2542 Larsen Lane SW (Parcel 308640100) of the approved Landing on the Cowlitz (LOT) Master Plan and subsequent minor modification (Ordinance No. 2021-10 and Resolution No. 2024-03) (Master Plan). This proposal also includes the provision of private park/open space areas, individual residential driveways, Residential Local Access roads and private driveway tracts. A single Residential Local Access roadway intersection is included in this proposal serving as the connection to the Standard Collector road included in Phase 1 of the Master Plan infrastructure.

The roadway stub included in this proposal may serve as an extension for a potential future connection to Larsen Lane SW. However, that extension is contingent upon the successful entry into contract agreements with neighboring property owners and completion of a feasibility analysis. There is the potential that the roadway stub will never be extended.

III. EXISTING CONDITIONS

The existing Parcel 308640100 is 8.93 acres and is zoned Industrial (I) within the City of Castle Rock (City) and is located within the residential land use designated area of the approved Landing on the Cowlitz (LOT) Master Plan. The site was recently subject to a boundary line adjustment (ref. CR-BLA-24-01). The recently adjusted Parcel 308640100 is bounded by the Phase 1 road, Timberlake Church (Parcel 308110100), Parcel 30818, Parcel 3081701 and Larsen Lane SW. The site is subject to conformance with the development standards applicable to the High Density Residential (R-2) except as amended by the Master Plan Conditions of Approval.

Infrastructure necessary for initial site use is anticipated to be completed prior to the issuance of final engineering approval for the River's Edge at the Landing Subdivision. Separate Development Engineering applications are presently under second review by the City for the approval of the Phase 1 roadway and stormwater system, and for the sewer pump lift station. An application for new commercial service is under review at the Cowlitz County Public Utilities District for the proposed Phase 1 infrastructure and the sewer pump station. All Phase 1 infrastructure has been designed to service the proposed subdivision.

The future site of the subdivision was historically subject to farming, and it is presently vacant. The site recently underwent the initial phase of mass grading pursuant to the approved Phase 1 Mass Grading Plan (ref. CR22023). Further mass grading efforts will occur in conjunction with the proposed Phase 1 roadway construction. A temporary private access gravel roadway off Huntington Avenue S. serves the Master Plan. No public roadways presently serve the site.

IV. CONFORMANCE WITH CITY OF CASTLE ROCK SUBDIVISION APPROVAL CRITERIA

Under the provisions of the City of Castle Rock Municipal Code, the applicable approval criteria must be met for subdivision application submittals which includes demonstrating that the threshold requirements are met, payment of required City application fees required and corroboration that the proposal is consistent with the relevant development standards' provisions of the Code except where

amended by the Developer's Agreement for the Landing on the Cowlitz Master Plan. This application has been prepared in conformance with the Code and Developer's Agreement requirements for a Preliminary Plat approval. The subsequent narrative addresses this proposals' compliance with all applicable approval criteria.

TITLE 16 SUBDIVISIONS

Chapter 16.12 Subdivisions

Procedural Requirements

[...]

Response: This subdivision application follows a pre-application conference which was held on November 6, 2024, in conformance with §16.12.010. In addition, a notification was mailed to neighboring property owners within three hundred (300) feet of the property preceding the neighborhood meeting, which was held on November 25, 2024, in conformance with §16.12.013. A copy of the notices with a list of addresses is included in this application submittal along with a Neighborhood Meeting sign in sheet.

Application Requirements

[...]

Response: Pursuant to the City of Castle Rock Municipal Code (CRMC) Section 16.12.045, an overview of all required submittal items is evidenced in the *1. Subdivision Application Submittal*, as included in the subdivision application submittal. The Preliminary Plat is included in this application package which meets the requirements of CRMC Section 16.12.050.

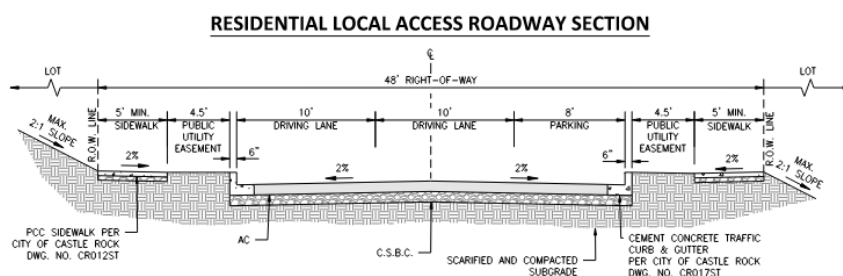
Chapter 16.20 Design and Layout Standards

[...]

16.20.040 Streets – Conformance with street plan.

The location of all streets and roads shall conform to the official street plan adopted or in preparation by the city. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(A), 1980].

Response: The Applicant has provided a subdivision which conforms with the applicable design and layout standards contained within the City of Castle Rock Municipal Code (CRMC) and the City's Engineering Design Standards except where modified within Section 6 of the Landing on the Cowlitz Master Plan (LOT) Developer's Agreement. This proposal includes the modified urban residential local access road:



Ref. Landing on the Cowlitz Roadway Sections, Exhibit C

Streets internal to the subdivision have been designed in conformance with the Residential Local Access which was modified with the Development Agreement to include a forty-eight- (48) foot right-of-way , five- (5) foot sidewalks and a four and a half (4.5) foot public utility easement on both sides of the street. The functional classification of the internal subdivision roadway is appropriate for the intended use of the site for forty-five (45) lots pursuant to the City City Engineering Design Standard 4.03.d. which requires this for roadway for service of up to sixty-four (64) lots. The intersection spacing of the streets internal to the subdivision have been designed to meet the minimum one-hundred and twenty-five (125) feet intersection spacing required by the City Engineering Design Standard Chapter 4.02.B.10., for local access roadways.

The subdivision has been designed to include a connection to the Phase 1 LOTC Road B (Standard Collector), the intersection for which is spaced approximately 366 feet between the nearest intersections of Larsen Lane SW and the future Phase 2 meeting the 300-foot minimum spacing requirement for Standard Collectors.

The two private driveway access tracts included in this proposal feature 20 feet of paved width, which meets Fire Marshal access requirements.

16.20.050 Arterial streets.

Arterial streets will be designed to move vehicles through the city and between various areas of the city. Direct driveway access to arterial streets shall be avoided except where no other access is available. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006].

Response: Not applicable. This proposal does not include the provision of or connection to arterial streets.

16.20.050 Access streets.

Access streets will be designed primarily to provide access to abutting properties only and shall be designed to discourage through traffic. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 §5.03(B), 1980].

Response: This proposal has been designed to include access streets which discourage through traffic to abutting properties and will instead facilitate access to the Phase 1 Road B.

In addition, this proposal has been designed without the provision of direct emergency access to Larsen Lane SW. Proposed finished site grades will inhibit the connection of emergency access for the River's Edge at the Landing Subdivision. twenty- (20) foot wide tract. In conformance with the Master Plan Conditions of Approval, Item 12.a(2), an alternative location for emergency access is required if the required emergency access cannot be provided within the existing Larsen Lane SW right-of-way. This proposal has been designed to include an emergency access spaced two-hundred and seventeen (217) feet apart from the primary subdivision access road and is included via a twenty- (20) foot wide Tract 'A.' The emergency access connection to the Phase 1 Standard Collector included in this subdivision extends less than one hundred and twenty (120) feet. The placement of bollards or other acceptable barrier at the end of the tract shall inhibit the everyday use of the emergency access road and allow emergency access use by the Cowlitz County Fire District 6.

16.20.060 Cul-de-sac streets.

"Cul-de-sacs," defined in CRMC 17.16.685, are required for roads longer than 150 feet, but they cannot exceed 400 feet in length. Please refer to the "City of Castle Rock Engineering Standards for Public Works Construction" for design specifications. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 2003-05 § 2, 2003].

Response: This proposal does not include roads that are longer than one-hundred and fifty (150) feet that do not intersect with another street. As such, cul-de-sacs are not included in this proposal.

16.20.100 Right-of-way and roadbed widths.

The minimum street right-of-way and roadbed widths shall be in "City of Castle Rock Engineering Standards for Public Works Construction" and are adopted by this reference. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(G), 1980].

Response: The road included in this proposal adhere to the modified forty-eight- (48) foot wide street right-of-way and eighteen- (180) foot roadbed width standards pursuant to the approved Landing on the Cowlitz.

16.20.110 Street frontage improvements.

Except where deemed impractical by the city council, all plats, subdivisions, short subdivisions, condominiums, and binding site plans shall install street frontage improvements at the time of construction as required by "City of Castle Rock Engineering Standards for Public Works Construction." Such improvements may include curb and gutter, sidewalk, bus stops, street storm drainage, street lighting system, traffic signal modification, relocation or installation, utility relocation, landscaping and irrigation, and street widening all per these standards. Plans shall be prepared and signed by a licensed civil engineer registered in the state of Washington. All frontage improvements shall be made across full frontage of property from centerline to right-of-way line. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(H), 1980].

Response: This proposal is not subject to any frontage improvements for existing roadways abutting the site. The roadway improvements for a portion of Larsen Lane SW are included in the Phase 1 Access and Utilities (CR-24-052).

16.20.120 Half streets.

A street lying along the boundary of a subdivision may be dedicated one-half of the required width if it is practical to require the dedication of the other half when the adjoining property is subdivided. Whenever there exists a dedicated half street of an adjoining subdivision next to a proposed subdivision, the other half shall be dedicated on the proposed subdivision to make the street complete. To ensure that this occurs, a one-foot conditional dedication shall be required on the subdivision boundary along the street for the purpose of withholding access from the unsubdivided property to said street until such time as a complete street is constructed. This same procedure will also be required when a street dead-ends at the boundary of any subdivision. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(I), 1980].

Response: This proposal does not include the provision of a half-width street. A one (1) foot conditional dedication shall be included for Road C which dead ends at the boundary of the proposed River's Edge at the Landing Subdivision.

16.20.140 Street lighting.

Street lighting shall be included in the development of all future platting and/or subdivisions. Street lights shall be placed at all streets per the "City of Castle Rock Engineering Standards for Public Works Construction." [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(K), 1980].

Response: The Preliminary Lighting Plan depicts street lighting spaced in conformance with the two-hundred- (200) feet maximum spacing requirement pursuant to *CRMC 16.20.140.*). Final locations of street lighting are subject to change during final engineering but shall be required to conform with the City Engineering Standards, Chapter 4.22.K., local roadways which include twenty-eight (28) feet wide pavement, staggered or one (1) side system every two hundred (200) feet. This proposal has been designed to include the modified Residential Local Access roadway segments varying in length.

16.20.150 Parking requirements.

When a plat or subdivision is included in an area where off-street parking is required, such off-street parking shall be as required by CRMC Title 17. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.03(L), 1980].

Response: This proposal is subject to off-street parking requirements pursuant to the City of Castle Rock Municipal Code (CRMC) 17.52.020.A.1. which necessitates two (2) spaces for each dwelling unit. This proposal has been designed to facilitate the inclusion of two- (2) car garages and two- (2) car carports/driveways.

16.20.160 Railway crossings.

[...]

Response: Not applicable. This proposal is not situated at a site in which a railway grade crossing is involved.

16.20.170 Alleys – Required when.

Alleys should be provided at the rear of all lots intended for commercial or industrial uses. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.04(A), 1980].

Response: Not applicable. This proposal does not involve lots intended for any non-residential use.

16.20.180 Alleys – Specifications.

Dead-end alleys shall be avoided whenever possible, but, if unavoidable, shall be provided with turnaround facilities. Alley intersections and sharp changes in direction shall be avoided, but where they are necessary, corners shall be rounded sufficiently to permit safe vehicular movement. Except as otherwise provided in this title, alleys shall follow the general development standards governing streets. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.04(B), 1980].

Response: Not applicable. This proposal does not include alleys therefore the specifications pertaining to those do not apply.

CRMC §16.20.190 Easements – Required when.

A. Except where alleys of not less than 20 feet are provided for that purpose, the city council may require easements not exceeding 10 feet on each side of all rear lot lines, and on side lot lines where necessary or, in the opinion of the city council, advisable, for poles, wires, conduits, storm and sanitary sewers, gas, water and heat mains or other utility lines or across lines where necessary for the extension of existing or planned utilities.

Response: This proposal has been designed to include a ten- (10) foot stormwater easement within portions of the site pursuant to the requirements of the approved Landing on the Cowlitz Master Plan.

B. If, in the opinion of the city council, the most suitable and reasonable locations for any of the utilities, such as sewers, storm drains, water and gas pipes and electric pole lines and conduits, which are likely to be required within a subdivision, either for the service thereof or for service of areas in the surrounding territory, do not wholly lie within the streets, including alleys, if any, shown upon the plat, the city council may require, as far as reasonable, provisions to be made for the location of such utilities on routes elsewhere than within said streets, either by dedication of public easements for the same as part of the plat or by the filing of supplementary instruments which will adequately protect public interest in the proper location of said utilities. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.05(A), 1980].

Response: This proposal has been designed to include a ten- (10) foot stormwater easement, where applicable, along the perimeter of the property abutting privately owned non-LOT Master Plan property and for Lots 12-19 abutting Larsen Lane SW.

16.20.200 Public open spaces.

All residential single-family subdivision (including manufactured home parks/subdivision) and multifamily development proponents shall be required to dedicate land for park areas prior to receiving any occupancy permit. Upon finding that there is cause for a variation in accordance with Chapter 16.36 CRMC, or if the proponent demonstrates that off-site improvements associated with projects identified in the park and recreation plan are of greater benefit to the city than an on-site land dedication, the city council may accept off-site improvements or a fee in lieu of land dedication; provided, that the off-site improvements are completed or the fee in lieu of land dedication will be collected in full prior to final plat approval.

All mitigation measures are to be based on specific impacts based on population increase caused by the development as determined in the city's park and recreation plan adopted via Resolution No. 2005-02, or amended thereafter. Said dedication shall be based on an assessment of demand and need along with established park standards set forth within the adopted park and recreation plan. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.05(B), 1980].

Response: This proposal has been designed to include park space that is approximately 18,396 square feet in size and shall be dedicated to the City of Castle Rock upon completion of construction and prior to issuance of final certificate of occupancy for the subdivision. The exact amount of park area may be subject to change during final engineering but shall be designed in conformance with the applicable requirements.

In anticipation of a potential 183 future site residents (factoring in a potential three (3) residents per lot), a minimum of one-hundred and seventy four (174) square feet per lot is required pursuant to the approved Landing on the Cowlitz Master Plan (LOTIC) Developer's Agreement, Item No. 6.1.4.

16.20.210 Watercourse easements.

Where a subdivision is traversed by a watercourse, drainageway, wasteway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially to the line of such watercourse, drainageway, wasteway, channel, or stream, and of such width for construction, maintenance, and control as will be required for such purposes. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.05(C), 1980].

Response: This proposal includes an existing drainageway along the perimeter abutting privately owned property not included in the approved Landing on the Cowlitz Master Plan (LOTIC) which has been designed to be undergrounded with a ten- (10) foot stormwater easement. In addition, stormwater piping is included along the rear of Lots 12-19 abutting Larsen Lane SW for which a ten- (10) foot stormwater easement.

16.20.220 Blocks – Length.

Intersecting streets shall be laid out so that blocks between street lines shall be provided in accordance with the "City of Castle Rock Engineering Standards for Public Works Construction," except that where, in the opinion of the city council, extraordinary conditions unquestionably justify departure from this maximum, the city council may require or permit greater distances between street lines. The city council may require, at or near the middle of the block, a public pedestrian way not less than 15 feet in width for foot traffic. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.06(A), 1980].

Response: This proposal has been designed to include streets that meet the City Engineering Design Standard Chapter 4.10.C., which requires a minimum centerline offset of one hundred and fifty (150) feet from the intersection with Road B, a Standard Collector modified by the LOTIC Developer's Agreement. In addition, the intersection spacing of the streets internal to the subdivision have been designed to meet the minimum one-hundred and twenty-five (125) feet intersection spacing required by the City.

16.20.240 Blocks – widths.

The width of blocks shall be such as to allow two rows of lots, of the size specified in this chapter, unless exceptional conditions are, in the opinion of the city council, such as to render this requirement impracticable. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.06(B), 1980].

Response: This proposal has been designed to include a maximum of two (2) rows of lots.

16.20.240 Lots – Access.

Each lot shall be provided with satisfactory access by means of a public street connecting to existing and developed highways or by some other legally sufficient right of access which is permanent and inseparable from the lot to be served. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 §5.07(A), 1980].

Response: Direct roadway connection for each lot included in this subdivision is facilitated via the internal public asphalt LOTC modified Urban Local Access roads or private tracts included in the River's Edge at the Landing Subdivision.

16.20.250 Lots – Arrangement.

In all quadrangular lots and, so far as practicable, all other lots, the side line shall be at right angles to straight street lines or radial or curved street lines. An arrangement placing adjacent lots at right angles to one another shall be avoided where practicable. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.07(B), 1980].

Response: Each quadrangular lot has been included in this subdivision with right angles to abutting roadways and tracts which provide access to the lots.

16.20.260 Lot – Minimum size.

Minimum lot sizes and lot dimensions of any subdivision shall be as required by CRMC Title 17. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 518 § 1, 1980; Ord. 509 § 5.07(C), 1980].

Response: Pursuant to the approved Landing on the Cowlitz Master Plan (LOT) Condition of Approval, Item 5.a., there are no minimum lot size or width requirements provided that applicable lot coverage, parking, loading, stormwater management, and landscaping requirements as well as the provisions of the International Building Codes, as adopted and implemented by the City are met. The Developer's Agreement Item 6.1.1., requires that single-family lots must be a minimum of 3,500 square feet in size. This proposal has been designed to include single-family lots which are 3,500 square feet or larger.

16.20.260 Minimum yards.

The minimum front, side or rear yard within a subdivision shall be as required by the zoning ordinance then in effect. [Ord. 2010-01 Att. A, 2010; Ord. 2006-09 Att. A, 2006; Ord. 509 § 5.07(D), 1980].

Response: Each lot included in this subdivision has been designed in this subdivision to include the required setbacks. privately-owned property not included in the master plan. The LOTC Developer's Agreement requires that the residential land use portion of the Master Plan must comply with the following minimum setback requirements of the R-2 high density residential district:

- 20 feet for front yards with garages;
- 15 feet for front yards and corner lot/side yard in width along the flanking or street side;
- 20 feet for rear yards, and;
- 5 feet for side yards for lots that include single-family dwellings.
- 35 feet building setback abutting privately-owned properties not included in the LOTC master plan (twenty- (20) foot landscape buffer, ten- (10) foot drainage easement and additional five- (5) foot building setback).
- Corner lots must comply with the minimum sight distance requirements included in Section 4.12 of the City Engineering Design Standards. This standard is met as demonstrated on the Landscape Planting Plan, Sheet L1.0

This proposal also includes additional setback requirements in conformance with the approved Landing on the Cowlitz Master Plan (LOT) Condition of Approval, Item 5.b.:

Condition of Approval, Item 5.b.:

There are no minimum front, side, or rear yard building setbacks, within the interior of the master planned development, provided that:

- (1) There shall be a minimum landscape buffer of 20' along the external boundary of the master planned development that abuts privately owned properties not a part of the Master Planned Development. This requirement may be modified by mutual written agreement of the adjoining property owners and subject to City review and approval.*
- (2) All buildings must be setback at least 5' from the required 20' landscaped buffer.*
- (3) All buildings shall comply with the provisions of the International Building Codes as adopted and implemented by the City.*

This proposal has been designed to include a twenty- (20) foot landscape buffer along portions of the property that abut privately owned property not included in the approved Master Plan, i.e., Parcel 3081101100, Parcel 30818 and Parcel 3081701. In addition, this proposal has been designed to include a ten- (10) foot drainage easement within which no development is allowed, and a five- (5) foot building setback (ref. Lots 14 and 16). As such, a total of thirty-five (35) feet of setback included in the design for proposed lots within the Landing on the Cowlitz (LOT) Master Plan that abut privately owned property.

Lots 9-14 abut Larsen Lane SW and have been designed to include a ten- (10) foot drainage easement within which no development is allowed and a twenty- (20) foot building setback.

TITLE 17 ZONING
Chapter 17.32 High Density Residential District

17.32.040 Building heights.

The maximum building height in the R-2 district shall be four stories or 40 feet, except that building heights greater than four stories or 40 feet may be allowed by special permit. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: This preliminary plat does not include proposed structures, however, demonstrate that this standard has been met will be required with the building permit applications.

17.32.050 Building site dimensions.

A. In the R-2 district, the following shall be considered as a minimum lot area; however, no dwelling shall be constructed upon a lot which has a width of less than 60 feet or less than the following square footage:

- 1 Single-family dwellings, 6,000 square feet;*
- 2. Single-family attached dwellings, 3,750 square feet;*
- 3. Duplexes, 7,500 square feet;*
- 4. Multiple-family dwellings, 7,500 square feet for the first two dwelling units, plus 1,000 square feet for each additional dwelling unit.*

Response: While this site is subject to the requirements of the R-2 district, this proposal has been designed to meet the minimum lot sizing as modified by the approved Landing on the Cowlitz Master Plan which includes 3,500 square foot single-family residential lots.

B. Provided, that these regulations shall not prohibit the erection of one single-family dwelling upon any lot of record prior to March 1, 1975, because such lot is of less area or width than required by these regulations. [Ord. 2018-02 §2 (Exh. A), 2018].

Response: Not applicable. This proposal involves the subdivision and development of property which shall be devoid of any structures.

17.32.060 Street frontage.

Every principal structure, except bungalow courts, shall front upon a public street without any other building intervening between it and the street upon which it fronts. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: This proposal has been designed to include lots which front upon and have direct access to a public street or private tract. Subsequent building permit applications submitted after preliminary land use approval shall be required to demonstrate that no buildings shall be allowed to intervene between the principal structure and the street for which each lot has access to.

17.32.070 Minimum yard requirements.

The minimum yard requirements in the R-2 district are as follows:

A. Front yard: not less than 15 feet from the front property line.

Response: This proposal has been designed to include twenty- (20) foot front yard setbacks as each lot has been designed with the intention to be front loaded.

B. Garage entrance: set back a minimum of 20 feet from the front property line.

Response: All lots included in this proposal have been designed to include a twenty- (20) foot setback from the front property line.

C. Rear yard: not less than 20 feet in depth. The rear yard may be reduced by the development review committee to five feet if provisions are made for off-street parking and the property abuts an alley. The development review committee can include conditions necessary to maintain the residential character of the neighborhood.

Response: Rear lot setbacks included in this proposal are twenty (20) feet. None of the lots included in this proposal abut an alley as an urban local access roadway and private tracts are the only road types included in this subdivision.

D. Side yard: not less than five feet in width on sides of dwelling. For two-family dwellings (duplex), each side yard shall be a minimum of eight feet in width. The side yard for every building shall be increased by one additional foot in width for each story of the structure above two stories in height.

Response: This proposal involves a detached single-family residential subdivision and as such, five- (5) foot side yard setbacks are included. With a maximum building height of forty (40) feet, it is not anticipated that additional building setback area will be necessary for side yards.

E. Corner lot/side yard: 15 feet in width along the flanking or side street line. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Corner lots included in this proposal feature a fifteen (15) foot setback along the flanking or street line.

17.32.080 Screening, landscaping and critical area buffering requirements.

The objectives of the screening, landscaping and buffering requirements are threefold. The first objective is to develop a multiple-family residential area which is attractive; the second is to buffer adjacent single-family residential areas from the effects of neighboring high density residential uses; and the third is the protection of property and life from damages resulting from locating too close to a critical area, while providing protection from human encroachment for endangered and local wildlife species. Prior to or as part of applying for a building permit to expand existing or construct a new building in the R-2 residential zone, the following screening, landscaping and buffering requirements shall be met:

A. A site plan with detailed landscaping and screening must be submitted for city review for consideration of the following requirements: A perimeter hedge or landscaped berm or landscaped areas at least three feet deep shall be installed and maintained adjacent to each property line, except where a permanent structure, driveway or sidewalk is in this area. The landscaping must conform with the street visibility standards contained in CRMC 17.48.020.

Response: This preliminary application submittal includes a landscaping and screening plan which depicts the proposed landscaping on sheets L1.0, L1.1 and L1.2.

B. Landscaping of Surface Parking and Loading Areas. In addition to the general required landscaping, the following screening and landscaping is required on surface parking areas:

- 1. Additional interior landscaping of two percent or more of the site area shall be required when the site, exclusive of building areas, is 5,000 or more square feet. The interior landscaping shall be placed within a parking area in a way which visually reduces the barren effect of the open surfaced area. Berms and other landscaped areas provided to meet screening requirements may not be counted as part of this additional interior landscaped area.*

Response: Not applicable. This proposal does not include surface parking or loading areas therefore these standards do not apply.

- 2. One tree or medium sized (four feet tall or larger) evergreen shrub shall be planted and maintained for every 20 parking spaces. Each tree or shrub shall be three feet away from any curb of a landscaped area or edge of the parking area.*

Response: This proposal has been designed to include trees sized and spaced in accordance with this requirement and is depicted in the proposed landscaping on sheets L1.0, L1.1 and L1.2.

C. Screening of Surface Parking Areas and Other Outdoor Use Areas Abutting a Single-Family Residential Area.

[...]

Response: Not applicable. This proposal involves residential use only.

D. Screening of Blank Facades. A five-foot-deep landscaped area with trees or medium sized (four feet tall or larger) evergreen shrubs shall be planted and maintained between street property lines and a blank building facade which exceeds 50 feet in width.

Response: This proposal does not include the provision of structures. This will be addressed with the building permit application submittal.

E. Permitted Breaks in Landscaping or Screening. Pedestrian walkways and vehicular driveways through required landscaping or screening are permitted. Breaks in required landscaping or screening for vehicular access shall not exceed the width of permitted curbcuts.

Response: This proposal does not at this time include breaks in landscaping or screening to facilitate vehicular driveways or walkways that exceed the width of permitted curbcuts.

F. Screening. Wherever six-foot-high screening is required, it may be either:

- 1. A fence or wall six feet in height; or*
- 2. A landscaped berm at least four feet in height or a hedge which will achieve a height of five feet within three years of planting and is at least two feet high at the time of planting.*

Response: This proposal has been designed to include screening as appropriate.

G. Grade Separation Exceptions. Where grade difference of 10 or more feet occurs within 10 feet of the lot line, the required screen may be replaced with a landscaped area five feet deep or 150 percent of the required landscaped area, whichever is more.

Response: Not applicable. The site is flat and devoid of grade differences of ten (10) feet or more.

H. Required Planting. Areas or berms required to be landscaped shall be planted with trees, shrubs and evergreen ground cover, in a manner which covers the required setback, excluding driveways, within three years of the date of the issuance of the permit. Features such as walkways, decorative paving, sculptures or foundations may cover a maximum of 30 percent of each required landscaped area or berm. Trees shall be selected from the city's recommended list for tree planting.

Response: This proposal has been designed to include landscaping which covers the required setback, excluding driveways.

I. Buffering Requirements Adjacent to Critical Areas. Prior to or as part of applying for a building permit to expand existing or construct a new multiple-family building in the R-2 zone adjacent to any identified critical area, an approved critical area permit must be submitted which clearly shows that adequate buffering has been (or soon will be) provided in accordance with Chapter 18.10 CRMC, Critical Areas, as applicable to the subject site. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Not applicable. This proposal does not abut critical areas.

17.32.090 Off-street parking.

Off-street parking shall be provided in accordance with the requirements of Chapter 17.52 CRMC and CRMC 17.48.110. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: This proposal has been designed to facilitate the inclusion of the required parking quantity and configuration pursuant to the requirements of Chapter 17.52 CRMC. CRMC 17.48.110 pertains to quasi-public building yard and as such does not apply to this proposal which involves a single-family residential subdivision. Narrative addressing the requirements contained within 17.52 is included in response to those chapters below.

17.32.100 Permitted signs.

Signs allowed in the R-1 district shall be allowed in the R-2 district in accordance with Chapter 17.82 CRMC. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: This proposal does not include the provision of signage. It is anticipated that monumentation signage may be contemplated as part of the subdivision building permitting process. Since a subdivision developer is not at this time engaged in the project, it remains unknown if entry signage will be pursued at a later date.

Chapter 17.52

OFF-STREET PARKING AND LOADING

17.52.010 Requirements.

In all use districts, space for the off-street storage and parking and loading and unloading of motor vehicles shall be reserved and improved for use when any building or structure is erected, or when any building or structure is enlarged or expanded in heights or ground coverage so as to increase the number of required parking spaces by 10 percent over the number required prior to the enlargement or expansion. Any on-street parking space immediately adjacent to a use may be counted toward fulfilling that use's parking requirements. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: This proposal includes the development of a subdivision. No uses have been developed within the approved Landing on the Cowlitz Master Plan (LOTIC) therefore, required parking spaces may not be counted towards the minimum required for the subdivision.

17.52.020 Parking standards.

A. The minimum required parking spaces for the various uses shall be as follows:

1. Single-family dwelling: two spaces for each dwelling or living unit;

Response: This proposal has been designed to include eighteen- (18) foot wide driveways for each individual residential lot in order to accommodate two (2) off-street parking spaces in the driveway. Pursuant to the City's Street & Asphalt Concrete Paths and/or Bikeways Standards Section 4.11, page 4-15, for private driveways, individual lot sizes ranging from 30 to 50 feet are limited to twelve (12) feet or 30% of frontage. The Applicant requests a modification to the City's driveway standard in order to maximize the number of parking spaces available to future homeowners. This modification would allow the Applicant to maximize the number of lots available to the community.

2. Duplex: two spaces for each dwelling unit;

Response: Not applicable. This proposal involves a subdivision with single-family residential lots.

3. Multifamily dwelling: one and one-half spaces for each dwelling or living unit;

Response: Not applicable. This proposal does not involve a multifamily family use.

4. Church, mortuary, funeral home: one space for each four seats in the chapel or nave;

Response: Not applicable. This proposal involves a single-family residential subdivision.

5. *Bowling alleys: three spaces for each lane;*

Response: Not applicable. This proposal involves a residential use and as such does not include a bowling alley.

6. *Hotels and motels: one space for each room or suite, plus one space for each employee and required spaces for any restaurant, assembly rooms, or other accessory use;*

Response: Not applicable. This proposal involves a single-family residential subdivision.

7. *Hospitals, sanitariums, convalescent homes, nursing homes and rest homes: one space for every three patient beds, plus one additional space for each staff doctor and for every three employees;*

Response: Not applicable. This proposal involves a single-family residential subdivision.

8. *Manufacturing or industrial uses: one space for each two employees on the shift of greatest employment, with a minimum of three spaces;*

Response: Not applicable. This proposal involves a single-family residential subdivision.

9. *Restaurants with inside service: one space for each 100 square feet and restaurants with drive-thru, one space for each 200 square feet.*

Response: Not applicable. This proposal involves a subdivision with single-family residential lots.

B. *All parking spaces will be provided with adequate ingress and egress to allow maneuvering for the parking spaces.*

Response: All parking spaces included in this subdivision have been designed to allow adequate ingress and egress.

C. *All parking spaces will be located on the same lot as the use for which the parking spaces are needed.*

Response: This proposal has been designed to include lots which can facilitate parking spaces and public streets internal to the subdivision. This proposal includes the provision of twenty-one (21) on-street parking spaces.

D. *All other uses will provide one parking space for each 200 square feet of gross floor area.*

Response: Not applicable. This proposal includes a single-family residential use for which the parking requirements are specified.

E. *Parking Space Dimensions.*

1. *The minimum size for large size vehicle parking (SUVs, pickup trucks, motor homes, etc.) is nine feet in width and 19 feet in length.*

Response: This proposal includes lots that have been dimensioned to facilitate the inclusion of four (4) nine- (9) foot wide and nineteen (19) feet in length.

2. *The minimum size for medium size vehicle parking (four-door sedans, etc.) is eight and one-half feet in width and 17 feet in length.*

Response: This proposal has been designed to include on-street parking spaces to facilitate twenty-one (21) on-street parking spaces which have been sized to include eight- (8) foot wide by twenty- (20) foot long parking spaces.

3. *The minimum size for small size vehicle parking (VWs, Honda Civics, etc.) is eight feet in width and 15 feet in length.*

Response: Not applicable. This proposal does not include small vehicle size parking spaces.

4. *Barrier-free parking space dimensions shall be provided as required by the Washington State Rules and Regulations for Barrier-Free Design. Unless more space is required under the Washington State Rules and Regulations, barrier-free parking spaces, accessible to disabled persons, shall be provided in every off-street parking facility with 10 or more parking spaces at the rate of one accessible parking space for every 30 standard parking spaces.*

Response: Not applicable. This proposal has been designed to include twenty-one (21) on-street parking spaces. Since this proposal does not include thirty (30) standard parking spaces, the provision of the City's barrier-free (handicapped) parking space requirement does not apply.

F. Required Mixture of Various Sized Spaces. The required number of parking spaces of each size shall be determined by whether the parking is for residential or nonresidential use. In structures containing both residential and nonresidential uses, parking, which is clearly set aside and reserved for residential use, shall meet the standards of subsection (F)(1) of this section; otherwise, all parking for the structure shall meet the standards of subsection (F)(2) of this section.

1. *Residential Use.*

- a. *When five or fewer spaces are provided, a minimum required size for each parking space shall be for a medium sized car.*

Response: Not applicable. This proposal involves the inclusion of greater than five (5) spaces.

- b. *When more than five spaces are provided, a minimum of 60 percent of the parking space shall be striped for medium sized vehicles, and one space or two percent, whichever is the greater, of parking spaces must meet the barrier-free (handicapped) design standards.*

Response: This proposal includes the provision of more than five (5) spaces and the provision of on-street parking spaces which generally meet the criteria for the medium parking space.

2. *Nonresidential Use.*

[...]

Response: Not applicable. This proposal involves a residential use.

17.52.030 Mixed occupancies.

In the case of mixed uses, the total requirements for off-street parking facilities shall be the sum of the requirements for the various uses computed separately. Off-street parking facilities for one use shall not be considered as providing required facilities for any other use except as hereinafter specified for a joint use. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Not applicable. This proposal involves a single use whereby which mixed occupancies shall be prohibited.

17.52.040 Layout plan.

Prior to the issuance of a building permit for any building or use requiring more than two parking spaces, a plan showing proposed and existing buildings and the layout, dimension, mixture of various size spaces, and the number of parking spaces shall be submitted to the development review committee as per Chapter 17.77 CRMC. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: The Applicant acknowledges this requirement must be met prior to the City's issuance of building permits.

17.52.050 Loading and unloading.

On every lot in a C-1, C-2 or I-1 district, and on any lot on which is conducted any public or semi-public use, there shall be space provided for the loading of goods and materials. Such spaces shall not be less than 10 feet in width nor 25 feet in length. Such space shall be provided with adequate access to a public right-of-way. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Not applicable. This proposal involves a subdivision which requires adherence to standards required for a R-2 district.

17.52.060 Requirement compliance with state handicapped regulations.

Handicapped (barrier-free) parking shall be provided as stated in CRMC 17.52.020 and as defined in RCW 46.16.281. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Regulations pursuant to CRMC 17.52.020 do not apply to this proposal as it involves the provision of fewer than thirty (30) on-street parking spaces.

17.52.070 Hard surfaces required for commercial and industrial parking.

"Hard surface" means asphalt, concrete, or cement. [Ord. 2018-02 § 2 (Exh. A), 2018].

Response: Not applicable. This pertains to commercial and industrial parking and this proposal includes a residential use.

TITLE 15 BUILDINGS AND CONSTRUCTION

Chapter 15.24 Flood Damage Prevention

[...]

15.24.240 Subdivision Proposals

A. All subdivision proposals shall be consistent with the need to minimize flood damage.

Response: This proposal includes the provision of site fill, with proposed site grading which shall result in raising the site to 50.3 feet which is above the base flood elevation (BFE) of 48 for the site. In addition, structures shall be required to be raised one- (1) foot above the BFE. This proposal has been designed to facilitate the inclusion of building pads at 51.8 feet.

B. All subdivision proposals shall have public utilities and facilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

Response: The road profiles included in this proposal have been designed to keep the roadways above the BFE ensuring that water meter boxes, gas meters, electric meters, etc. are all above flood elevations. In addition, this proposal has been designed to include building pad elevations well above the base flood plain (BFE).

C. All subdivision proposals shall have adequate drainage provided to reduce exposure to flood damage.

Response: This proposal has been designed in accordance the Landing on the Cowlitz Master Plan master drainage plan which is anticipated to receive approval within Q2 of 2025. in addition, each building pad elevation in this proposal is set well above the 100-year base flood plain elevation. Driveway grades have been designed to ensure positive drainage away from structures. For more information, refer to the Stormwater Master Plan for the LOTC about how the system will perform during flood events.

D. Where base flood elevation data has not been provided or is not available from another authoritative source, it shall be generated for subdivision proposals and other proposed developments which contain at least 50 lots or five acres (whichever is less). [Ord. 88-14 § 5.1-4, 1988].

Taylor, how would you describe how the proposed provision of utilities and facilities has been designed to minimize flood damage?

Response: Not applicable. Base flood elevation data is available for this site as derived from FEMA FIRMETTE Map No. 53015C0294G (Effective Date 12/16/2015).

TITLE 18 ENVIRONMENTAL PROTECTION

[...]

18.04.130 Environmental checklist.

A. A completed environmental checklist (or a copy), in the form provided in WAC 197-11-960, shall be filed at the same time as an application for a permit, license, certificate, or other approval not specifically exempted in this chapter; except, a checklist is not needed if the city and applicant agree an EIS is required, SEPA compliance has been completed, or SEPA compliance has been initiated by another agency. The city shall use the environmental checklist to determine the lead agency and, if the city is the lead agency, for making the threshold determination.

Response: This application submittal includes a completed SEPA Checklist.

B. For private proposals, the city will require the applicant to complete the environmental checklist, providing assistance as necessary. For city proposals, the department initiating the proposal shall complete the environmental checklist for that proposal. [Ord. 574 § 18A.12.040, 1984].

Response: While a SEPA Checklist was not specified in the Pre-Application Notes as a required submittal item, one is provided in the event the City of Castle Rock makes the determination one is needed.

V. CONFORMANCE WITH MITIGATION MEASURES AS OUTLINED IN THE MODIFIED MDNS DATED SEPTEMBER 8, 2021

This proposal has been designed in conformance with the City's requirement to avoid, minimize, and mitigate potential adverse impacts associated with the phased implementation of the Landing on the Cowlitz (LOTIC) Master Plan over time. The subdivision application constitutes the first implementing phase of the LOTIC Master Plan and as such requires the submittal of a State Environmental Protection Act (SEPA) Checklist which evaluates the following potential impacts associated with the subdivision against the anticipated impacts evaluated in the Modified Mitigated Determination of Non-Significance (MDNS) dated September 8, 2021, for the Landing on the Cowlitz (LOTIC) Master Plan. The following mitigating measures have been met by this proposal:

1. *A SEPA Checklist will be submitted with the application to implement each phase of the approved master plan.*
 - a. *The City may require additional mitigation and/or conditions of approval based on an analysis of these subsequent environmental documents.*

Response: The application for the River's Edge at the Landing Subdivision includes a SEPA Checklist which demonstrates that all anticipated impacts associated with the subdivision were contemplated within the approved SEPA MDNS dated September 8, 2021.

2. *All subsequent project specific development activities shall comply with the applicable provisions of the Castle Rock Municipal Code unless modified by these conditions of approval.*

Response: Pursuant to the Developer's Agreement (DA) dated February 20, 2024, Section 5, all subsequent project specific development activities are vested under the development standards in effect on November 8, 2021 except where modified by the DA. This proposal has been designed in conformance with all applicable development standards.

3. *There shall be no net loss of function or value of wetlands, streams, or rivers and associated habitats.*
 - a. *A Critical Areas Report shall be submitted for all development activities that may impact environmentally sensitive areas on or near the site and a Critical Areas Permit or similar authorization shall be required for all non-exempt development activities.*

Response: Not applicable. The site does not have indicators for wetlands, stream, or rivers and associated habitats. Therefore, a Critical Areas Report is not required for the proposed subdivision.

- b. *All critical areas and their buffers shall be delineated and placed in an open space tract.*

Response: This proposal shall involve site fill and certification for bringing above the floodplain. As such, the finished subdivision shall not include critical areas and shall not necessitate the inclusion of an open space tract.

- c. *All development activities within 200' of a river or stream and their associated wetlands under the jurisdiction of the Washington State Shoreline Management Act shall comply with the provisions of the Castle Rock Shoreline Master Program.*

Response: The site is located outside of the two hundred (200) feet of a river or stream and their associated wetlands under the jurisdiction of the Washington State Shoreline Management Act.

4. *All development activities shall comply with the City Flood Hazard Prevention regulations including the elevation of buildings at least one foot above base flood elevations.*

Response: This proposal has been designed in conformance with the City of Castle Rock Municipal Code (CRMC) 15.24.240 and includes building pads at elevation 51.8 which is well over one- (1) foot about the base flood elevation of 48. For more information, see the narrative section above which addresses this.

5. *Prior to the initiation of any clearing and grading activities the Project Sponsor shall submit for City review and approval a Master Clearing, Fill, and Grading Plan that is integrated with a Master Stormwater Management Plan that includes an analysis of the impacts of the development to the adjacent properties and measures to ensure that stormwater or flood waters will not adversely affect neighboring properties.*

Response: This proposal post-dates the approved master grading plan (ref. City file no. CR22023)

6. *The primary route of ingress and egress shall be from Huntington Avenue South and a new access road in the immediate vicinity of the existing Timberlake Church access road. All access roads in this corridor shall be designed, built, and improved to City industrial road standards, except as modified by the Conditions of Master Plan approval, provided that:*

- a. *With each application to implement a phase of development, the Project Sponsor shall submit an updated traffic report that identifies the number of trips to be generated, assesses existing conditions, identifies proposed mitigation measures to meet City standards, and that identifies when such mitigation measures are required.*

Response: Pursuant to the feedback provided by the City's traffic engineering consultant in a letter dated November 14, 2024, determined that the appropriate level of review required for the subdivision includes a trip accounting analysis.

7. *Larsen Lane SW is a public right-of-way and in its existing condition the use of Larsen Lane SW to access the Master Planned Development shall be limited to:*

- a. *Emergency ingress and egress, provided that:*

- (1) *The Project Sponsor shall be responsible for the design and construction of such improvements to Larsen Lane SW within the existing right-of-way from the site of the Master Planned Development to the intersection with Huntington Avenue South that may be*

required by the City to maintain emergency access to the Master Planned Development in accordance with the provisions of the International Fire Code as implemented and adopted by the City.

Response: This proposal has been designed without the provision of direct emergency access to Larsen Lane SW. Proposed finished site grades will inhibit the connection of emergency access for the River's Edge at the Landing Subdivision. As such, the Applicant is not subject to the provision of additional improvements to Larsen Lane SW right-of-way from the site of the Master Planned Development to the intersection with Huntington Avenue South.

- (2) It is understood by the parties that if the required emergency access cannot be provided within the existing right-of-way that a different route for emergency access may be required.*

Response: This proposal has been designed to include emergency access to the subdivision via a private access driveway tract located approximately two hundred and seventeen feet from the primary subdivision.

- b. Interim access by the Project Sponsor, and their employees, subcontractors, and suppliers pending the construction of a temporary access road at the primary access point from Huntington Avenue near the church driveway, provided that:*

- (1) The Project Sponsor shall provide the City with documentation of the existing condition of Larsen Lane SW and shall be responsible for the repair of any damages to the roadway during this interim period.*

Response: A temporary access road was established to the site in 2022 and as such, Larsen Lane SW is not used as an interim construction access road.

- (2) The City will require a bond or financial guarantee sufficient to restore Larsen Lane SW in its sole discretion.*

Response: Not applicable. This proposal does not include emergency or otherwise temporary use of Larsen Lane SW.

- (3) The Project Sponsor shall design and construct, subject to City review and approval, a temporary access road at the primary point of access from Huntington Avenue near the church driveway no later than June 30, 2022, provided that this deadline may be extended with cause by the City.*

Response: The temporary access road at the primary point of access from Huntington Avenue South near the church driveway was established in 2022 in conformance with City requirements.

- (4) The City will make a good faith effort to expedite the review and approval of this temporary access road.*

Response: Not applicable. The Applicant did not bear the responsibility of expediting reviews.

8. *The City may install reasonable measures to prevent the use of Larsen Lane SW to access the Master Planned Development. This may include, but is not limited to, signage, a gate or bollards with a lock box, and a cul-de-sac or turnaround for vehicles attempting to enter the Master Planned Development.*

Response: Pursuant to the Pre-Application Meeting with the City of Castle Rock on November 6, 2022 (ref. CR-PA-24-06), the City indicated that they do not have plans limit access along Larsen Lane SW from the master planned development.

9. *The Project Sponsor may propose to use Larsen Lane SW to provide a second access route to the Master Planned Development if such is required in accordance with local, state, or federal standards. The Project Sponsor shall be responsible for the design, acquisition of right-of-way, and construction of any required improvements to Larsen Lane SW including the intersection with Huntington Avenue South in accordance with City standards. The proposed design and use of these improvements shall be subject to environmental review and mitigation.*

Response: Not applicable. This proposal does not involve a second access route connection to Larsen Lane SW.

10. *The Project Sponsor shall prepare and submit with the first implementing application a Conceptual Master Plan to guide the development and use of pedestrian and bicycle facilities, parks, and open spaces open to the public. This Conceptual Master Plan shall include, but is not limited:*

- a. *The standards for the development of trails, sidewalks, bike paths and lanes.*

Response: This proposal includes park area which shall be dedicated to the City of Castle Rock pursuant to the Developer's Agreement Item No. 6.1.4. Sidewalks included in this proposal are included with the roadways internal to the subdivision.

- b. *Potential areas to view and access shorelines.*

Response: Not applicable. There are no scenic views observable from the site that could become obstructed by the proposed subdivision.

- c. *Areas to be maintained by a private management entity, homeowner's association, or the like.*

Response: It is presently anticipated that the future Homeowner's Association shall be responsible for the areas within the subdivision such as the private driveway access tracts, i.e., Tract 'A' and Tract 'B,' mailboxes and the entrance area which may someday feature entrance signage/monumentation.

- d. *Areas proposed for dedication and maintenance by the City or other public agency, if any.*

Response: This proposal includes roadways internal to the subdivision which shall be dedicated to the City of Caste Rock.

11. *The Project Sponsor shall be responsible for the design, construction, and maintenance of such improvements as may be required to connect to the City water system, unless otherwise agreed to by the parties. All new development shall be connected to the City water system, provided that plans for a separate irrigation system may be submitted for City review and approval.*

Response: This proposal involves connection to the proposed City water system within the Phase 1 roadway.

12. *The Project Sponsor shall be responsible for the design, construction, and maintenance of such improvements as may be required to connect to the City sewer system, unless otherwise agreed to by the parties.*

Response: This proposal has been designed to connect to the City sewer system within the Phase 1 roadway.

13. *The City and the Project Sponsor shall jointly consult with the Cowlitz Indian Tribe to determine the scope of a cultural and archaeological survey that shall be conducted prior to initiating any clearing, grading, filling, or excavation activities.*

[...]

Response: An inadvertent discovery plan was developed in conformance with these requirements as well as state and federal provisions. Adherence to these requirements shall be required in the event any human remains, artifacts, or evidence of potential archaeological, historical, or cultural resources are encountered during construction activities.

VI. CONCLUSION

This application has addressed all relevant City of Castle Rock approval criteria for a residential subdivision application within the approved Landing on the Cowlitz Master Plan, and as such, the Applicant respectfully requests the approval of this subdivision proposal.

City of Castle Rock

P.O. Box 370
CASTLE ROCK, WA 98611
(360) 274-8181



SEPA ENVIRONMENTAL CHECKLIST

What is this for?

The City and other governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information will also help determine if it's possible to avoid, minimize, or compensate (mitigate) for the probable significant impacts; or whether an environmental impact statement needs to be prepared to further analyze the proposal.

How to fill this out:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach, excerpt, or refer to additional studies or reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decisionmaking process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The City or other agencies may ask you to explain your answers or provide additional information to determine if there may be a significant adverse impact.

If you're using this checklist for a nonproject proposal (such as an ordinance, regulations, plans, or programs), complete the applicable parts of Parts A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (Part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. For nonproject actions, the lead agency may exclude questions in Part B that do not contribute meaningfully to the analysis of the proposal.

This form is set up as a Word table. Except for a few questions that ask for you to select options, each question is followed by a blank field in which you can type your answer. Type in the shaded box. Check boxes will fill in when you click them. Each field will expand to accommodate your text, and the overall form will expand to additional pages as you fill in answers.

A. BACKGROUND

1. Name of proposed project, if applicable:

River's Edge at the Landing Subdivision

2. Name of applicant:

CT6, LLC

3. Address and phone number of applicant or contact person:

PO Box 1419, Battle Ground, WA 98604 | Ingrid Friedberg,
Special Projects Manager

4. Date checklist prepared:

3/27/2025

5. Agency requesting checklist:

City of Castle Rock

6. Proposed timing or schedule (including phasing, if applicable):

It is anticipated that construction will commence upon the receipt of the necessary permits and approvals.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? ☐ Yes ☒ No

If yes, explain.

Insert text here.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Specific to this subdivision, the following items have been prepared:

Preliminary Technical Information Report | MacKay Sposito |
March 26, 2025

Transportation Compliance Letter | Lancaster Mobley | March
7, 2025

SR-411 at Westside Highway - Mitigation Due Diligence
Analysis Memorandum | Lancaster Mobley | January 14, 2025

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? ☒ Yes ☐ No

If yes, explain.

Phase 1 access and utilities (CR-24-052) and the outfall (CR-24-051) for the Landing on the Colwitz Master Plan are presently under review and affect the developability of the property covered by the proposal.

10. List any government approvals or permits that will be needed for your proposal, if known.

Approvals or permits required for this proposal include:
Preliminary Subdivision; Engineering Approval; Final Plat
Approval; NPDES General Construction Stormwater Permit;
Building Permits.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. (There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers here.)

The Applicant, CT6, LLC, wishes to subdivide an approximately 8.93-acre property into forty-five (45) single-family detached residential lots within property associated with 2542 Larsen Lane SW (Parcel 308640100) of the approved Landing on the Cowlitz (LOT) Master Plan and subsequent minor modification (Ordinance No. 2021-10 and Resolution No. 2024-03) (Master Plan). This proposal also includes the provision of private park/open space areas, individual residential driveways, residential local access roads and private driveway tracts. A single modified Residential Local Access roadway intersection is included in this proposal serving as the connection to the Standard Collector road included in Phase 1 of the Master Plan infrastructure.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description and, if you haven't already done so with the permit application to which this checklist is related, a site plan, vicinity map, and topographic map, if reasonably available.

The site is included within the Residential designated portion of the approved LOTC Master Plan. It was recently adjusted (Parcel 308640100, BLA Parcel 1, ref. CR-BLA-24-01), and it is bounded by the Phase 1 public access roadway (also interchangeably referred herein as Phase 1), Timberlake Church (Parcel 308110100), Parcel 30818, Parcel 3081701 and Larsen Lane SW. The property is subject to the Master Plan area designated for residential use and is required to conform with the High Density Residential (R-2) except as amended by the Master Plan Conditions of Approval.

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. General description of the site:

☒ Flat ☒ Rolling ☐ Hilly ☐ Steep slopes ☐ Mountainous

☐ Other (specify): Insert text here.

- b. What is the steepest slope on the site (approximate percent slope)?

50%

- c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The majority of the site (60.2%) is comprised of Carrolls loamy sand, 0 to 2 percent slopes. Other soils at the site

include Pilchuck loamy fine sand, 0 to 8 percent slopes (35.4%) and Newberg fine sandy loam, 0 to 3 percent slopes (4.5%). The site does not consist of soils designated for long-term commercial significance.

- d. Are there surface indications or history of unstable soils in the immediate vicinity? ☐ Yes ☒ No
If so, describe.

Insert text here.

- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

It is anticipated that the preliminary grading and cross sections shall include an estimated week 2,000 cubic yards (cy) of cut and 15,000 cy of fill, with a net 13,000cy of fill. These quantities are in relation to the revised mass grading surface which is anticipated to be finalized prior to the initiation of earthwork activities for the subdivision. The source of the fill shall be the dredge material stockpiles on-site.

- f. Could erosion occur as a result of clearing, construction, or use? ☒ Yes ☐ No
If so, generally describe.

As with any clearing or other types of earth-disturbing construction activity, there is potential for erosion to occur. Site-specific best management practices will be used to mitigate erosion during the construction of the proposal. Site-specific erosion control measures will be implemented per the approved Grading Plan. Further, all sediment and erosion control design work will be completed in accordance with the requirements of the NPDES Construction Stormwater General Permit and City standards.

- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

It is currently anticipated that approximately forty-six (46) percent ($\pm 179,541$ square feet) of the total site area ($\pm 388,991$ square feet) will be covered with impervious surfaces.

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Proposed measures to reduce or control erosion, or other impacts to the earth include treating and detaining stormwater, as well as silt fencing and other erosion control best management practices. Stormwater and erosion control plans prepared by MacKay Sposito have been prepared in compliance with the City's regulatory requirements.

2. Air

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known:

During Construction, Operation, and Maintenance:

Equipment and vehicles required for construction activities will generate dust and particulate emissions during the construction period.

After Project Completion:

Delivery trucks, mail delivery, solid waste, recycling vehicles and residence's automobiles will generate some particulate emissions in the long-term. Other emission sources include those typical to residential areas, e.g. small power tools including, heating, air conditioning, fireplaces, gas appliances, small gas-powered equipment used for site and landscape maintenance and emissions that are typical of a residential area are anticipated.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? ☐ Yes ☒ No
If so, generally describe.

Insert text here.

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

If necessary, water will be utilized for dust control as needed during construction of on- and off-site improvements. Emissions control measures for vehicles and equipment are regulated under the Washington State Department of Ecology and U.S. Environmental Protection Agency. It is anticipated that all construction vehicles and equipment will be in compliance with these regulations.

3. Water

- a. Surface Water

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? ☐ Yes ☒ No
If yes, describe type and provide names. If applicable, state what stream or river it flows into.

Insert text here.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters?
☐ Yes ☒ No
If yes, please describe, and attach available plans.

Insert text here.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

- 4) Will the proposal require surface water withdrawals or diversions? ☐ Yes ☒ No
Give general description, purpose, and approximate quantities if known.

None.

- 5) Does the proposal lie within a 100-year floodplain? ☒ Yes ☐ No
If so, note location on the site plan.
- 6) Does the proposal involve any discharges of waste materials to surface waters? ☐ Yes ☒ No
If so, describe the type of waste and anticipated volume of discharge.

Insert text here.

b. Ground Water

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? ☐ Yes ☒ No
If so, give a general description of the well, proposed uses, and approximate quantities withdrawn from the well.

Insert text here.

Will water be discharged to groundwater? ☐ Yes ☒ No

Give general description, purpose, and approximate quantities if known.

Click or tap here to enter text.

- 2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

Not applicable. No wastewater will be discharged into the ground.

c. Water runoff (including stormwater)

- 1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Surface runoff within the proposed roadways will be collected at catch basins (both standard and mechanical filter) before being conveyed into piping beneath the roadways. Lot drainage for impervious surfaces will be collected via area drains and gutters, then piped into the conveyance system bypassing any treatment. Runoff on open spaces, slopes, and park areas will be minimal as most areas will be pervious, but perimeter ditches will convey those flows to the off-site drainage system. Once runoff is captured by the conveyance system, a portion of the main will consist of infiltration trench to meet LID standards and reduce the amount of runoff leaving the site at the stub to the subdivision. Any runoff leaving the site through the stub will enter the LOTC on-site drainage system. The LOTC in-site drainage system features a large detention pond and a direct outfall to the Cowlitz River.

- 2) Could waste materials enter ground or surface waters? ☐ Yes ☒ No
If so, generally describe.

Insert text here.

- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site?
☒ Yes ☐ No
If so, describe.

This proposal has been designed to enhance the site drainage by including mechanisms to control water quality and quantity.

- d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Measures included in this proposal have been designed specifically to control surface runoff and improve drainage patterns for the site.

4. Plants

- a. Check the types of vegetation found on the site:

☐ alder ☐ maple ☐ aspen ☐ fir ☐ cedar ☐ pine ☐ other tree(s) (specify):

☐ shrubs ☒ grass ☐ pasture ☐ crop or grain ☐ orchards, vineyards or other permanent crops

☐ cattail ☐ buttercup ☐ bulrush ☐ skunk cabbage ☐ other wet soil plant(s) (specify): Insert text here.

☐ water lily ☐ eelgrass ☐ milfoil ☐ other water plant(s) (specify): Insert text here.

☒ other types of vegetation Scotch broom

- b. What kind and amount of vegetation will be removed or altered?

All vegetation within the site will be removed. The site is presently sparsely vegetated.

- c. List threatened and endangered species known to be on or near the site.

None.

- d. List all noxious weeds and invasive species known to be on or near the site.

None.

5. Animals

- a. Check any birds and other animals which have been observed on or near the site or are known to be on or near the site.

☐ hawk ☐ heron ☐ eagle ☒ songbirds, ☐ other bird(s) (specify): Insert text here.

☒ deer ☐ bear ☐ elk ☐ beaver ☐ other mammal(s) (specify): Insert text here.

☐ bass ☒ salmon ☒ trout ☐ herring ☐ shellfish ☐ other fish (specify): Insert text here.

- b. List any threatened and endangered species known to be on or near the site.

The site is approximately less than 1,000 feet from the Cowlitz River and Salmon Creek, which according to the Washington Department of Fish and Wildlife Priority Habitats and Species list may contain:

Cutthroat - Candidate for Federal Status - Cowlitz River and Salmon Creek;

Steelhead - Threatened - Cowlitz River and Salmon Creek;
Coho - Threatened - Cowlitz River and Salmon Creek;
Chinook - Cowlitz River

- c. Washington as whole lies within the Pacific Flyway. Is the site part of any other migration route?
☒ Yes ☐ No
If so, explain.

The site is located within what is commonly referred to as the Pacific Flyaway. This Flyaway is the general migratory route for various species of ducks, geese, and other migratory fowl. The Flyaway stretched from Alaska to Mexico and from the Pacific Ocean to the Rocky Mountains. Neotropical birds, such as Robins, may also seasonally utilize or be near the site.

- d. Proposed measures to preserve or enhance wildlife, if any:

Landscaping included in the final condition of the finished subdivision may provide some habitat for wildlife typical for urban environments.

- e. List any invasive animal species known to be on or near the site.

Scotch Broom which shall be cleared as part of the activities necessary to develop the site.

6. Energy and Natural Resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The completed project's energy needs shall be met by electric and natural gas.

- b. Would your project affect the potential use of solar energy by adjacent properties?
☐ Yes ☒ No
If so, generally describe.

Insert text here.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

This proposal does not include the construction of buildings. Future building applications shall be required to demonstrate compliance with the State of Washington Energy Code and the adopted version of the International Building Code.

7. Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?
☐ Yes ☒ No
If so, describe.

Insert text here.

- 1) Describe any known or possible contamination at the site from present or past uses.

Unknown.

- 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no known existing hazardous chemicals/conditions that might affect the project development and design. The Applicant shall be required to comply with all applicable local, state and federal regulations during the construction of this proposal.

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Construction equipment will require the use of various petroleum products for fuel, hydraulics and lubrication.

- 4) Describe special emergency services that might be required.

Special emergency services are not anticipated for this proposal. However, State-compliant protocol shall be followed should any unforeseen complications arise with the spillage of hazardous or otherwise toxic chemicals. A spill prevention and/or response plan shall be on site at all times during construction.

- 5) Proposed measures to reduce or control environmental health hazards, if any:

None.

b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Some traffic noise from the Interstate 5 (I-5) Highway, may be heard currently at the site, but it not expected to adversely affect the proposal.

- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction on the site will create short-term noise and shall not be allowed after 7 p.m. or before 7 a.m. Visitor, resident, mail and parcel deliveries, solid waste and recycling vehicles, and HVAC equipment will be associated on a long-term basis. Other long-term noise sources which may be created include small power tools associated with landscaping maintenance and upkeep typical to residential life.

- 3) Proposed measures to reduce or control noise impacts, if any:

Construction activities shall be limited between 7 a.m. and 7 p.m.

8. Land and Shoreline Use

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? ☐ Yes ☒ No
If so, describe.

The site is vacant with an existing uninhabited residential building and outbuildings. Surrounding area includes undeveloped Department of Natural Resources property, Timberlake Church and established single-family residential use.

- b. Has the project site been used as working farmland or working forest land?
☒ Yes ☐ No
If so, describe.

The site has not been in active farmland use for several decades.

How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any?

None.

If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

Not applicable. The site does not consist of resource lands.

- 1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? ☐ Yes ☒ No
If so, how?

Insert text here.

- c. Describe any structures on the site.

The existing structures are dilapidated and require removal to facilitate the construction of the subdivision.

- d. Will any structures be demolished? ☒ Yes ☐ No
If so, what?

The existing uninhabited residential building and outbuildings on site require demolition and removal.

- e. What is the current zoning classification of the site?

The underlying zoning district of the site is Industrial and the land use designation pursuant to the approved Landing on the Cowlitz Master Plan is residential.

- f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the site is Industrial.

- g. If applicable, what is the current shoreline master program designation of the site?

The site is located outside of the jurisdictional shoreline area.

- h. Has any part of the site been classified as a critical area by the city or county?
☒ Yes ☐ No
If so, specify.

The site is currently located in a floodplain but shall be filled as part of this proposal, bringing all pad elevations above the base flood elevation (BFE). Portions

of the site have already been subject to mass grading activities as approved by the City of Castle Rock (ref. file no. CR2223).

- i. Approximately how many people would reside or work in the completed project?

Based on the State of Washington Department of Ecology's (ECA) standard calculation for occupancy rates utilized in instances when the exact number not yet known, there will be approximately one hundred and twenty six (126) people residing in the complete project. The assumption was made based on the total number of residential dwelling units multiplied by 2.8 (persons per dwelling unit) per ECA's standard calculation.

- j. Approximately how many people would the completed project displace?

None. The site is devoid of inhabitants.

- k. Proposed measures to avoid or reduce displacement impacts, if any:

None.

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

This proposal includes a residential use within the residential land use designated area of the approved Landing on the Cowlitz. Surrounding area use consists of existing single-family residential use, a church and undeveloped Department of Natural Resources property.

- m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

None. This proposal is not located near lands designated for agricultural or forest use.

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

This proposal includes the provision of forty-five (45) middle income housing units.

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

One (1) uninhabited housing unit will be eliminated to facilitate the development of the subdivision.

- c. Proposed measures to reduce or control housing impacts, if any:

None.

10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas? What is the principal exterior building material(s) proposed?

This proposal does not at this time include structures. However, once building permit applications are submitted at a later date, the tallest allowable building shall be forty (40) feet in conformance with the approved Landing on the Cowlitz Master Plan, Condition of Approval 5.c(3).

- b. What views in the immediate vicinity would be altered or obstructed?

The site is devoid of designated scenic views. Once the subdivision has been constructed, housing, landscaping and roads shall be visible in the immediate vicinity.

- c. Proposed measures to reduce or control aesthetic impacts, if any:

None.

11. Light and Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Typical residential building and street lighting will be produced by the completed project and will be most visible during the nighttime hours.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

The installation of illuminated materials will be done in such as was as to minimize dispersion off-site and not create a safety hazard.

- c. What existing off-site sources of light or glare may affect your proposal?

It is not anticipated that existing off-site source of light or glare will affect this proposal.

- d. Proposed measures to reduce or control light and glare impacts, if any:

This proposal has been designed to include the installation of lighting in order to meet safety and security criteria as set forth by the City of Castle Rock Municipal Code for a residential site development. Lighting included in this proposal shall include mitigation such as downward shielding of lighting fixtures so as to minimize dispersion and control for potential off-site impacts.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?

The nearest recreational opportunity to the site is the Lions Pride Park Cowlitz River Access which is located approximately 0.8 miles away from the proposed subdivision.

- b. Would the proposed project displace any existing recreational uses? ☐ Yes ☒ No
If so, describe.

Insert text here.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

This proposal does not include mitigation measures as none are needed. This proposal includes the provision of park area that will be dedicated to the City of Castle Rock.

13. Historic and cultural preservation

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? ☐ Yes ☒ No

If so, specifically describe.

Insert text here.

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. ☐ Yes ☒ No
Are there any material evidence, artifacts, or areas of cultural importance on or near the site?
☐ Yes ☒ No

Please list any professional studies conducted at the site to identify such resources.

An Archaeological Survey for the Castle Rock Landing on the Cowlitz Project was produced by Archaeological Investigations Northwest, Inc. on February 15, 2022 which evaluated area that encompassed the entire master plan.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with local tribe(s) and the state Department of Archeology and Historic Preservation, archaeological surveys, historic maps, GIS data, etc.

The methods used to assess the potential impacts to cultural and historic resources included an evaluation of archaeological site distribution maps, site form files, historical maps, and literature pertaining to archaeological research conducted in the vicinity of the project area.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

None. There are no known historic or cultural resources at the site.

14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. If any, show on site plan.

Generally, the site shall be accessible via Huntington Avenue South via the Phase 1 roadways. This proposal includes the provision of public street access to the subdivision via Road A and B included in the Phase 1 Access for the approved Landing on the Cowlitz Master Plan.

- b. Is the site or affected geographic area currently served by public transit? ☐ Yes ☒ No
If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Insert text here.

- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

None.

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? ☒ Yes ☐ No
If so, generally describe (indicate whether public or private).

This proposal requires the inclusion of new public streets to service the subdivision.

- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? ☐ Yes ☒ No

If so, generally describe.

A railway line is located adjacent to the Landing on the Cowlitz Master Plan but is not within the immediate vicinity of the proposed subdivision. This proposal shall not involve the use of the railway line.

- f. How many vehicle trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

It is anticipated that the completed project shall result in a total of 368 external weekday trips.

- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? ☐ Yes ☒ No
If so, generally describe.

Insert text here.

- h. Proposed measures to reduce or control transportation impacts, if any:

No mitigation measures are required or included in this proposal as the anticipated impacts were evaluated and accounted for within the approved Landing on the Cowlitz Master Plan.

15. Public Services

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? ☒ Yes ☐ No
If so, generally describe.

This proposal may result in an increased need for additional fire / emergency and police protection with the proposed development of forty-five (45) single-family residential lots.

- b. Proposed measures to reduce or control direct impacts on public services, if any.

This proposal, as with any new construction, will include the provision of urban utilities and payment of development charges and impact fees.

16. Utilities

- a. Check utilities currently available at the site:

☒ electricity ☒ natural gas ☒ potable water ☒ irrigation water ☒ refuse service ☒ telephone ☒
sanitary sewer ☒ septic system ☒ other (specify): internet

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

This proposal includes the provision of public water, sewer, electric and natural gas. Utilities providers anticipated are as follows:

City of Castle Rock: Water and sewer

Cowlitz PUD: Electricity
Internet/Telephone: Xfinity

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Signed by:


Manually sign above, print, & scan; or
insert electronic signature here.

Name:

Ingrid Friedberg

Position:

Special Projects Manager

Agency/Organization:

CT6, LLC

Date Submitted:

March 27, 2025

D. SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS

(Do NOT use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment. When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Insert text here.

Proposed measures to avoid or reduce such increases are:

Insert text here.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Insert text here.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Insert text here.

3. How would the proposal be likely to deplete energy or natural resources?

Insert text here.

Proposed measures to protect or conserve energy and natural resources are:

Insert text here.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species' habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Insert text here.

Proposed measures to protect such resources or to avoid or reduce impacts are:

Insert text heret.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Insert text here.

Proposed measures to avoid or reduce shoreline and land use impacts are:

Insert text here.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Insert text here.

Proposed measures to reduce or respond to such demand(s) are:

Insert text here.

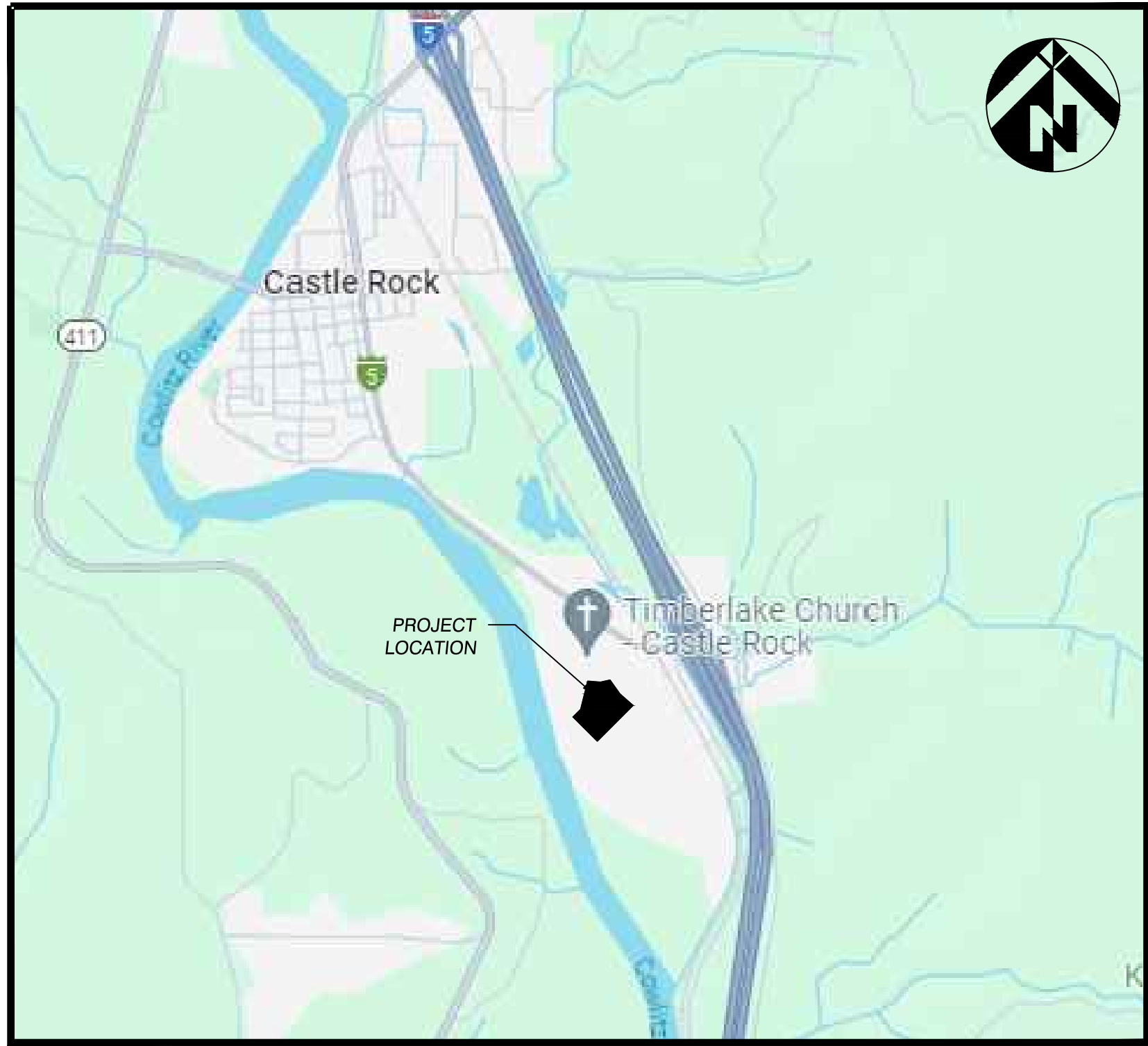
7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

Insert text here.

RIVER'S EDGE AT THE LANDING SUBDIVISION

PRELIMINARY LAND USE PLANS

NW QTR, SECTION 14
TOWNSHIP T9N, RANGE R2W W.M.



VICINITY MAP
N.T.S.

PROJECT PARCEL #308640100
PER BLA #CR-BLA-24-01 (AFN
#3762029 AND AFN #3763318)

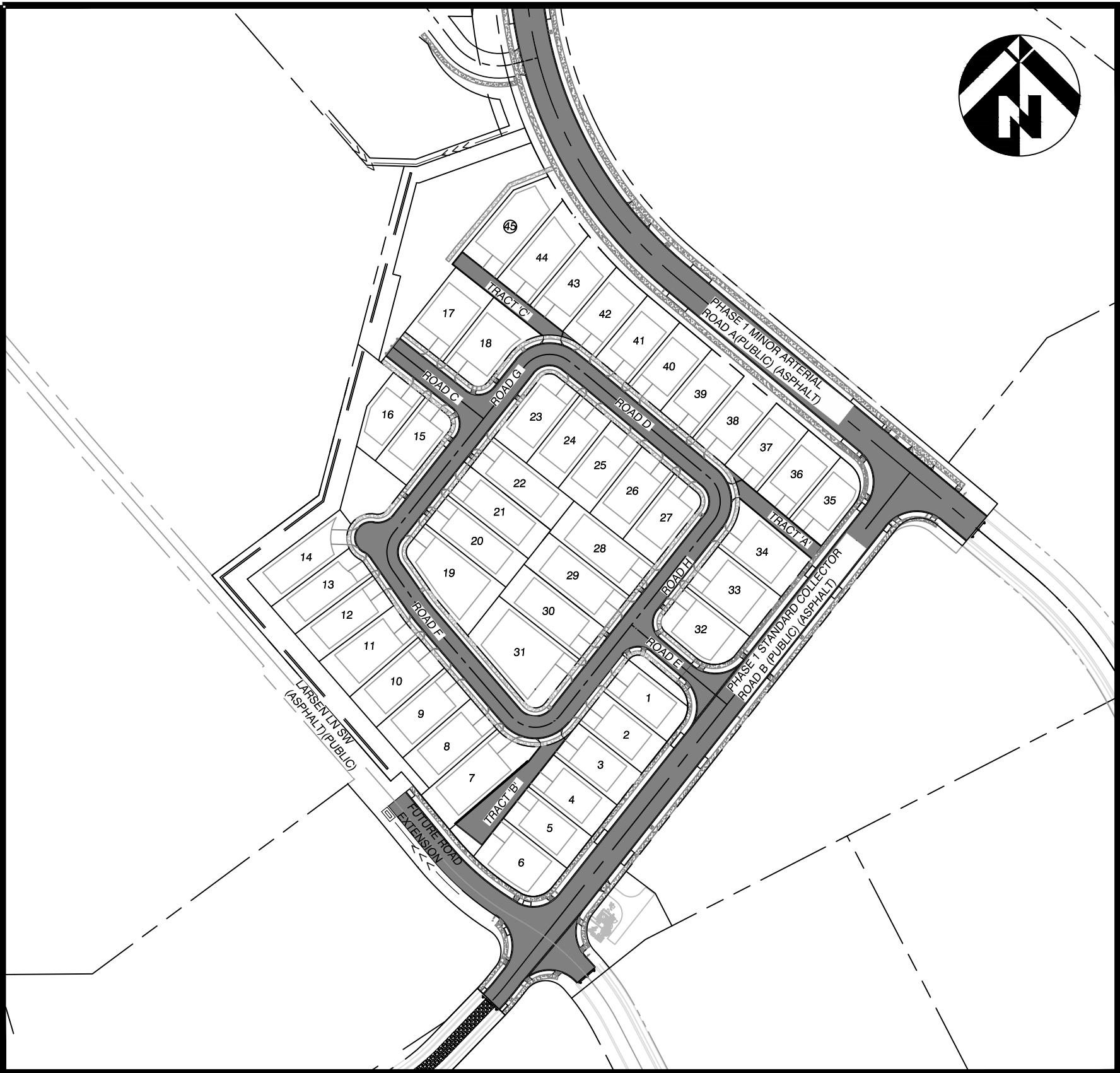
OWNER
CT6, LLC
SHANE TAPANI
PO BOX 1419
BATTLE GROUND, WA 98604
PHONE: 360-687-1148

CONTRACTOR
TAPANI, INC.
1705 SE 9TH AVE
BATTLE GROUND, WA 98604
JEROME SARKINEN
PHONE: 360-907-7615

ENGINEER
MacKay Sposito
18405 SE MILL PLAIN BLVD, SUITE 100
VANCOUVER, WA 98683
C (714)732-8563
O (360)823-1244
www.mackaysposito.com
ENGINEER: TAYLOR WILSON, PE
TWILSON@MACKAYSPOSITO.COM

VERTICAL DATUM
THE ELEVATIONS SHOWN ON THIS MAP ARE BASED ON AN
OPUS SOLUTION AT CP 1 WITH A DERIVED NAVD88
ORTHOMETRIC ELEVATION OF 46.26 FEET.

HORIZONTAL DATUM
WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH
ZONE (4602), NAD83(2011)(EPOCH: 2010.0000), US SURVEY
FOOT. DISTANCES SHOWN HEREON ARE GROUND
DISTANCES. TO CONVERT TO GRID MULTIPLY BY THE
COMBINED SCALE FACTOR OF 0.9999321353 ABOUT CP1



SITE MAP
1" = 150'

Sheet List Table

Sheet Title	Sheet Number
COVER SHEET	C0.0
SHEET INDEX PLAN	C0.1
EXISTING CONDITIONS	C0.2
PRELIMINARY PLAT	C1.0
GRADING AND EROSION CONTROL PLAN (PHASE 1)	C2.0
GRADING AND EROSION CONTROL PLAN (PHASE 2)	C2.1
STREET AND STORM PLAN (PHASE 1)	C3.0
STREET AND STORM PLAN (PHASE 2)	C3.1
STREET SECTIONS	C3.2
MAIN CIRCULATION STREET AND STORM PROFILE	C3.3
ROAD C AND ROAD E STREET AND STORM PROFILES	C3.4
SEWER AND WATER PLAN (PHASE 1)	C4.0
SEWER AND WATER PLAN (PHASE 2)	C4.1
MAIN CIRCULATION SEWER PROFILE	C4.2
ROAD C AND ROAD E SEWER PROFILES	C4.3
PRELIMINARY MASTER PHASING PLAN	MP1.0
PRELIMINARY MASTER SIGNAGE PLAN	MP1.1
PRELIMINARY MASTER PARKS, RECREATION, AND OPEN SPACE PLAN	MP1.2

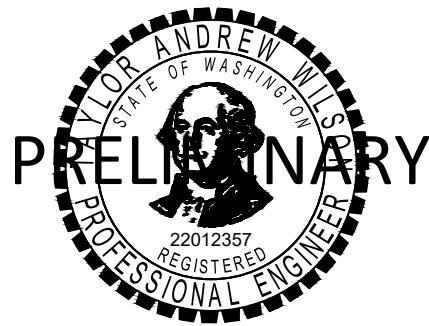
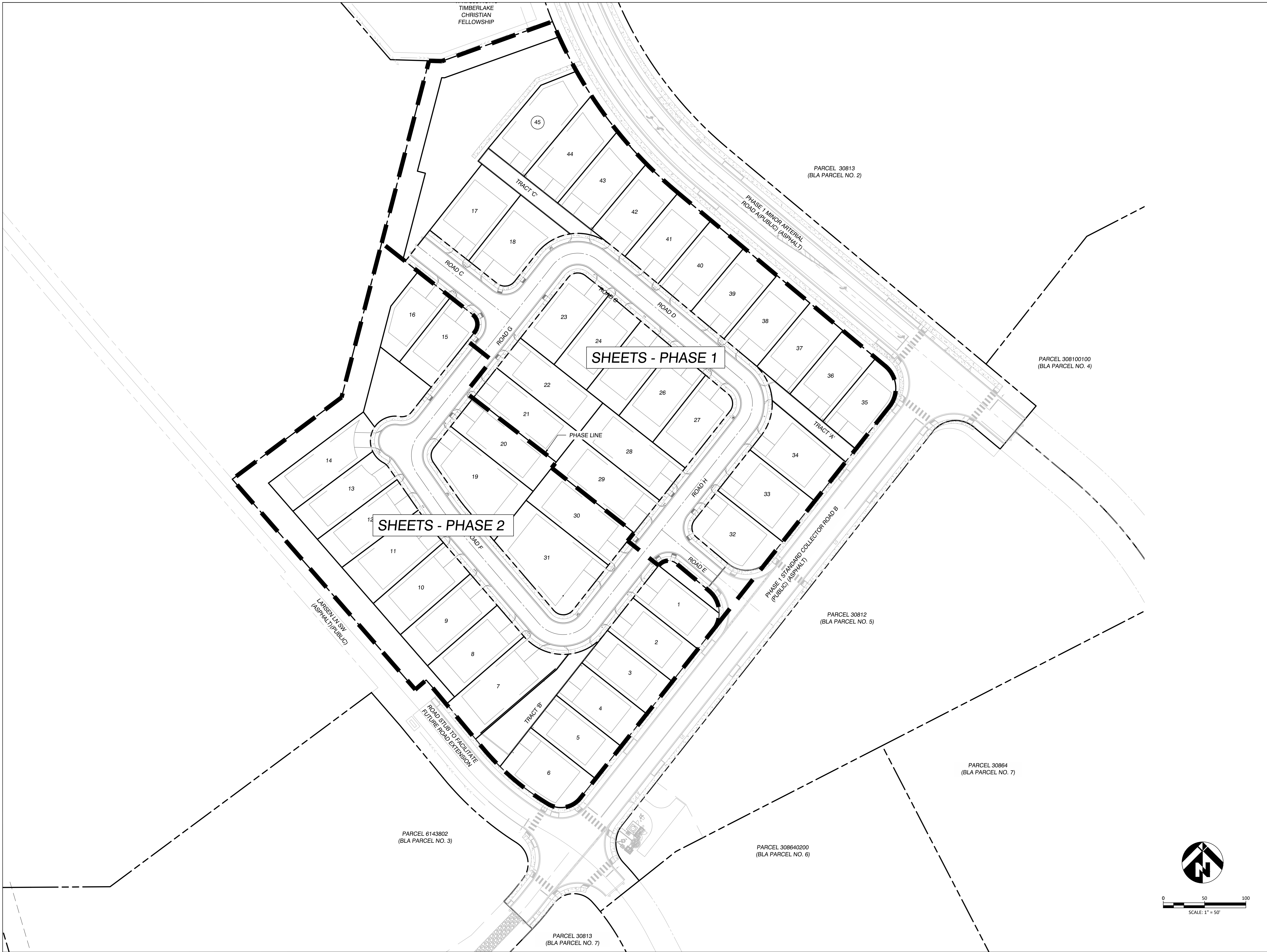
Sheet Title	Sheet Number
LANDSCAPE PLANTING PLAN	L1.0
PLANTING SPECIFICATIONS AND DETAILS	L1.1
IRRIGATION SPECIFICATIONS	L1.2
STREET PHOTOMETRICS	CL1.0
FIXTURE SPECIFICATIONS	CL1.1

LEGEND

---	PERIMETER OF SITE
---	RIGHT-OF-WAY LINE
---	CENTERLINE OF ROAD
---	FACE OF CURB
---	LOT LINE
---	EASEMENT LINE
STM	STORM SEWER LINE
STM	EXIST STORM SEWER
SAN	SANITARY SEWER LINE
SAN	EXIST SANITARY SEWER
W	WATER SERVICE LINE
W	EXIST WATER LINE
123	GRADED CONTOUR LINE
123	EXIST CONTOUR LINE
MANHOLE	WATER SERVICE METER
WATER VALVE AND BOX	TELEPHONE RISER
FIRE HYDRANT ASSEMBLY	GAS RISER
CLEAN OUT	ELECTRIC RISER
CATCH BASIN	UTILITY POLE
THRUST BLOCK	UTILITY POLE W/ LIGHT
	SIGN POST



FILE: W\18591 LOTC Phase 1\500 Design\502 Drawings\Sheets\18591.01 - Phase 1 Subdivision\CO.3 SHEET INDEX PLAN.dwg PLOTSTYLE: Cover.stb



3/27/2025

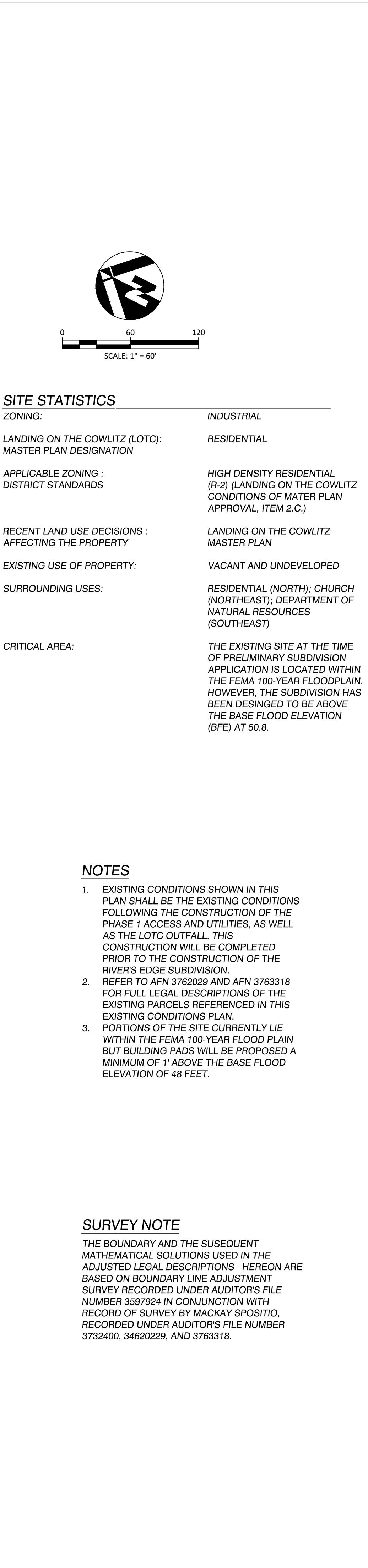
RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
SHEET INDEX PLAN

REVISIONS:

JOB NO.: 18591
DATE: 3/27/2025
SCALE: H: 1"= 50' V: N/A
DESIGNED BY: PJM
DRAWN BY: PJM
CHECKED BY: TAW

PRELIMINARY

C0.1



RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

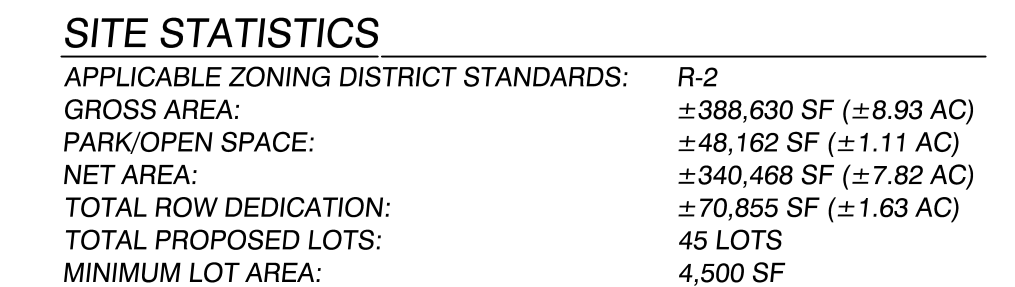
PRELIMINARY PLAT

REVISIONS

OB NO.:	18592
DATE:	3/27/2025
SCALE: H: 1" = 40'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C1.0



MINIMUM LOT SIZE:	3,500 SF
MINIMUM LOT WIDTH/DEPTH:	NONE PURSUANT TO LOT CONDITION OF APPROVAL 5.A.

FRONT YARD/GARAGE: 20 FEET
SIDE YARD: 5 FEET
REAR YARD: 20 FEET

PARKING: 90 OFF-STREET PARKING SPACES (2 OFF-SITE PARKING SPACES PER DWELLING UNIT)

PARK AREA: 7,830 SF(174 SF PER LOT)

LANDSCAPING: 20-FOOT LANDSCAPE
BUFFER ABUTTING
PRIVATELY-OWNED
PROPERTIES NOT
INCLUDED IN THE LOTC
MASTER PLAN

LOT AREA:	4,500 SF MINIMUM
LOT WIDTH:	45 FEET MINIMUM
LOT DEPTH:	100 FEET MINIMUM

<u>LOT SETBACKS</u>	
FRONT YARD/GARAGE:	20 FEET
SIDE YARD:	5 FEET
REAR YARD:	20 FEET

LANDSCAPE BUFFER FOR LOTS ABUTTING
PRIVATELY OWNED NON-LOT
MASTER PLAN PROPERTY: 20 FEET

STORM EASEMENT FOR LOTS ABUTTING
PRIVATELY OWNED NON-LOT
MASTER PLAN PROPERTY : 10 FEET

PARKING : EACH LOT HAS BEEN
SIZED TO ACCOMMODATE
4 CARS (2 IN GARAGE AND
2 IN DRIVEWAY, EACH
SIZED UP TO 9 FEET WIDE
BY 19 FEET LONG)

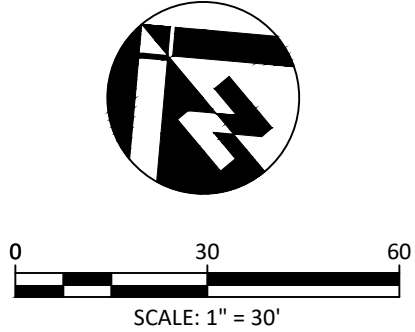
21 ON-STREET PARKING SPACES (SIZED UP TO 8 FEET WIDE BY 20 FEET LONG WITH A FOOT GAP BETWEEN EACH)

TRACT	PURPOSE	AREA
TRACT A	ACCESS ROAD	±2,595 SF
TRACT B	ACCESS ROAD	±5,052 SF
TRACT C	ACCESS ROAD	±3,125 SF
TRACT D	PARK/OPEN SPACE	±18,396 SF
TRACT E	OPEN SPACE	±4,250 SF
TRACT F	OPEN SPACE	±29,766 SF
TRACT G	MONUMENT	±1,182 SF
	SIGNAGE AREA	

1. ALL PROPOSED STORMWATER EASEMENTS ARE TO BE DEDICATED TO THE CITY OF CASTLE ROCK
2. FOR PROPOSED ROAD SECTIONS, SEE SHEET C3.2.
3. ALL PUBLIC ROADS SHOWN ON THIS PLAN TO BE DEDICATED TO THE CITY OF CASTLE ROCK.
4. MAINTENANCE FOR ALL PRIVATE DRIVEWAY TRACTS ON THIS PLAN TO BE MAINTAINED BY AN HOA.

Page 76 of 51





	FINISHED GRADE CONTOUR
	EXISTING CONTOUR
	DRAINAGE SWALE
	AREA OF CUT
	AREA OF FILL
	INLET PROTECTION
	STABILIZED CONSTRUCTION ENTRANCE
	SILT FENCE
	HIGH VISIBILITY FENCE

NOTE: DUE TO THE LIMITED EROSION CONTROL STANDARDS AVAILABLE BY THE CITY OF CASTLE ROCK, ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL CONFORM WITH WSDOT STANDARDS. HOWEVER, CONTRACTOR MAY USE ALTERNATE DESIGNS IF THEY ARE APPROVED BY THE SITE INSPECTOR PRIOR TO INSTALLATION.

CUT	2,000 CY
FILL	15,000 CY

NOTE: CUT AND FILL AREAS AND VOLUMES ARE CALCULATED FROM EXISTING GROUND TO FINISHED GRADE AND ARE NOT ADJUSTED FOR STRIPPINGS, TRENCH EXCAVATION, STRUCTURAL EXCAVATION OR SHRINK/SWELL. CONTRACTORS ARE SOLELY RESPONSIBLE FOR QUANTITY ESTIMATES FOR BIDDING PURPOSES.

- 1) ALL EROSION CONTROL DEVICES PROPOSED SHALL CONFORM WITH WSDOT STANDARDS.
- 2) CONTRACTOR TO CONSTRUCT EQUIPMENT AND PARKING AREA AT A SUITABLE LOCATION PRIOR TO BEGINNING GRADING ACTIVITIES. LOCATION TO BE DETERMINED PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
- 3) IF TRACKING OF SEDIMENT FROM THE SITE BECOMES A PROBLEM, A WHEEL WASH SHALL BE INSTALLED AT THE SITE ENTRANCE.
- 4) STOCKPILE AREAS PLACED ONSITE SHALL BE COORDINATED BY THE CONTRACTOR AND SURROUNDED WITH SILT FENCE AND COVERED WITH PLASTIC AS NECESSARY DURING CONSTRUCTION. MATERIAL NOT STOCKPILED ONSITE SHALL BE REMOVED TO AN APPROPRIATE IMPORT SITE.
- 5) ANY SLOPE LESS THAN 3:1 TO BE STABILIZED WITH SEEDING AND MULCH/STRAW.
- 6) CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING BMP T5.13.
- 7) EROSION CONTROL INSPECTION REQUIRED BEFORE YOU BEGIN ANY SITEWORK
- 8) THE BASE FLOOD ELEVATION IS 48.0 AND MINIMUM PAD ELEVATION (AS SHOWN ON PLAN) IS 51.70.



3/27/2025

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

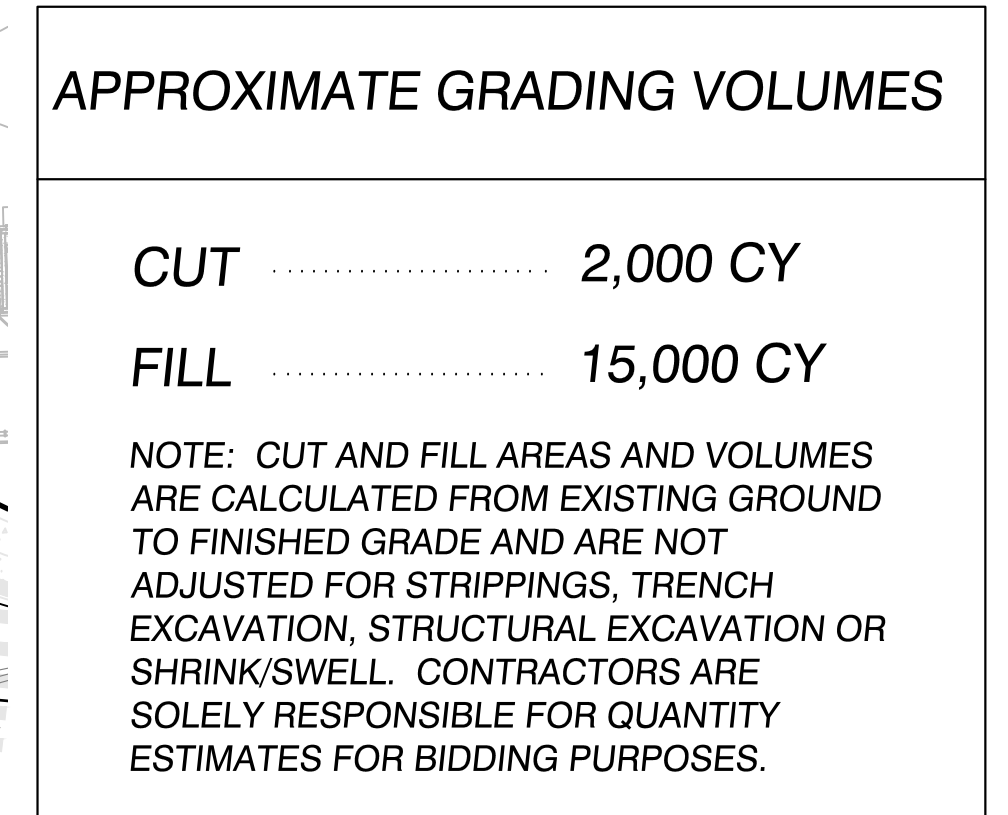
GRADING AND EROSION CONTROL PLAN (PHASE 1)

REVISIONS

JOB NO.:	18591
DATE:	3/27/2025
SCALE: H: 1" = 30'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

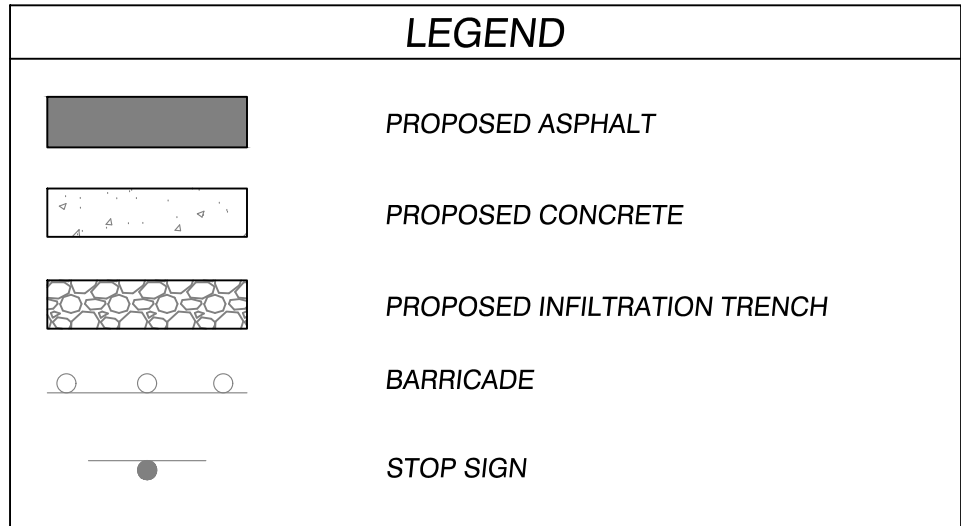
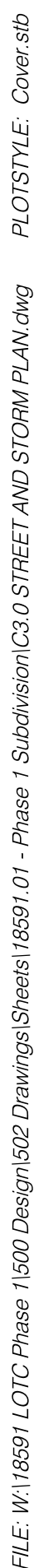
PRELIMINARY

C2.0



- 1) ALL EROSION CONTROL DEVICES PROPOSED SHALL CONFORM WITH WSDOT STANDARDS.
- 2) CONTRACTOR TO CONSTRUCT EQUIPMENT AND PARKING AREA AT A SUITABLE LOCATION PRIOR TO BEGINNING GRADING ACTIVITIES. LOCATION TO BE DETERMINED PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
- 3) IF TRACKING OF SEDIMENT FROM THE SITE BECOMES A PROBLEM, A WHEEL WASH SHALL BE INSTALLED AT THE SITE ENTRANCE.
- 4) STOCKPILE AREAS PLACED ONSITE SHALL BE COORDINATED BY THE CONTRACTOR AND SURROUNDED WITH SILT FENCE AND COVERED WITH PLASTIC AS NECESSARY DURING CONSTRUCTION. MATERIAL NOT STOCKPILED ONSITE SHALL BE REMOVED TO AN APPROPRIATE IMPORT SITE.
- 5) ANY SLOPE LESS THAN 3:1 TO BE STABILIZED WITH SEEDING AND MULCH/STRAW.
- 6) CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING BMP T5.13.
- 7) EROSION CONTROL INSPECTION REQUIRED BEFORE YOU BEGIN ANY SITEWORK
- 8) THE BASE FLOOD ELEVATION IS 48.0 AND MINIMUM PAD ELEVATION (AS SHOWN ON PLAN) IS 51.70.





1. HMA SECTIONS ARE TO BE CONSTRUCTED PER STREET SECTIONS, SHEET C3.2 .

1. ALL STORMWATER SYSTEMS WILL BE DESIGNED IN CONFORMANCE WITH CITY OF CASTLE ROCK STANDARDS AND THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.

2. ALL STORMWATER FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED WITH A BLANKET ACCESS AND INSPECTION EASEMENT OVER THE PROPERTY DEDICATED TO CITY OF CASTLE ROCK.
3. NATIVE SOILS ON THE SITE ARE CONSIDERED TO BE WWHM GROUP (EXCESSIVELY DRAINED SOILS A & B).
4. STORMWATER RUNOFF FROM PAVED SURFACES WILL BE ROUTED TO CONTECH STORMFILTER CATCHBASINS AND THEN CONVEYED TO AN OUTFALL AFTER PROPER TREATMENT. STORMWATER RUNOFF WILL BE INFILTRATED ON SITE AND/OR DISCHARGED INTO THE COWLITZ RIVER.
5. INSTALL INFILTRATION TRENCH PER DETAIL BELOW



REVISIONS:

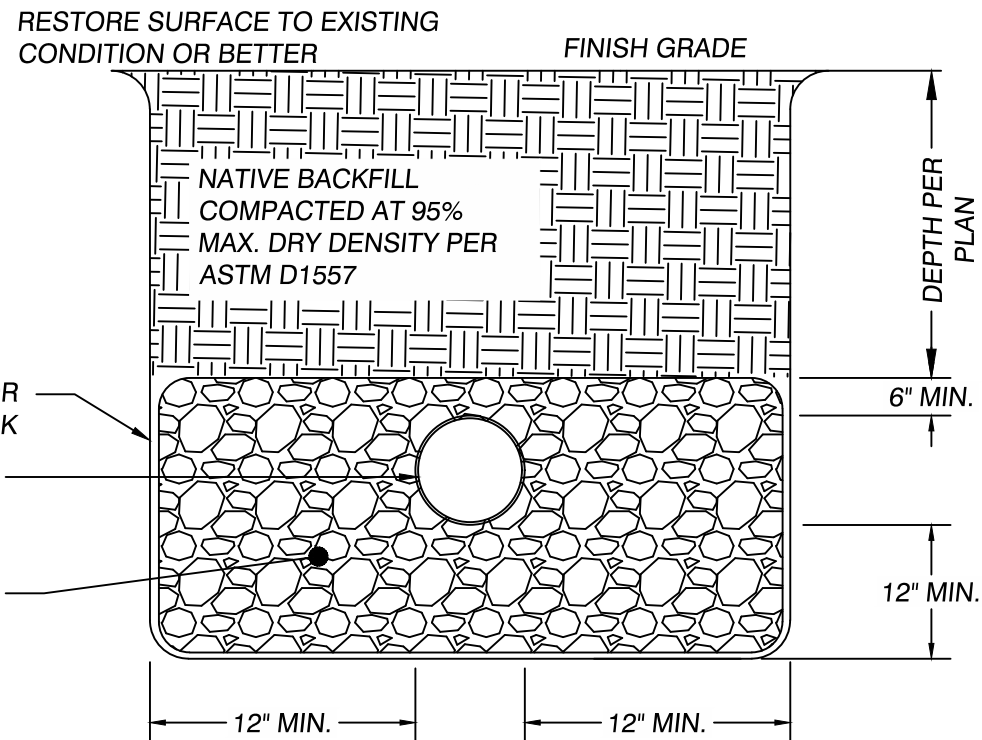
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DATE:	3/27/2025
SCALE: H: 1" = 30'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C3.0

FILE: W:\16591 LOTC Phase 1\500 Design\502 Drawings\Sheets\16591.01 - Phase 1 Subdivision\C3.0 STREET AND STORM PLAN.dwg PLOT STYLE: Cover.sbt

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AD3	N: 346548.33 E: 1035056.97 INSTALL DITCH INLET RIM = 40.52 12" IE OUT = 40.52	AD8	N: 346282.27 E: 103489.92 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.20 12" IE IN = 39.85 12" IE OUT = 39.85	CB15	N: 346010.85 E: 1035241.56 INSTALL 1-CARTRIDGE(18") CONTECH STORMFILTER CB RIM = 49.36 12" IE OUT = 47.09	BB9	STA 16+39.18 (7.0' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 49.70 12" IE IN = 43.27 12" IE IN = 44.89 12" IE OUT = 43.07	BB14	STA 20+43.64 (5.2' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.93 12" IE IN = 45.54 18" IE OUT = 45.38
AD4	N: 346547.04 E: 1035061.80 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.92 12" IE IN = 40.52 12" IE IN = 40.52 12" IE OUT = 40.52	AD9	N: 346050.26 E: 1035094.76 INSTALL 24" AREA DRAIN W/ SOLID COVER RIM = 41.53 12" IE IN = 39.23 12" IE OUT = 39.23	CB16	STA 18+53.78 (13.5' LT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 50.20 12" IE OUT = 46.20	BB10	STA 17+39.92 (7.2' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 49.99 12" IE IN = 43.77 18" IE IN = 44.09 12" IE OUT = 43.57	DD1	STA 13+78.53 (55.9' RT-ROAD B) INSTALL 48" STM MH RIM = 49.53 18" IE OUT = 42.22
AD5	N: 346462.71 E: 1035034.03 INSTALL DTCH INLET RIM = 40.88 12" IE OUT = 40.34	AD10	N: 346046.36 E: 1035090.20 INSTALL DITCH INLET RIM = 42.80 12" IE IN = 39.22 18" IE OUT = 39.22	CB17	STA 18+53.78 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 50.20 12" IE IN = 46.06 12" IE OUT = 45.56	BB11	STA 18+00.88 (4.8' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.22 18" IE IN = 44.17 12" IE OUT = 43.97	EE1	N: 346073.60 E: 1035291.06 INSTALL 48" STM MH RIM = 50.53 12" IE IN = 44.43 18" IE OUT = 44.23
AD6	N: 346461.42 E: 1035038.86 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.76 12" IE IN = 40.34 12" IE IN = 40.34 12" IE OUT = 40.34	CB13	STA 16+49.18 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 49.59 12" IE OUT = 45.59	CB18	STA 20+66.47 (37.4' LT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 50.36 12" IE OUT = 46.36	BB12	STA 18+48.78 (5.0' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.36 18" IE IN = 44.53 12" IE IN = 45.51 18" IE OUT = 44.33		
AD7	N: 346374.13 E: 1035015.47 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.54 12" IE IN = 40.16 12" IE OUT = 40.16	CB14	STA 16+49.25 (13.6' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 49.59 12" IE IN = 45.45 12" IE OUT = 44.95	CB19	STA 20+45.96 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 50.78 12" IE IN = 46.08 12" IE OUT = 45.58	BB13	STA 19+17.27 (5.1' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.56 18" IE IN = 44.96 18" IE OUT = 44.76		

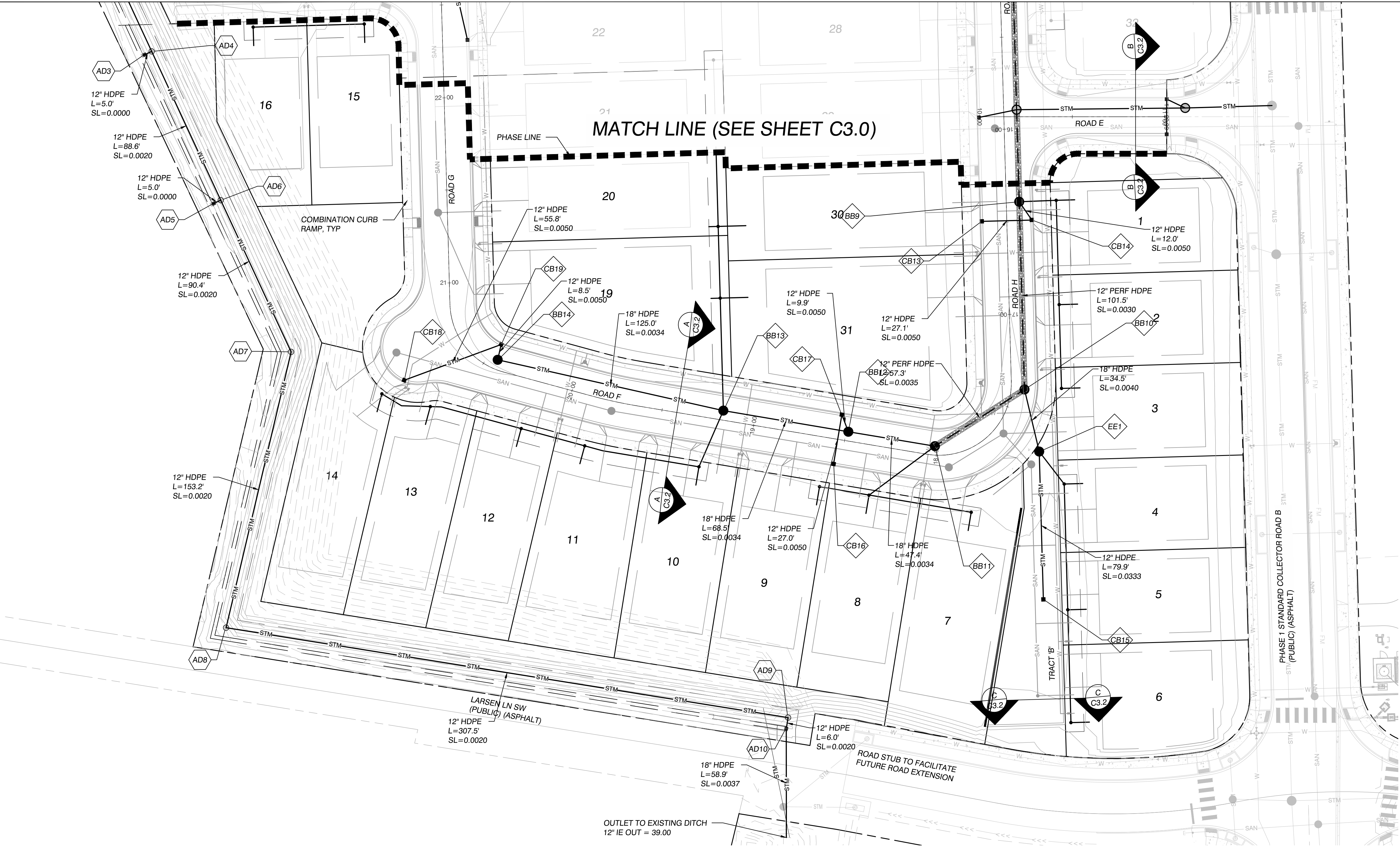
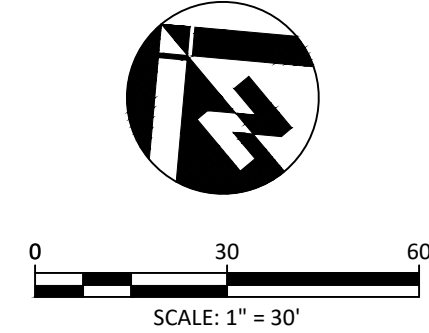


INFILTRATION TRENCH SECTION
NO SCALE

- NOTE:**
- HMA SECTIONS ARE TO BE CONSTRUCTED PER STREET SECTIONS, SHEET C3.2 .
- STORMWATER:**
- ALL STORMWATER SYSTEMS WILL BE DESIGNED IN CONFORMANCE WITH CITY OF CASTLE ROCK STANDARDS AND THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.
 - ALL STORMWATER FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED WITH A BLANKET ACCESS AND INSPECTION EASEMENT OVER THE PROPERTY DEDICATED TO CITY OF CASTLE ROCK.
 - NATIVE SOILS ON THE SITE ARE CONSIDERED TO BE WWHM GROUP 1 (EXCESSIVELY DRAINED SOILS A & B).
 - STORMWATER RUNOFF FROM PAVED SURFACES WILL BE ROUTED TO CONTECH STORMFILTER CATCHBASINS AND THEN CONVEYED TO AN OUTFALL AFTER PROPER TREATMENT. STORMWATER RUNOFF WILL BE INFILTRATED ON SITE AND/OR DISCHARGED INTO THE COWLITZ RIVER.
 - INSTALL INFILTRATION TRENCH PER DETAIL BELOW

LEGEND

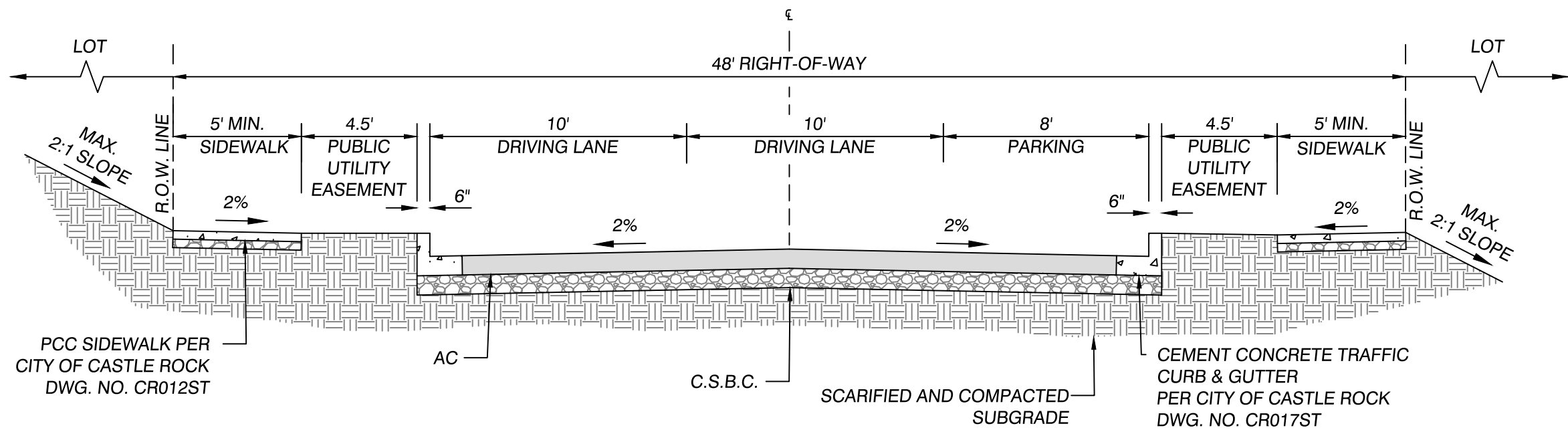
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED INFILTRATION TRENCH
- BARRICADE
- STOP SIGN



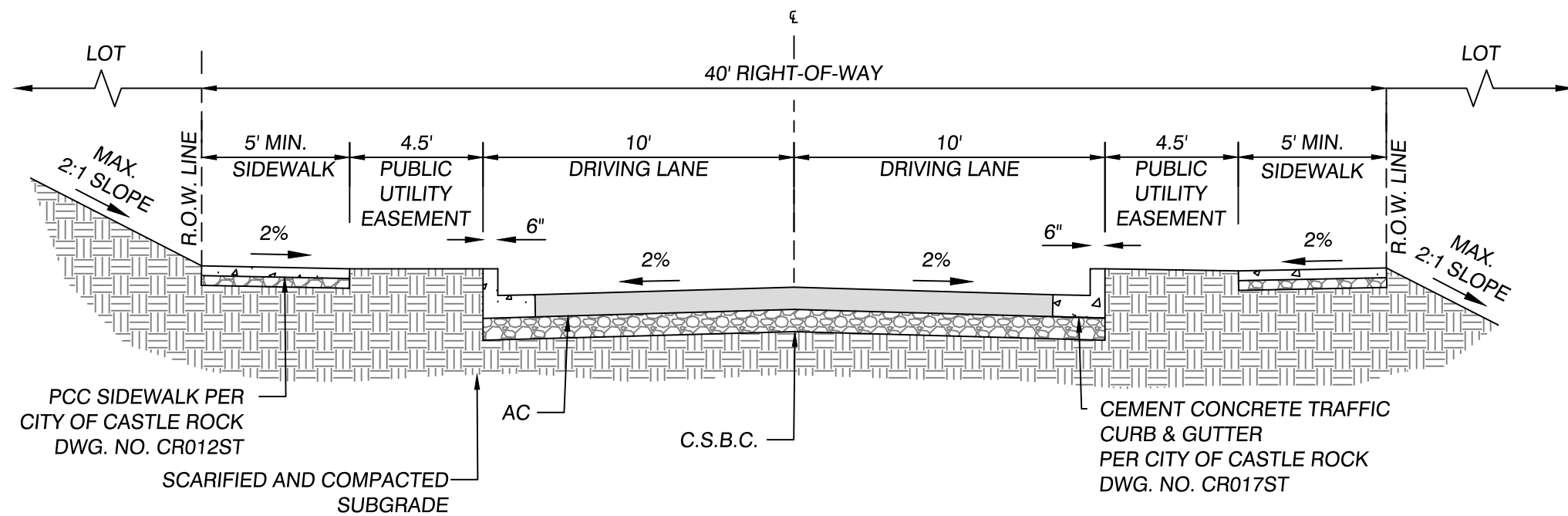
RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

STREET AND STORM PLAN (PHASE 2)

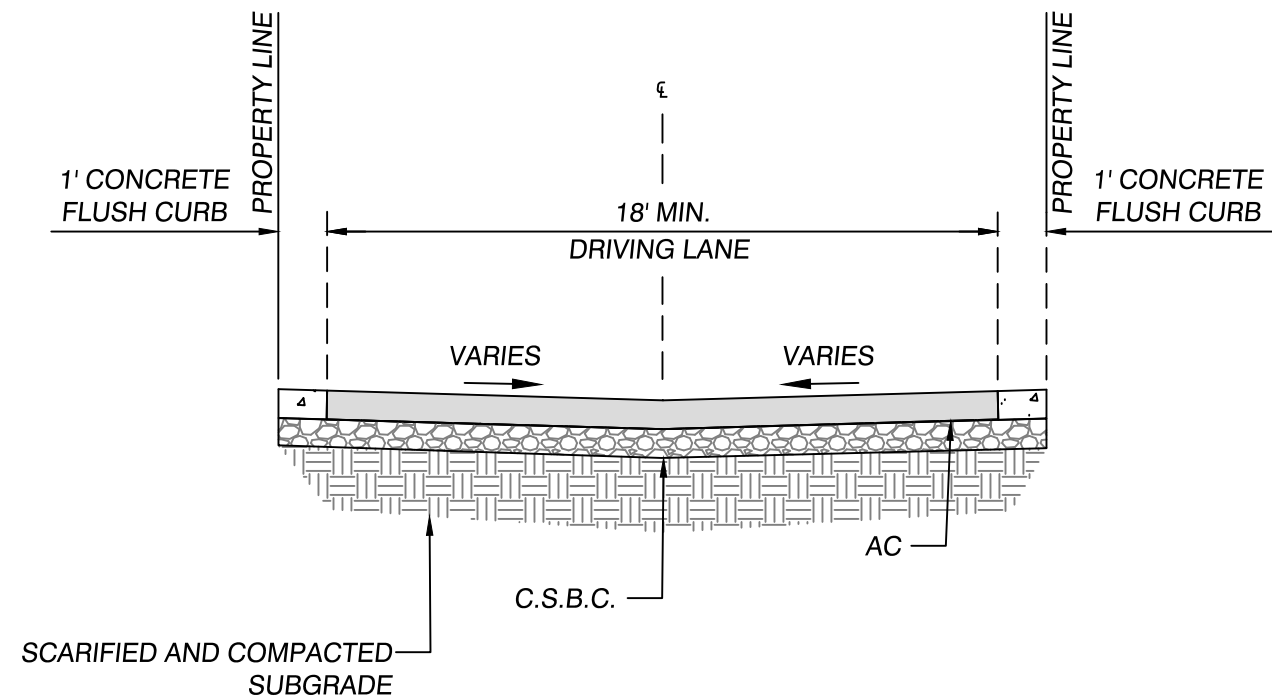
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SECTION A-A - RESIDENTIAL LOCAL ACCESS ROADWAY SECTION



SECTION B-B - SUBDIVISION ENTRANCE ROADWAY SECTION



SECTION C-C - PRIVATE TRACT SECTION

AC PAVEMENT SECTIONS

	RESIDENTIAL LOCAL ACCESS	PRIVATE TRACTS
AC THICKNESS	3"	3"
# OF AC LIFTS	1	1
CRUSHED SURFACING BASE COURSE DEPTH	9"	6"
SUBGRADE DEPTH	12"	12"

NOTE:

PAVEMENT SECTIONS SHOWN ARE PRELIMINARY RECOMMENDATIONS AS PROVIDED BY COLUMBIA WEST ENGINEERING DURING MASTER PLANNING PROCESS AND ARE BASED ON THE PROJECT GEOTECHNICAL REPORT, DATED MARCH 30, 2023. FINAL PAVEMENT SECTIONS FOR PUBLIC AND PRIVATE ROADWAYS WITHIN LOTC SHALL BE DESIGNED AND APPROVED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER PRIOR TO FINAL PERMIT APPROVAL.

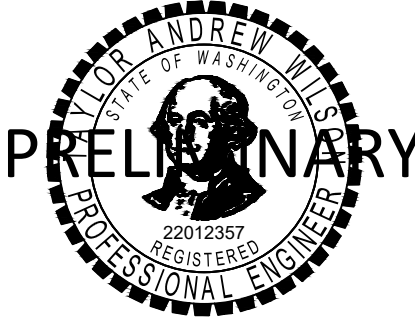
RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
STREET SECTIONS

REVISIONS:

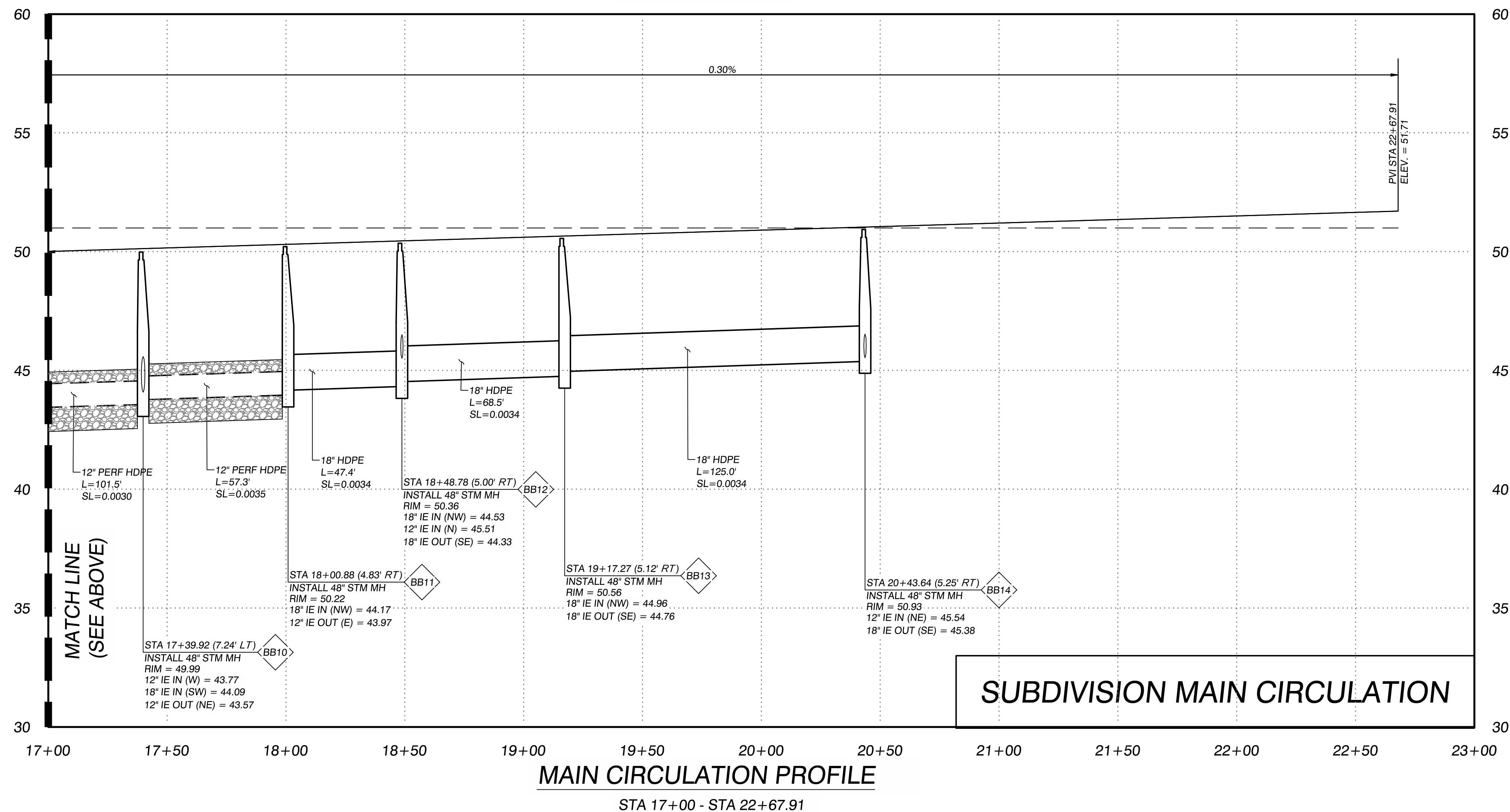
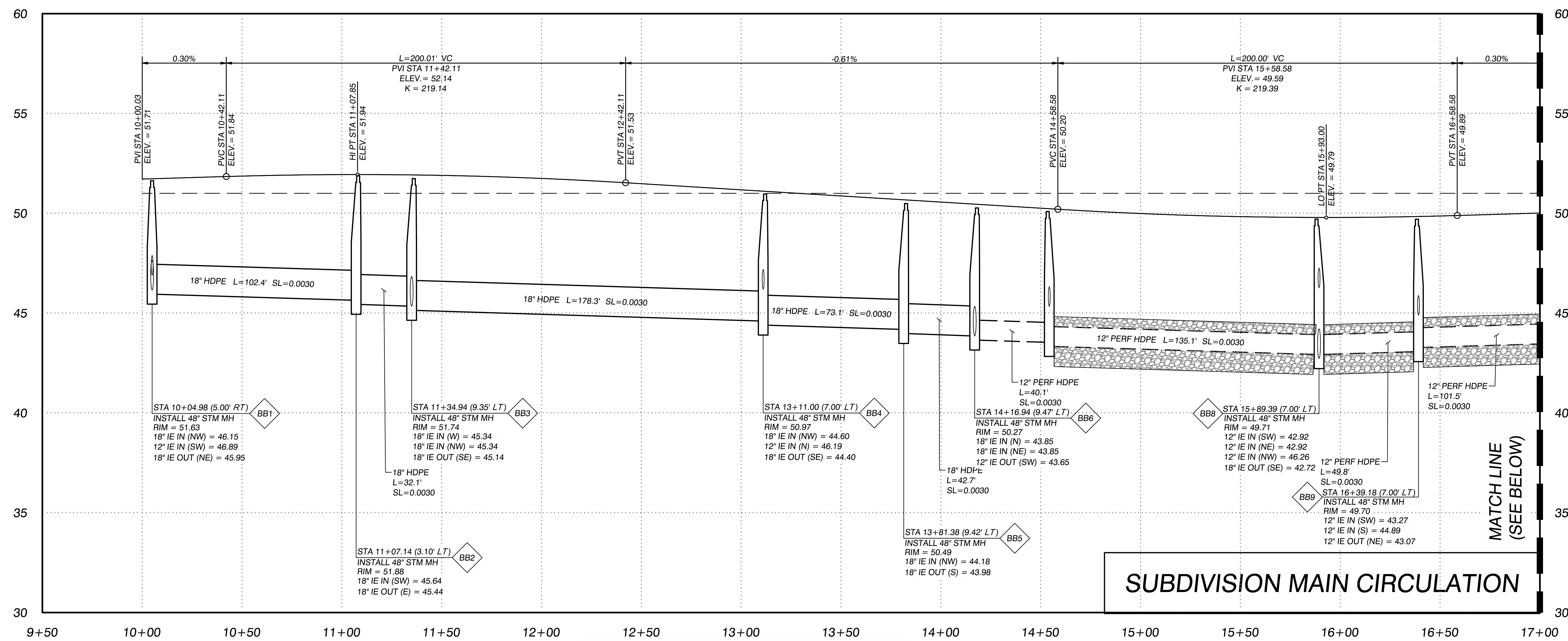
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DESIGNED BY: PJM
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CHECKED BY: TAW

PRELIMINARY

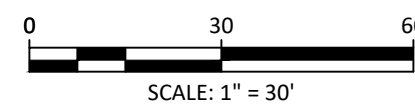
C3.2



3/27/2025



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RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

MAIN CIRCULATION STREET AND STORM PROFILE

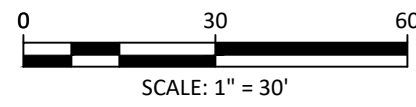
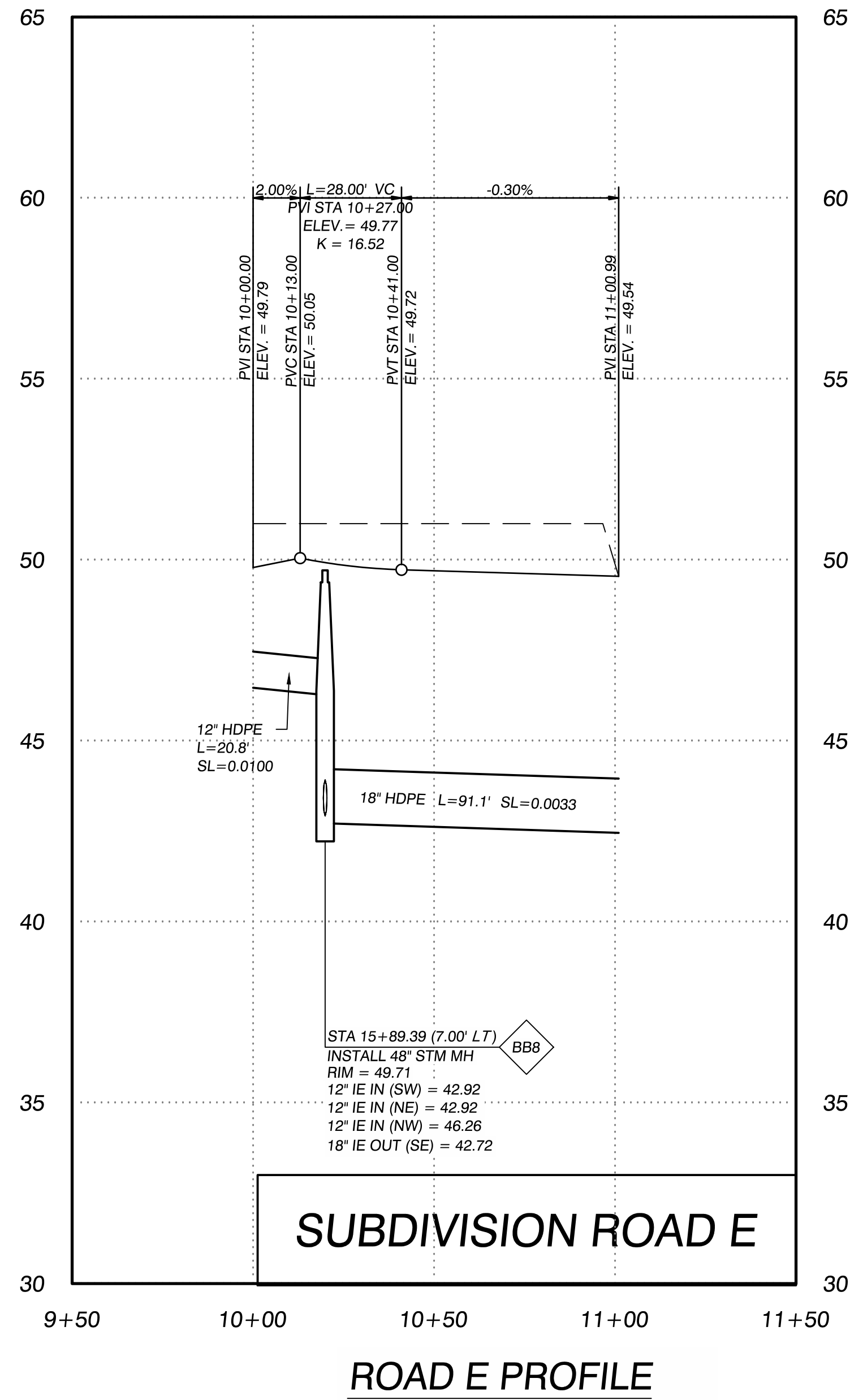
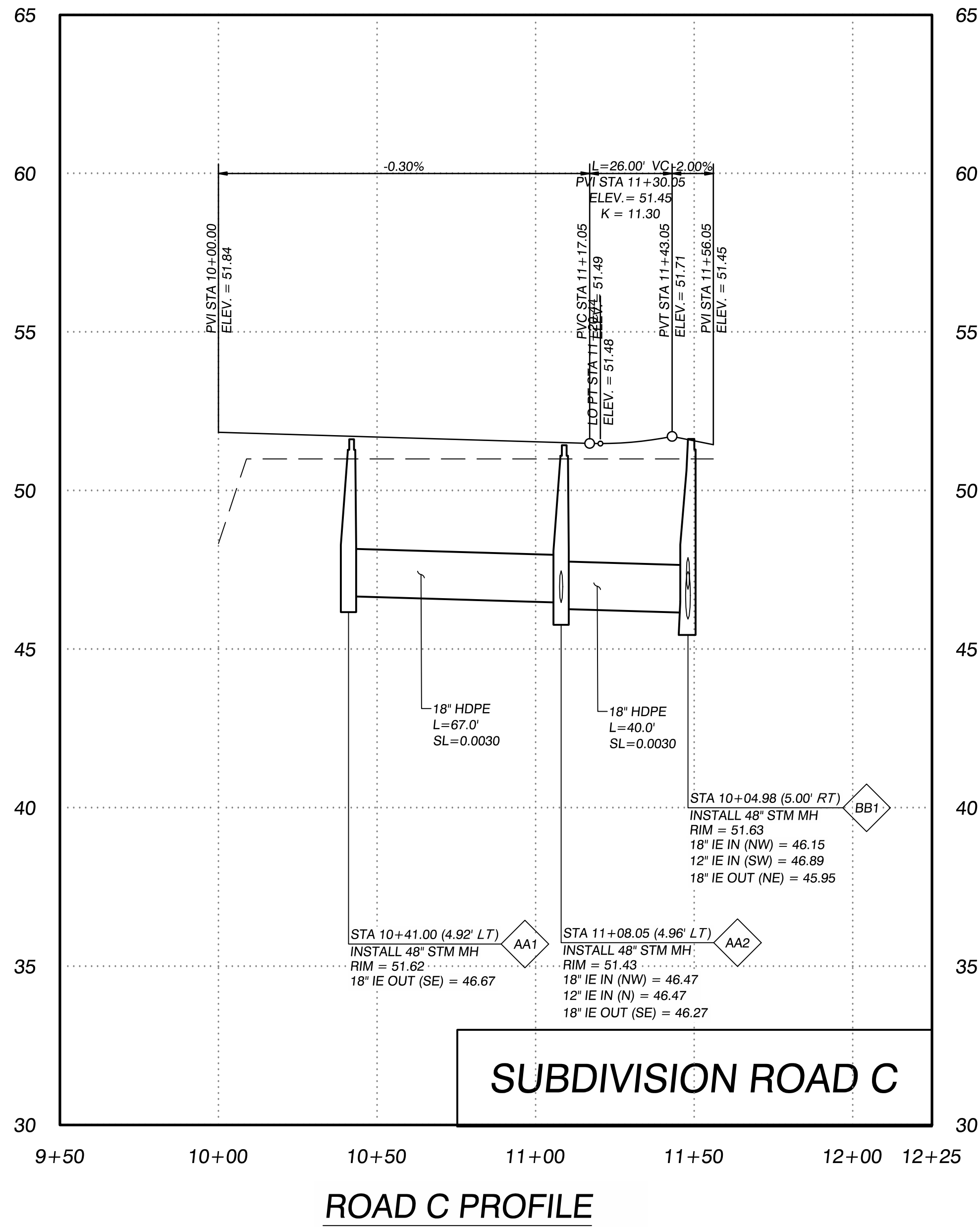
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DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C3.3

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RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

ROAD C AND ROAD E STREET AND STORM PROFILES

REVISIONS:

JOB NO.: 18591
DATE: 3/27/2025
SCALE: H: 1" = 30' V: 5:1
DESIGNED BY: PJM
DRAWN BY: PJM
CHECKED BY: TAW

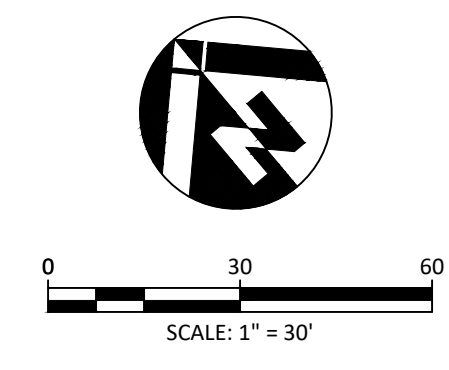
PRELIMINARY

C3.4



3/27/2025

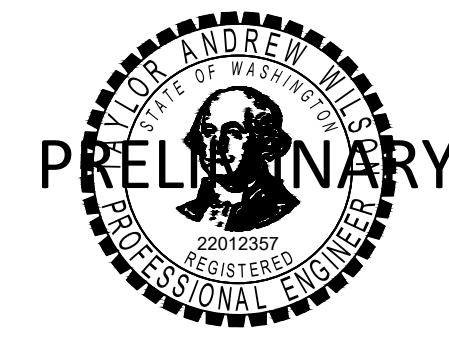
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SA1	STA 21+37.89 (5.0' LT-SUBDIVISION MAIN CIRCULATION) 48" SAN MH RIM = 51.22 8" IE OUT = 45.25	SA11	STA 20+74.42 (34.1' LT-SUBDIVISION MAIN CIRCULATION) 48" SAN MH RIM = 50.42 8" IE OUT = 44.75
SA8	STA 17+62.93 (5.2' LT-SUBDIVISION MAIN CIRCULATION) 48" SAN MH RIM = 50.10 8" IE IN = 42.82 8" IE IN = 42.82 8" IE OUT = 42.62	SE1	N: 346071.04 E: 1035283.31 48" SAN MH RIM = 50.53 8" IE IN = 43.77 8" IE OUT = 43.57
SA9	STA 17+93.81 (6.8' LT-SUBDIVISION MAIN CIRCULATION) 48" SAN MH RIM = 50.16 8" IE IN = 43.18 8" IE OUT = 42.98		



CITY OF CASTLE ROCK STD. WATER DETAIL SHEETS	
CR004W	FIRE HYDRANT
CR012W	CONNECTION TO EXISTING MAIN
CR019W	TRENCH - PAVEMENT RESTORATION

CITY OF CASTLE ROCK STD. SANITARY SEWER DETAIL SHEETS	
CR001SS	TYPE 1 MANHOLE
CR003SS	MANHOLE COLLAR
CR006SS	CLEANOUT
CR008SS	SEWER AIR RELEASE ASSEMBLY

- UTILITY NOTES:**
1. PROPOSED SANITARY FORCE MAIN SHALL BE GREEN COLORED AS REQUIRED BY CITY OF CASTLE ROCK.
 2. ALL UTILITIES WILL CONFORM WITH CITY OF CASTLE ROCK AND WSDOT STANDARDS.
 3. SEE SHEET C6.4 FOR SANITARY SEWER EXHIBIT OF THE FULL LOTC DEVELOPMENT. PROPOSED SANITARY SEWER DEPTH IS CONTROLLED BY THE ULTIMATE LAYOUT.



3/27/2025

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

SEWER AND WATER PLAN (PHASE 2)

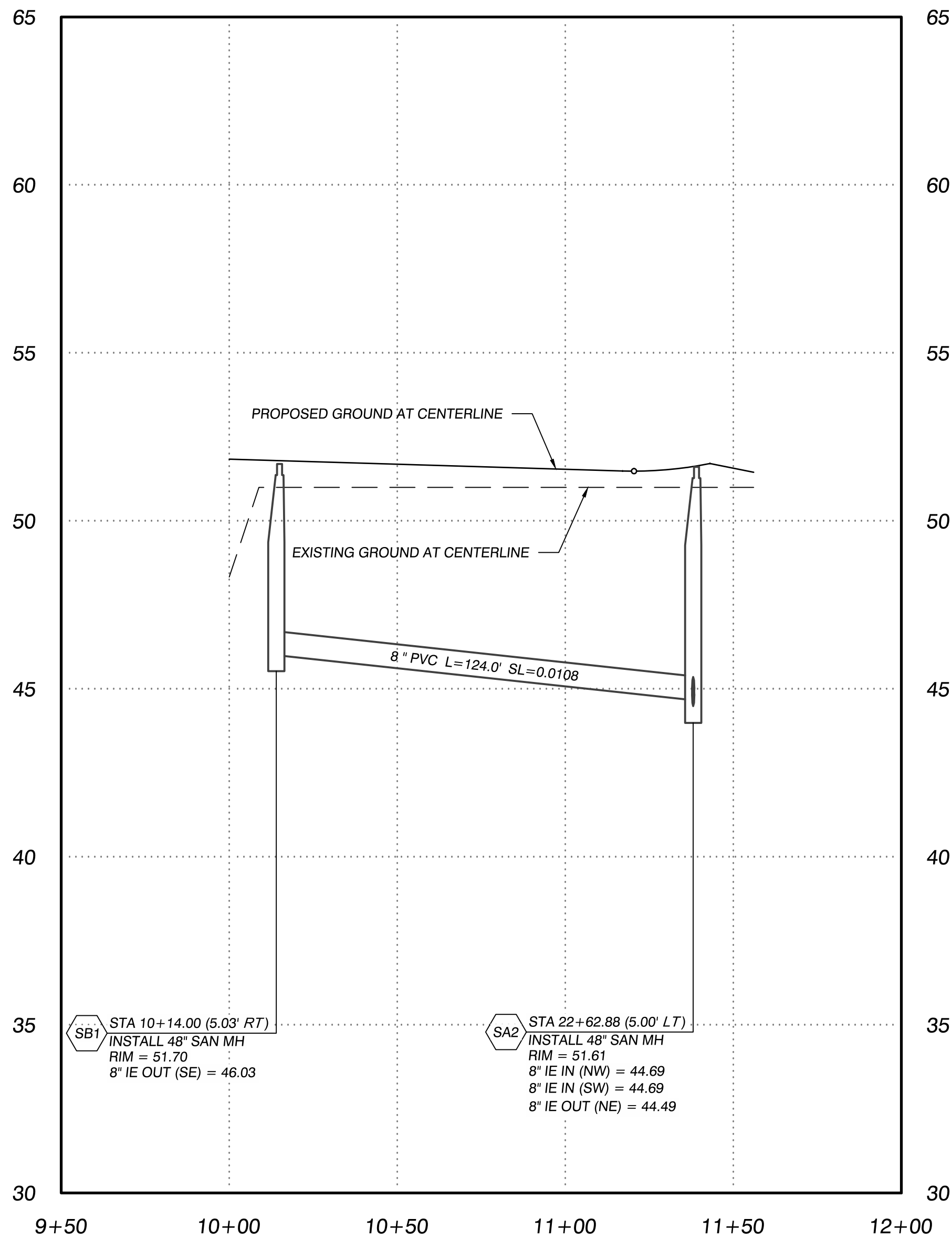
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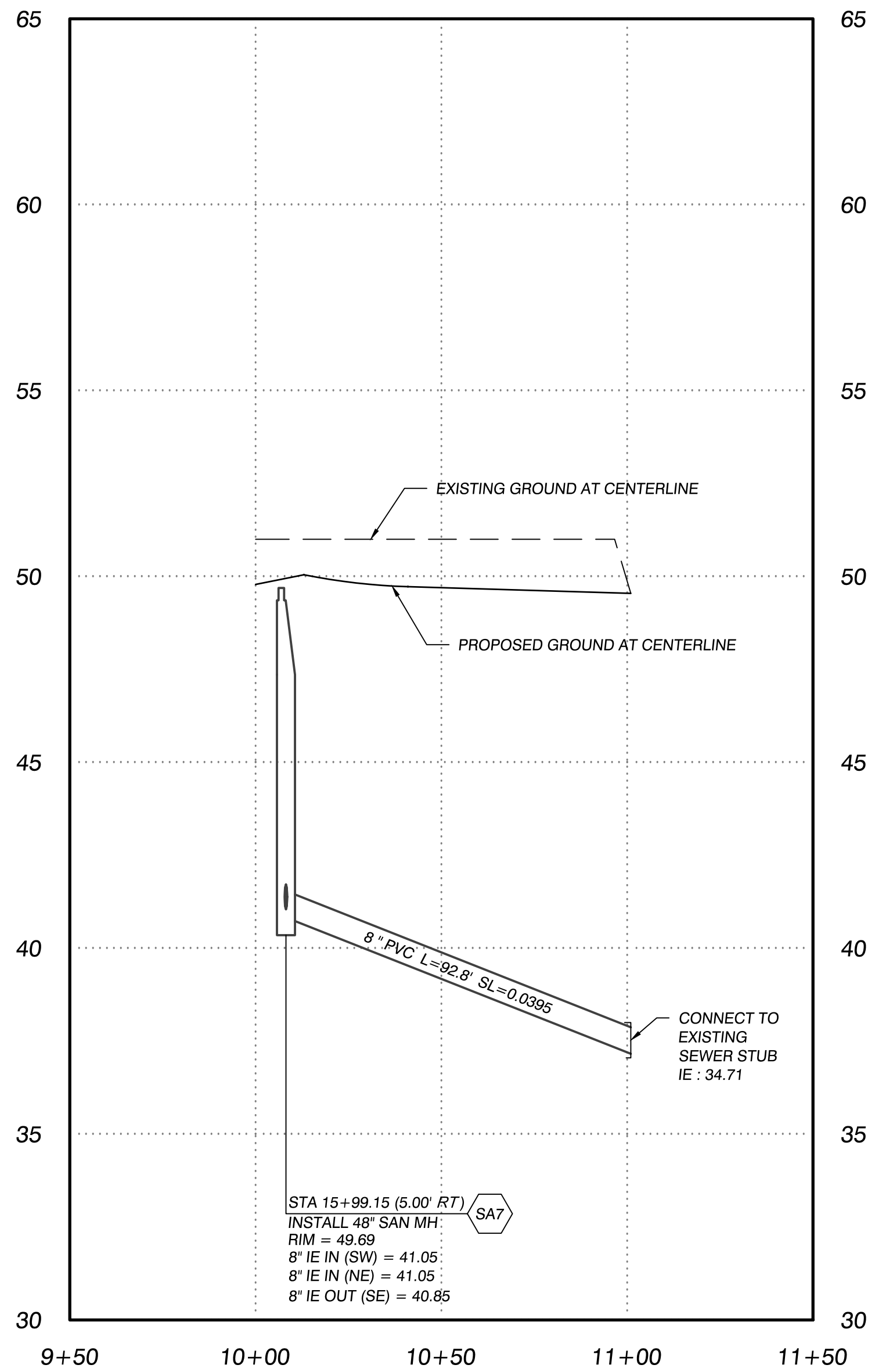
PRELIMINARY

C4.1

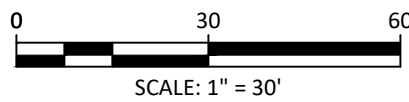
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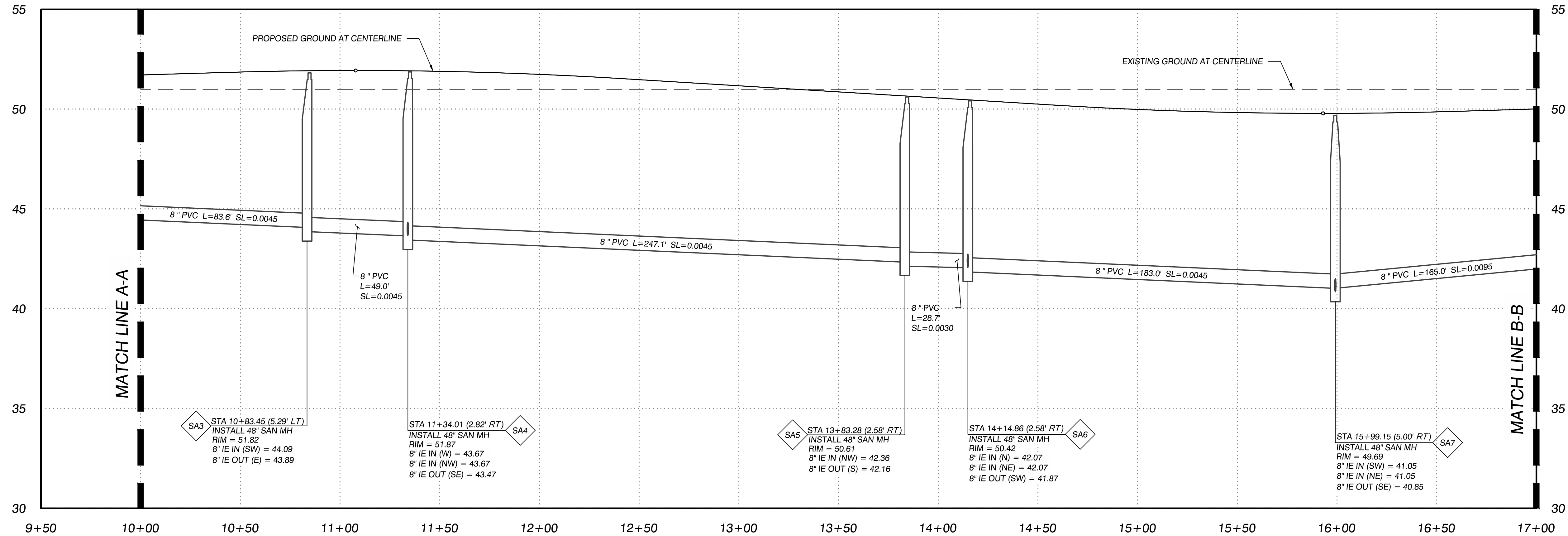
ROAD C PROFILE



ROAD E PROFILE

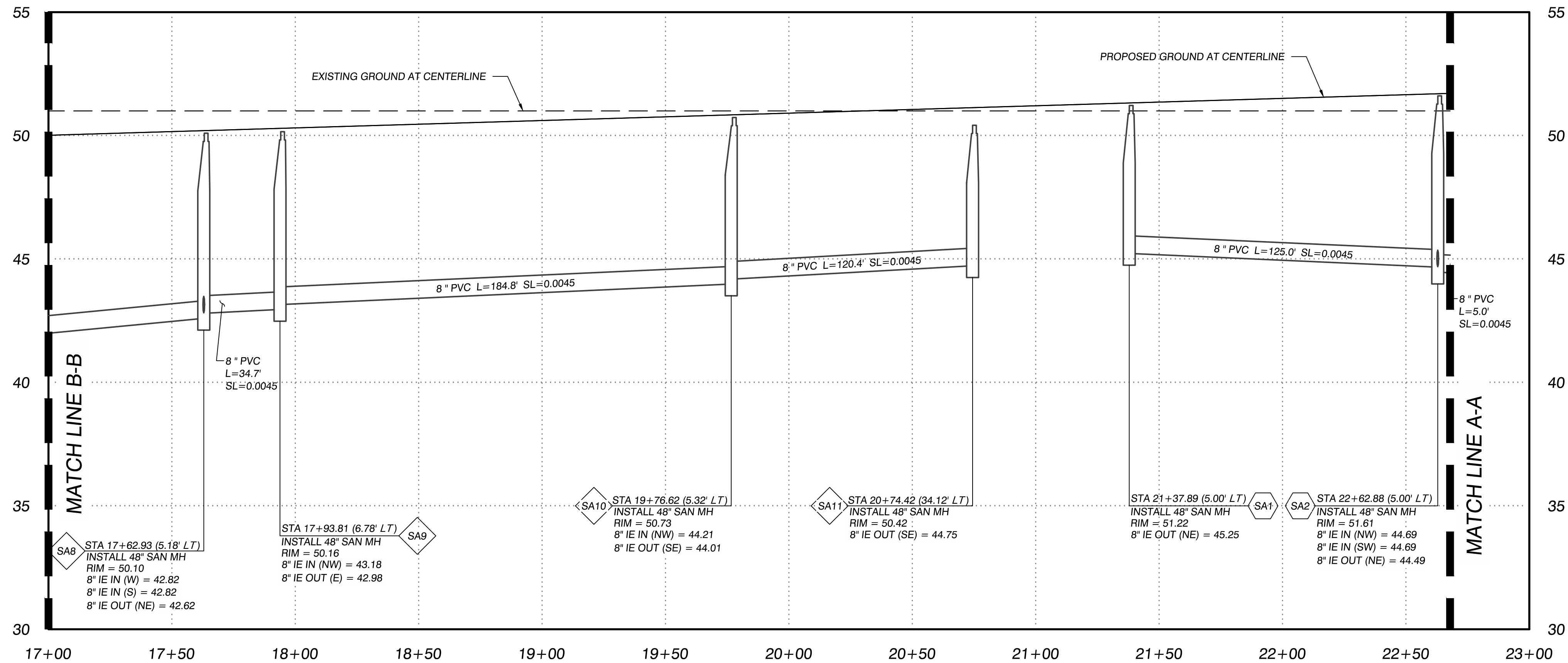


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MAIN CIRCULATION PROFILE

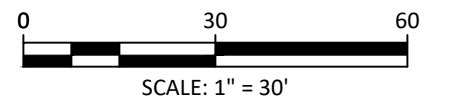
STA 10+00 - STA 17+00



MAIN CIRCULATION PROFILE

STA 17+00 - STA 22+67.91

NOTE: THIS ROAD IS A LOOP AND THE PROFILES CONNECT ON EITHER SIDE. STATION 10+00 STARTS NEAR THE INTERSECTION OF ROAD C ALIGNMENT.



3/27/2025

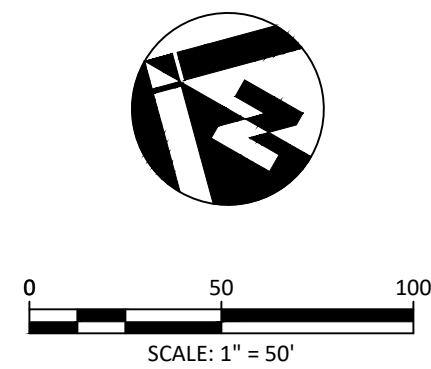
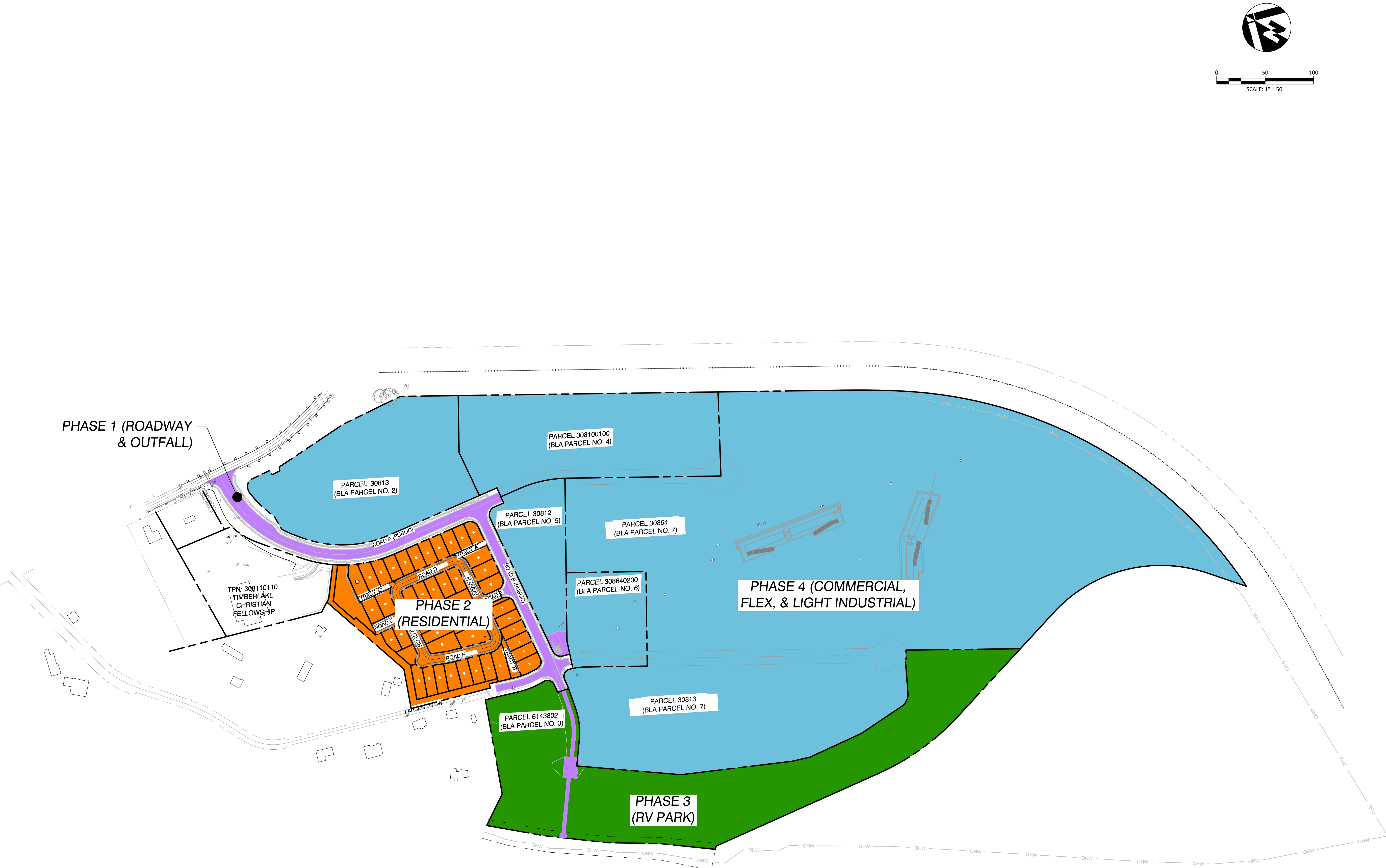
REVISIONS:

JOB NO.: 18591
DATE: 3/27/2025
SCALE: H: 1" = 30' V: 5:1
DESIGNED BY: PJM
DRAWN BY: PJM
CHECKED BY: TAW

PRELIMINARY

C4.2

FILE: W\18591 LOTC Phase 1\500 Design\502 Drawings\Sheets\8591.01 - Phase 1 Subdivision\MP1.0 MASTER PHASING PLAN.dwg PLOTSTYLE: Cover.stb



3/27/2025

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
PRELIMINARY MASTER PHASING PLAN

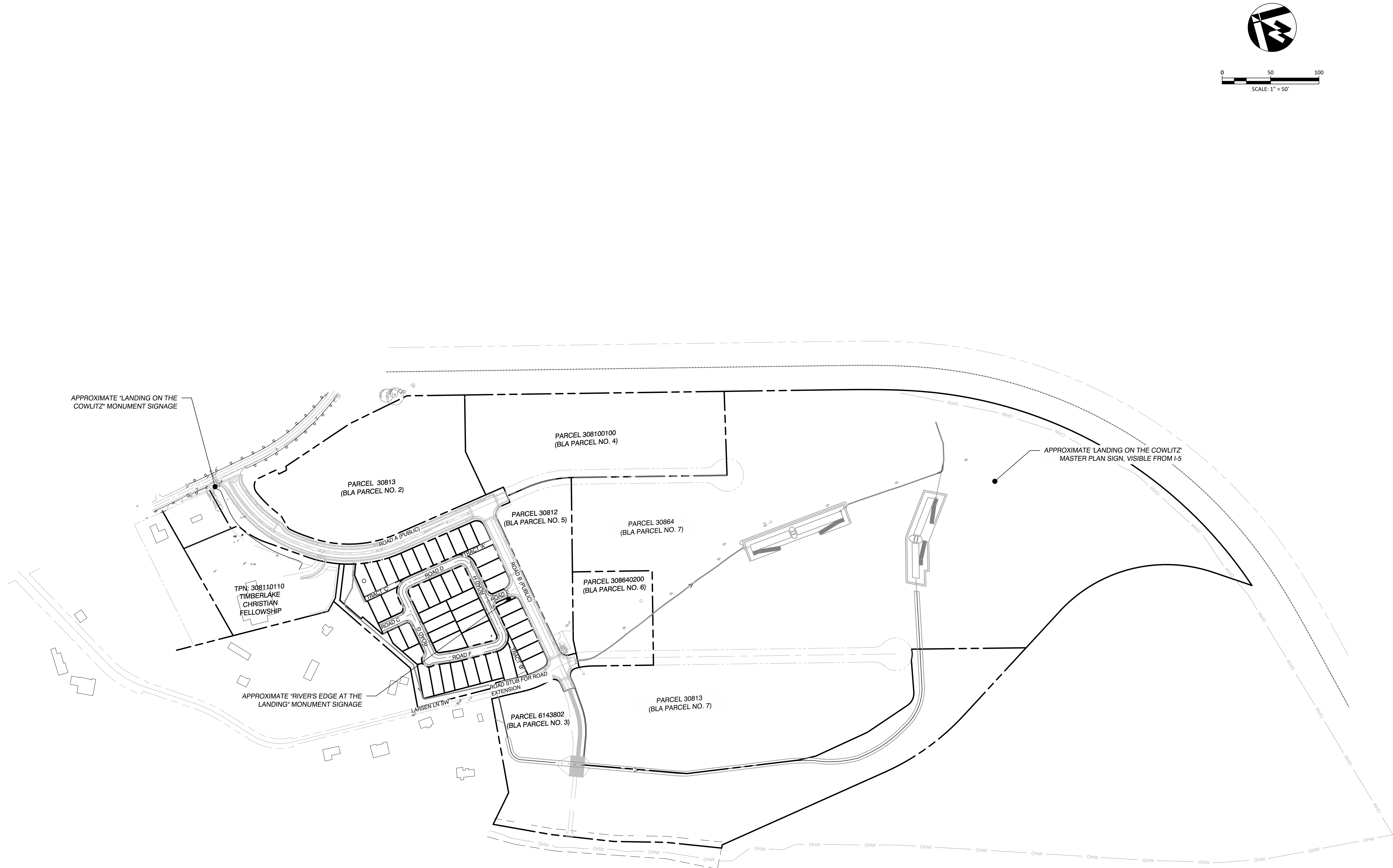
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DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

MP1.0

FILE: W\18591 LOTC Phase 1\500 Design\502 Drawings\Sheets\8591.01 - Phase 1 Subdivision\SS1.0 MONUMENT SIGNAGE PLAN.dwg PLOTSTYLE: Cover.sib



RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
PRELIMINARY MASTER SIGNAGE PLAN

REVISIONS:

JOB NO.: 18591
DATE: 3/27/2025
SCALE: H: 1" = 200' V: N/A
DESIGNED BY: PJM
DRAWN BY: PJM
CHECKED BY: TAW

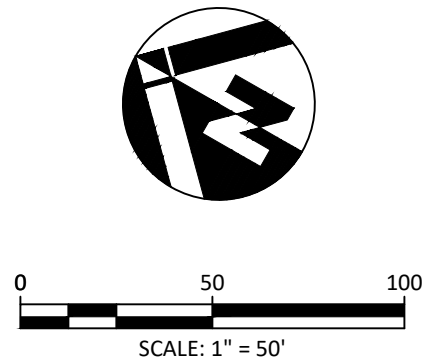
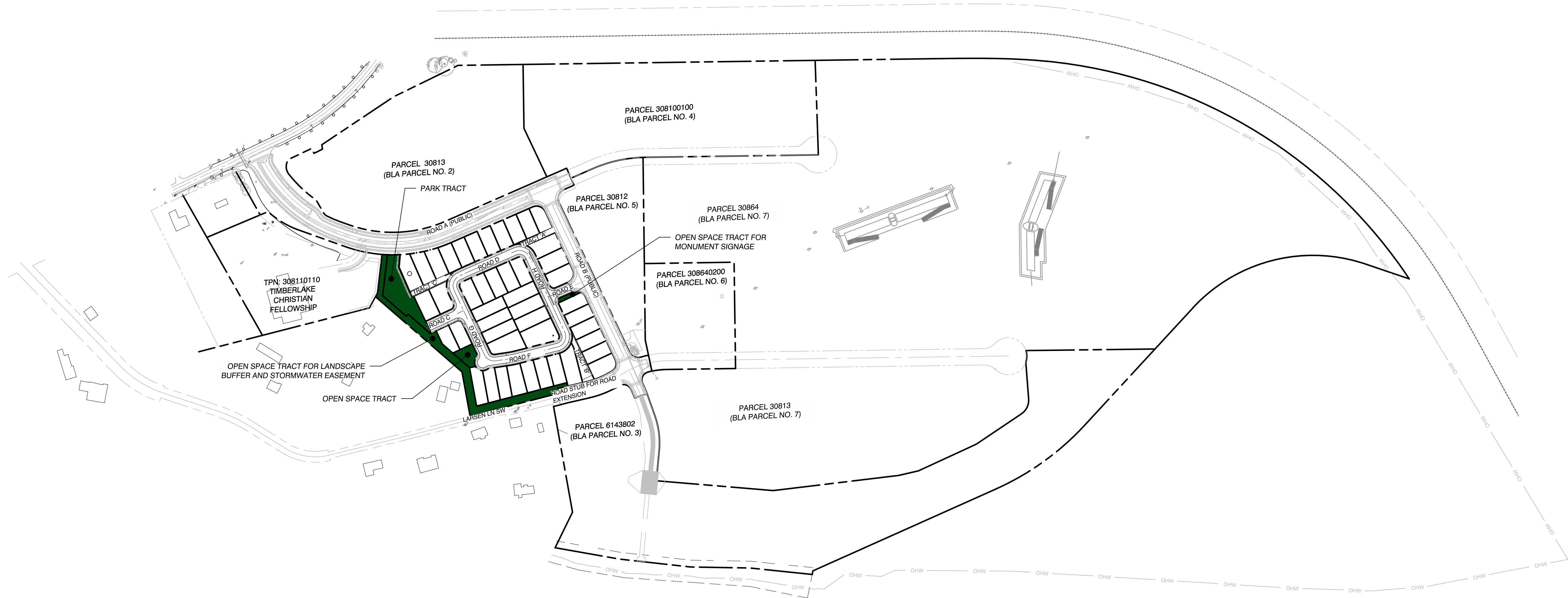
PRELIMINARY

MP1.1



3/27/2025

FILE: W\18591 LOTC Phase 1\500 Design\502 Drawings\Sheets\18591.01 - Phase 1 Subdivision\MP1.1 MASTER PARK PLAN.dwg PLOTSTYLE: Cover.stb



RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

PRELIMINARY MASTER PARKS, RECREATION,
AND OPEN SPACE PLAN

REVISIONS:

JOB NO.:	18591
DATE:	3/27/2025
SCALE: H: 1" = 200'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

MP1.2



3/27/2025

FILE: W\18591 LOTC Phase 1500 Design\502 Drawings\Sheets\18591-01 - Phase 1 Subdivision\1.0 LANDSCAPE PLANTING PLAN.dwg PLOTSTYLE: Planning.stb

PARK ELEMENTS as listed below, or approved alternate:

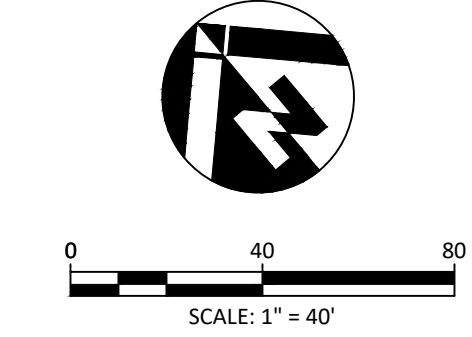
- Steel Pavilion, 12'x12', American Parks Co.
- Timberform Parkway Table with Three Chairs, Model 2052, Columbia Cascade Co.

Preschool Play

- Curved Crawl Tunnel, Model 67711, American Parks Co.
- Pony Spring Rider, 3889-01-P, Columbia Cascade Co.
- Apex Climber, 1672-01-W1, Columbia Cascade Co.

Primary Play

- Double Belt Swing, Model 1561-2, Columbia Cascade Co.
- Play Stack 4500-408-W1-Model, Columbia Cascade Co.
- Vertical Loop Climber, 6', Model 67636, American Parks Co.



PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SPACING	QTY	SIZE
TREES				
	ZELKOVA SERRATA 'CITY SPRITE' / CITY SPRITE ZELKOVA	30' O.C.	46	2" CAL.
	ACER RUBRUM 'FRANKSRED' / RED SUNSET MAPLE	30' O.C.	5	2" CAL.
	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY	20' O.C.	7	1.5" CAL.

SYMBOL	BOTANICAL / COMMON NAME	SPACING	QTY	SIZE
SHRUBS				
	CORNUS SERICEA 'ARCTIC FIRE RED' / ARCTIC FIRE RED REDTWIG DOGWOOD	3' O.C.	20	2 GAL.
	VACCINIUM OVATUM / EVERGREEN HUCKLEBERRY	3' O.C.	42	2 GAL.
	SPIREA JAPONICA / JAPANESE SPIREA	5' O.C.	2	3 GAL.
	AMELANCHIER UTAHENSIS / WESTERN SERVICEBERRY	15' O.C.	18	3 GAL.
	ARCTOSTAPHYLOS GLAUCA / BIG BERRY MANZANITA	15' O.C.	13	3 GAL.
	PYRACANTHA AUGUSTIFOLIA 'YUKON BELLE' / NARROWLEAF FIRETHORN	8' O.C.	20	3 GAL.
	JUNIPERUS CHINENSIS 'FAIRVIEW' / CHINESE JUNIPER	5' O.C.	34	5 GAL.
	CEANOTHUS INTEGERRIMUS / DEERBRUSH	6' O.C.	16	3 GAL.

SYMBOL	BOTANICAL / COMMON NAME	SPACING	QTY	SIZE
GROUND COVERS				
	RUBUS CALYCIINOIDES 'EMERALD CARPET' / EMERALD CARPET RUBUS	24" O.C.	5,200 SF	1 GAL.
	ARCTOSTAPHYLOS UVA-URSI 'MASSACHUSETTS' / BEARBERRY	24" O.C.	3,100 SF	1 GAL.
	WALDSTEINIA FRAGARIOIDES / BARREN STRAWBERRY	18" O.C.	600 SF	1 GAL.
	LAWN - SEEDED/SOD/HYDROSEED OREGON RYEGRASS BLEND		30,400 SF	

LANDSCAPE GENERAL NOTES

- Installation shall fully comply with all landscape code requirements and any City of Castle Rock conditions of approval.
- Irrigation shall be provided by a fully automatic underground system design/build by the landscape contractor.
- All landscaping shall be installed in a sound workman-like manner, and according to accepted good planting procedures with quality plant materials.
- The proposed stormwater facilities are bioretention features integrated with the right-of-way, and will be planted by others according to Dept. of Ecology standards.
- All existing vegetation shall be removed from areas to receive construction activities.
- Planting beds are to be sufficiently cleaned of all construction materials, including imported rock, to the satisfaction of the Owner's Representative before beginning any landscape work.
- All vegetation to be well rooted and well branched.
- All plant material shall be nursery grown and meet ANSI standards.
- Quantities indicated are for the convenience of the contractor only. Install number of plants as drawn. Contractor responsible for installing plants in quantities and locations shown.
- Contractor shall verify species and quantities of all plant material prior to bid.
- Plants shall be spaced as indicated in the Landscape Legend unless otherwise shown on the plan. If a discrepancy exists, the plan shall prevail.
- Use triangular spacing for all groundcover unless noted otherwise. See Detail Sheet L1.1.
- The owner, or his agent, shall be responsible for the maintenance of all landscaping which shall be maintained in good condition so as to present a healthy, neat, and orderly appearance, and shall be kept free from refuse and debris.
- See Sheet L1.1 for Planting Details.
- See Sheet L1.1 for Planting Specifications.
- See Sheet L1.2 for Irrigation Specifications.

LANDING ON THE COWLITZ
CASTLE ROCK, WASHINGTON

PRELIMINARY LANDSCAPE PLAN
RIVER'S EDGE AT THE LANDING SUBDIVISION

REVISIONS:

JOB NO.: 18591.01
DATE: 3/20/2025
SCALE: H: 1" = 40' V: N/A
DESIGNED BY: MCP
DRAWN BY: MCP
CHECKED BY: TAW

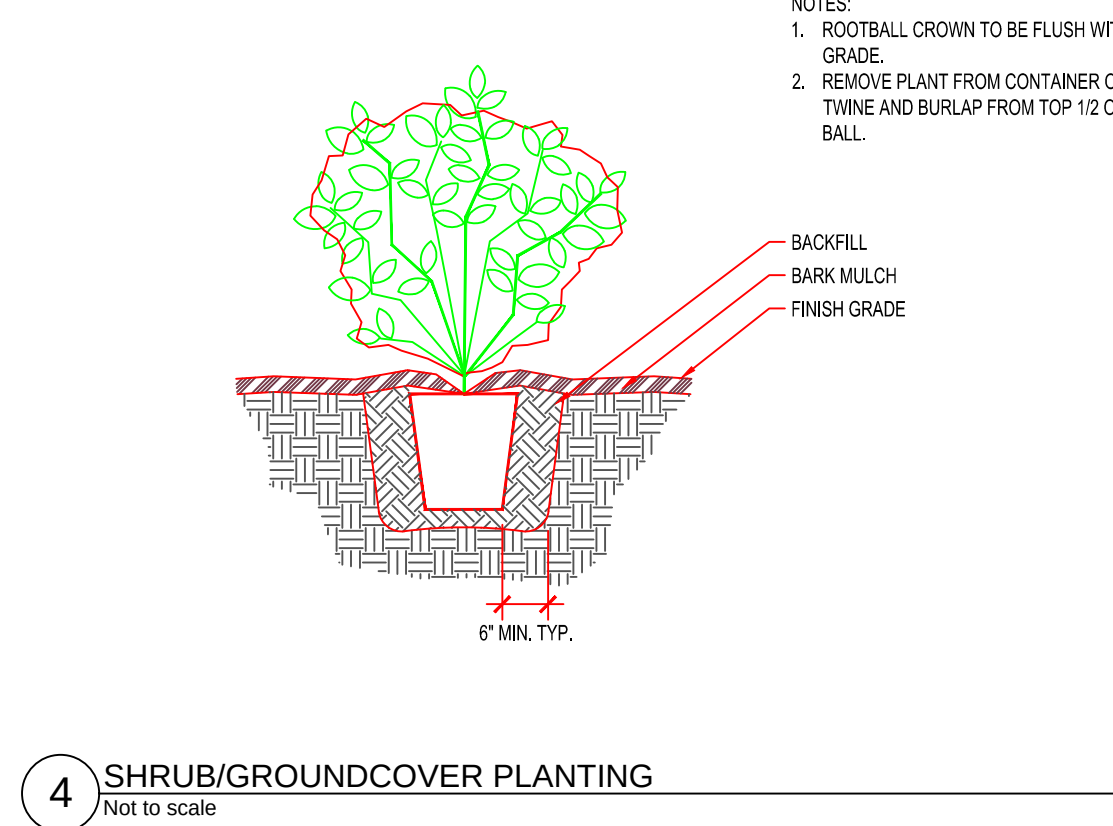
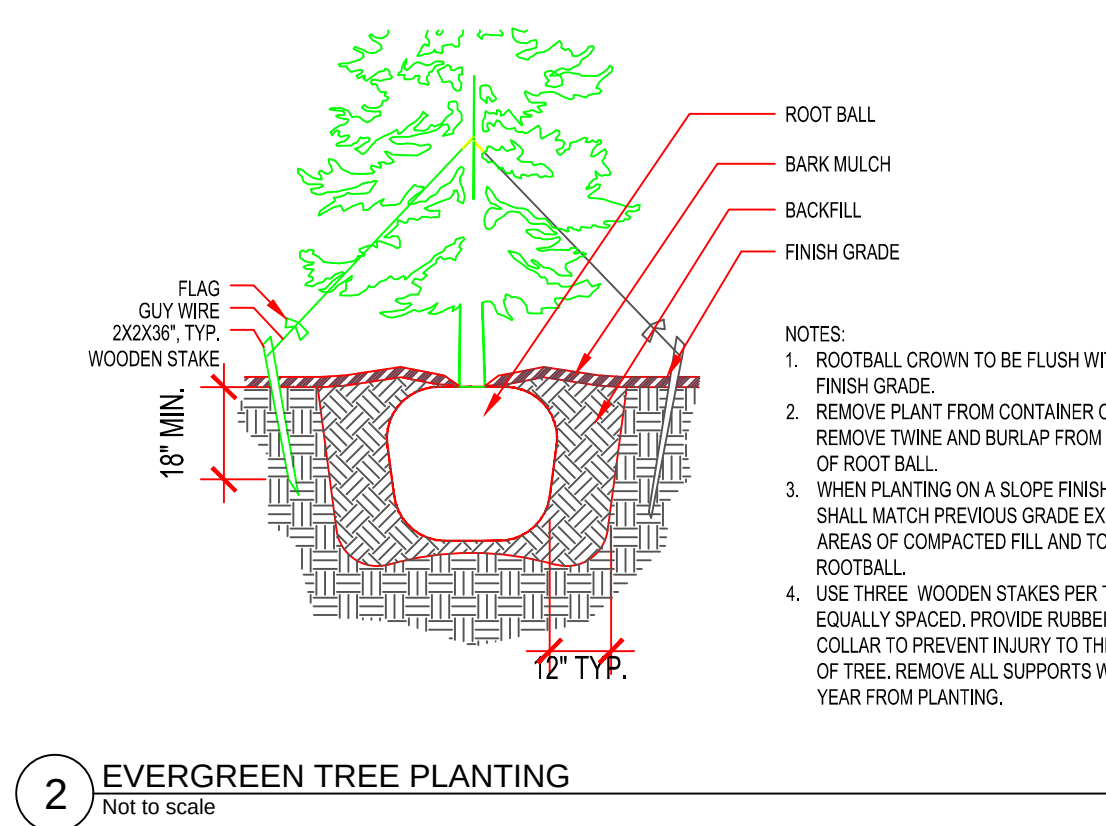
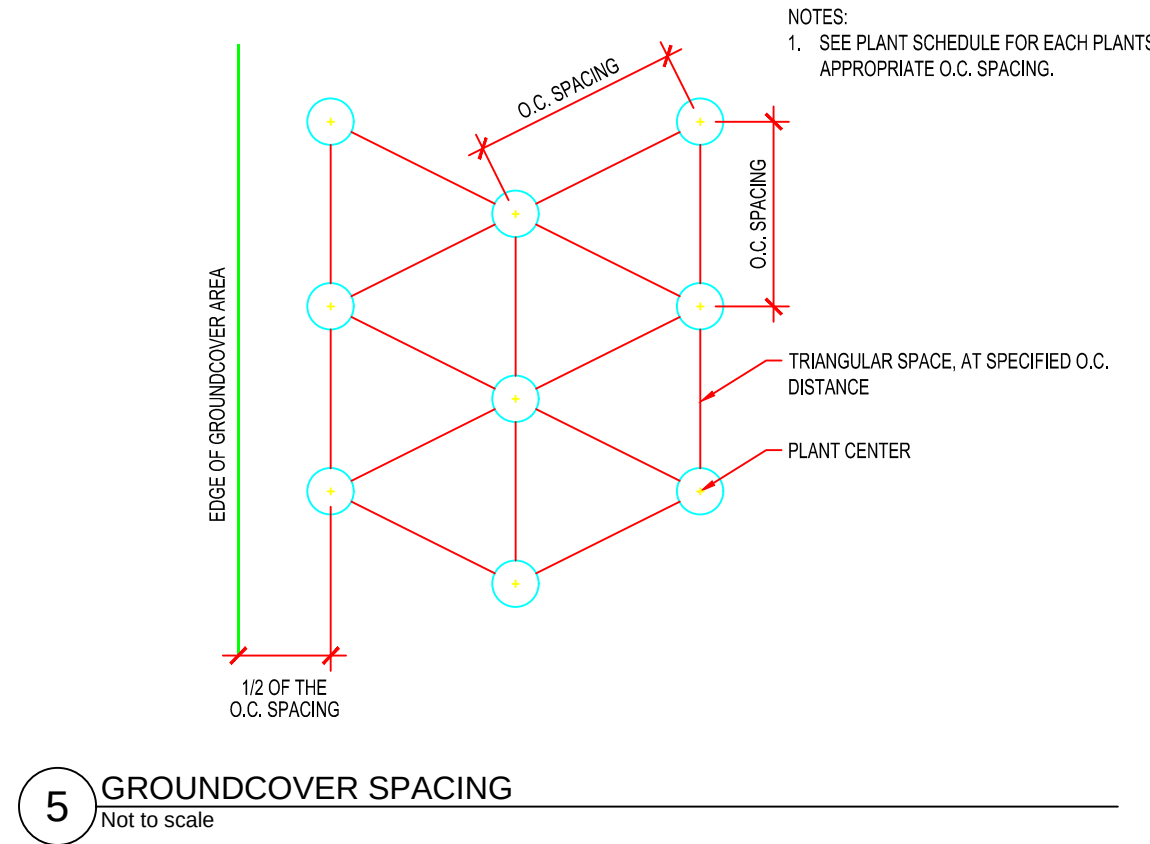
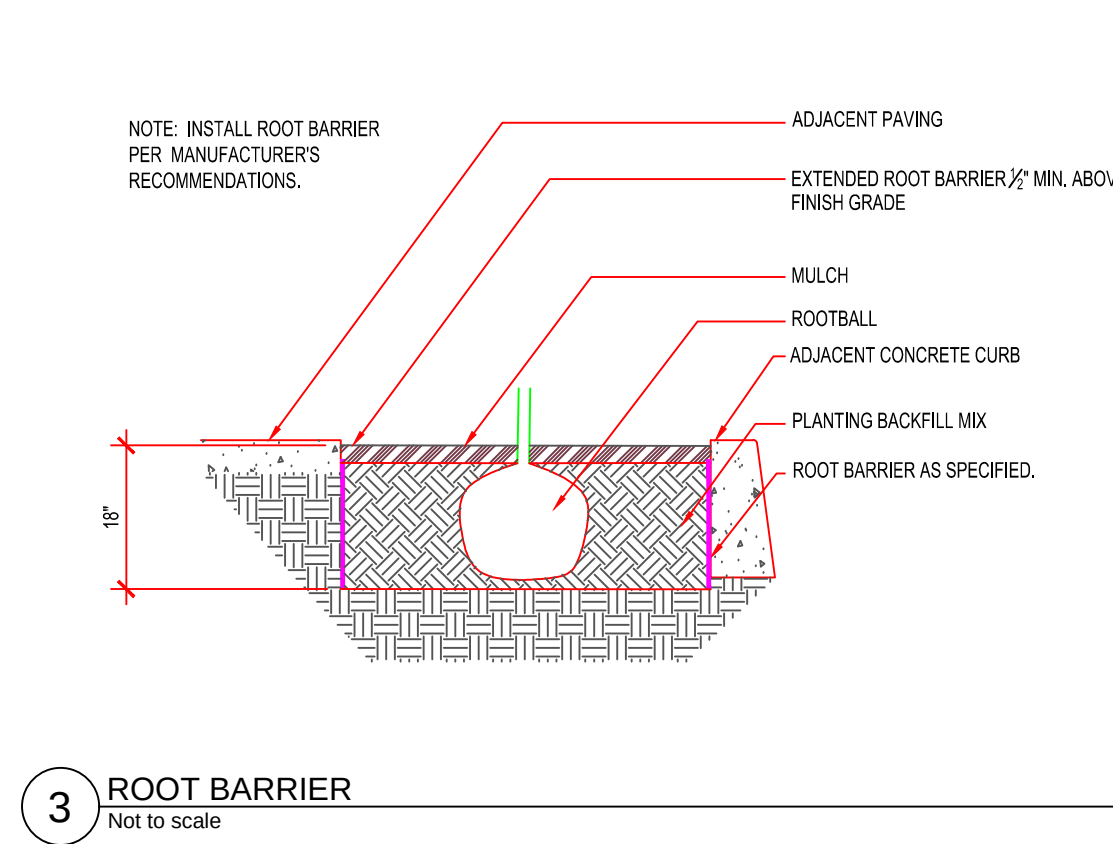
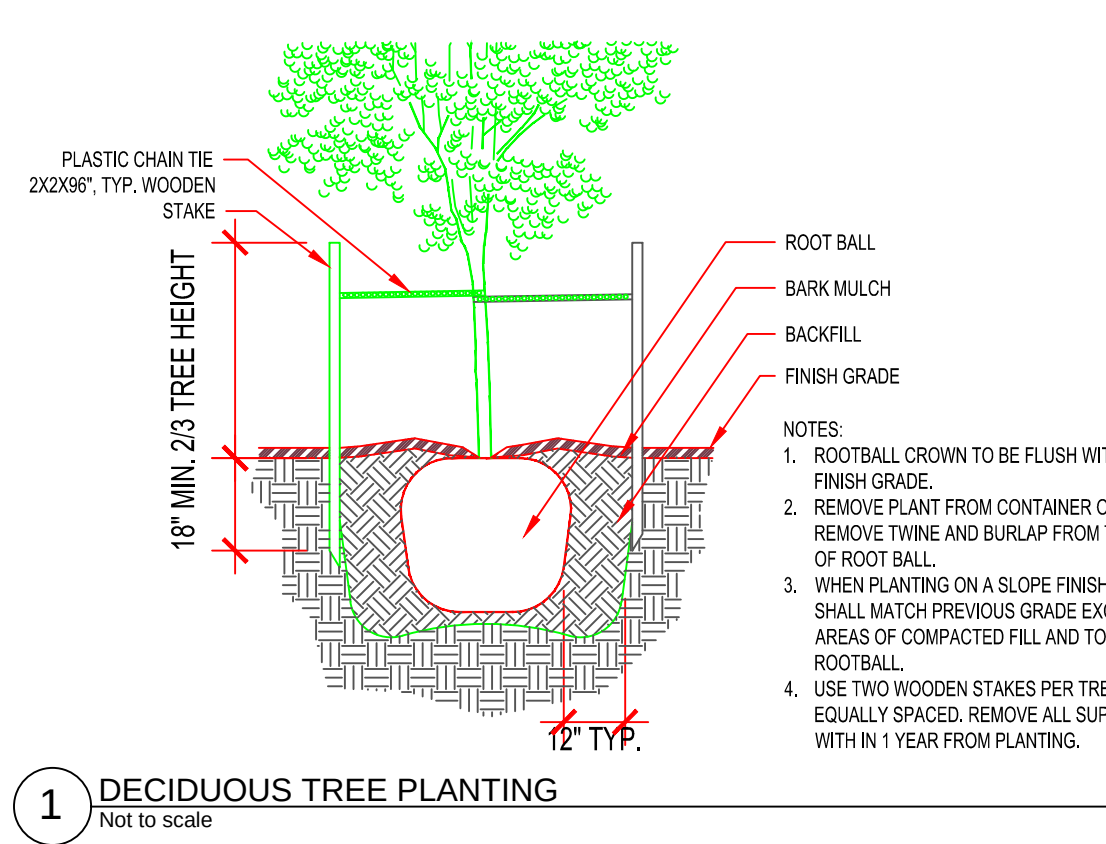
PRELIMINARY

L1.0

3/20/2025

PLANTING SPECIFICATIONS
PART 1 – GENERAL
1.1 SUMMARY
A. Section Includes:
1. Plants
2. Planting soils
3. Tree stabilization
4. Root Barrier
5. Tree Wrap
1.2 ESTABLISHMENT AND WARRANTY PERIOD REQUIREMENTS
A. All plant materials shall be maintained in a healthy condition until the end of the Establishment, Maintenance and Warranty Period. Establishment and Maintenance period is for one year and is initiated by substantial completion compliance. Replace dead and unhealthy plants immediately.
B. All plant materials and equipment replaced under warranty shall be replaced in accordance with all provisions of the Contract Documents. Plant material shall be of the same variety, size, and quantity as originally installed.
1. Owner reserves the right to inspect plant materials replaced under warranty and reject those which do not conform to specified standards.
1.3 SUBMITTALS
A. Product Data: For each type of product indicated, including soils.
1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
2. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to the Project
3. Tree Stabilization Materials
4. Tree Wrap
5. Imported Planting Soil
6. Bark Mulch
B. Samples for Verification: For each of the following:
1. Bark Mulch: 1-quart volume of each mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
2. Root Barrier
1.4 PROJECT CONDITIONS
A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
1.5 WARRANTY
A. Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
b. Structural failures including plantings falling or blowing over.
c. Faulty performance of tree stabilization
2. Warranty Periods from Date of Substantial Completion:
a. Trees, Shrubs, and Ornamental Grasses: 12 months.
b. Ground Covers and Other Plants: 12 months.
3. Include the following remedial actions as a minimum:
a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. A limit of one replacement of each plant will be required except for losses or replacements due to failure to comply with requirements.
d. Provide extended warranty for period equal to original warranty period, for replaced plant material.
1.6 MAINTENANCE SERVICE
A. Initial Maintenance: Provide maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established but for not less than maintenance period below.
1. Maintenance Period: 12 months from date of Substantial Completion.
PART 2 – PRODUCTS
2.1 PLANT MATERIAL
A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant Schedule or Plant Legend shown on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
2.2 ORGANIC SOIL AMENDMENTS
A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight.
2.3 FERTILIZERS
A. Planting Tablets: Tightly compressed chip type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.
1. 20-10-5 slow release plant tablets, 10 gram size. Agriform or equal.
2.4 PLANTING SOIL
A. Imported Planting Soil ASTM D 5268 topsoil, with pH range of 5.5 to 7, a minimum of 30 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth. Mix ASTM D 5268 topsoil with the following soil amendments in the following quantities to produce planting soil:
1. Mix Compost to Topsoil by Volume: 1:4. Shall be pre mixed prior to delivery.
2.5 MULCHES
A. Bark Mulch: Provide standard, commercially produced, medium-course, dark brown, bark mulch. Bark shall be ground Fir or Hemlock bark of uniform color, free from weeds, seed, sawdust, splinters and shall not contain resin, tannin or other compounds detrimental to plant life. All materials shall pass a 1-inch mesh screen.
2.6 PESTICIDES
A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.
2.7 TREE STABILIZATION MATERIALS
A. Stakes and Guys: See drawings for materials and instruction.
2.8 TREE WRAP
A. Corrugated or crepe paper, designed specifically to resist insect infestation and sun scald.
PART 3 – EXECUTION
3.1 EXAMINATION
A. Examine areas to receive plants for compliance with requirements and conditions affecting installation and performance.
1. Verify that no foreign or deleterious material or liquid such as gravel, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Do not mix or place soils in frozen, wet, or muddy conditions.
3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
B. Proceed with installation only after unsatisfactory conditions have been corrected.
C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.
3.2 PROTECTION
A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
3.3 PLANTING AREA ESTABLISHMENT
A. Locate all planting beds in field. Flag planting beds with white field-marking chalk or approved equal. All planting beds to be adjusted and approved by Owner's Representative prior to plant location.
B. Over excavate all shrub and tree planting beds to a depth of 12". Protect in place existing gravel base integrity for walks and curbs. Remove excavations from site and dispose at contractor's expense. Install root control barriers prior to backfilling.
C. Loosen subgrade of planting areas to a minimum depth of 6 inches depth. Remove stones larger than 1 inch (25 mm in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Spread planting soil in 4 -6 inches lifts but not less than required to meet finish grades after natural settlement.
2. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
E. Before planting, obtain owners representative's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
3.4 EXCAVATION FOR TREES AND SHRUBS
A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
B. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
3.5 TREE AND SHRUB PLANTING
A. The Owner's Representative will approve individual plant material and location of plant material prior to installation.
B. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
C. Provide slow release-fertilizer tablets during backfill at the following rates. Locate plant tablets 1 inch from roots and at mid-depth. Space evenly
1 Gallon Shrub = 1 Tablet

2 Gallon Shrub = 2 tablet
3 Gallon Shrub = 2 Tablet
5 Gallon Shrub = 3 Tablet
3.7 PLANTING AREA MULCHING
A. Mulch finish grade surfaces of planting areas and other areas indicated.
1. Bark mulch in Planting Areas: Apply 3-inch average thickness of bark mulch, and finish level with adjacent finish grades.
2. Bark mulch shall be a minimum of 6-inches from tree trunks and 3-inches from shrub crowns.
3.8 WRAPPING
A. Deciduous trees over 1-1/2 inch caliper when within five feet of pavement shall be wrapped promptly after planting to prevent sunscald, wrapping as approved by American Association of Nurserymen. Wrap spirally from ground line to the height of the first branch. Wrap in neat and snug manner and secure with tape similarly colored to tree wrap at bottom, top and in the middle. Wrap before staking or guying.
3.9 PLANT MAINTENANCE
A. Maintain plants after written notice of Substantial Completion of the Project. If plants are not installed before the dormant period, November 15th to March 1st, maintain for a period of 90 days after the dormant period or until Final Acceptance, whichever is later.
1. Inspect plants at least once a week and perform maintenance promptly.
2. Maintain trees, shrubs and ground covers by watering, pruning, spraying, cultivating, and weeding as required for healthy growth.
3. Water when soil moisture is below optimum level for best plant growth.
4. Remove and replace impaired or dead plants promptly during specified planting season.
5. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required.
6. Eradicate all weeds, grass, and other undesired vegetation growth from planting areas. Remove dead weeds and dispose legally off-site. Remove all perennial weeds completely, including all underground parts.
7. Restore all soil settlement to original grade
B. Replace mulch materials damaged or lost in areas of subsidence
C. Fertilizing: Perform as necessary to maintain cover crop in a healthy growing condition.
1. Fertilize trees, shrubs and ground cover once at the end of the Maintenance Period.
2. In March, within the first growing season, fertilize all planting areas with 1 application of each of the maintenance fertilizers, at the rate of 7 pounds per 1,000 square feet of soil surface.
3.10 PESTICIDE APPLICATION
A. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
B. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and ground-cover areas in accordance with manufacturer's written recommendations.
C. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.
3.11 CLEANUP AND PROTECTION
A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.
B. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
C. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.
3.12 ACCEPTANCE
A. Substantial Completion:
1. Notify the Owner's Representative in writing of the completion of planting.
2. Within 10 days after notification of completion of Work, the Owner's Representative will inspect the Work in the presence of the Contractor and the Owner, and prepare a Notice of Substantial Completion, along with a list of items that require completion and correction (i.e., Punch List).
3. Notice of Substantial Completion constitutes the commencement of the Maintenance Period.
B. Final Acceptance:
1. The final inspection of all planting will be made by the Owner, Owner's Representative in the presence of the Contractor, following completion and correction of all items on the Punch List, and prior to the expiration of the Maintenance Period.
2. Before Final Acceptance will be granted, the site must be in the condition stipulated all correction items on the Punch List completed to the satisfaction of the Owner and Owner's Representative.
3. If Final Acceptance is not granted at the end of the Maintenance Period, continue maintaining plantings until Final Acceptance is granted, at no additional cost to the Owner.



REVISIONS:

JOB NO.: 18591.01
DATE: 3/20/2025
SCALE: H: 1"= 50' V: N/A
DESIGNED BY: MCP
DRAWN BY: MCP
CHECKED BY: TAW

PRELIMINARY

L1.1

FILE: W:\16591 LOTC Phase 1\500 Design\502 Drawings\Sheets\16591.01 - Phase 1 Subdivision\1.2 IRRIGATION SPECIFICATIONS.dwg PLOTSTYLE: Sanitary and Water.stb

IRRIGATION NOTES:

1. PART 1 – GENERAL

- 1.1. SCOPE: Furnish design services and plans, labor, material, equipment and services for installation of a new irrigation system all in accordance with requirements of this and other specifications, local and state codes and equipment manufacturer's recommendations and specifications.
- 1.2. RELATED WORK BY OTHERS:
- 1.2.1. Provisions for electrical services to controller location.
- 1.2.2. Conduit from controller location to exterior of building, preferably to an adjacent landscape area.
- 1.2.3. Conduit from controller location to rain sensor if wired model utilized.
- 1.2.4. Water meter at point of connection.
- 1.2.5. Ball valve at point of connection.
- 1.3. QUALITY ASSURANCE:
- 1.3.1. Acceptable manufacturer: Hunter, Rainbird
- 1.3.2. Contractor shall be licensed and bonded in State of Washington.
- 1.3.3. Contractor shall have at least 5 years prior experience in projects of equal or larger size.
- 1.3.4. Contractor shall employ on-site at all times at least one person who is thoroughly experienced and competent in all phases of the work of this section and who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the manufacturer's recommended methods of installation, and who shall direct all work performed under this section.
- 1.3.5. Conform to the "Uniform Plumbing Code" as adopted and modified by the State of Washington and all legally constituted authorities having jurisdiction.
- 1.3.6. Materials and Equipment: New materials and equipment of type and brands as specified herein or accepted substitute.
- 1.4. DESIGN AND PLAN:
- 1.4.1. Design requirements:
- 1.4.1.1. Contractor shall provide design and layout of a new irrigation system meeting requirements of this and other specifications.
- 1.4.1.2. Meet requirements of local and state codes.
- 1.4.1.3. Meet recommendations and specifications of equipment manufacturer.
- 1.4.1.4. Contractor shall obtain services of an irrigation system designer with a minimum 5 years experience.
- 1.4.1.5. Provide minimum water coverage of 100% in all lawn, shrub and groundcover areas.
- 1.4.1.6. Lay out system to obtain optimum coverage utilizing manufacturer's standard heads. Spray across walks, onto walls, buildings, windows or paved areas is not acceptable.
- 1.4.1.7. Obtain static water pressure from local jurisdiction and install pressure regulating equipment as necessary including, but not limited to, pressure relief valves, pressure regulating valves, etc.
- 1.4.1.8. Install approved backflow protection to the public water source. If acceptable, use a double check backflow prevention device.
- 1.4.1.9. Install manual drain valves and gravel backfilled sumps of one cubic foot minimum size on each zone. Slope lines to drain valves.
- 1.4.1.10. Provide ball valves on supply lines for isolation of various sections of the irrigation system.
- 1.4.1.11. Provide quick coupling valves at various locations on site. Locations to be acceptable to Project Representative.
- 1.4.2. Plan Requirements:
- 1.4.2.1. Provide at same scale as landscape plan.
- 1.4.2.2. Prepare on good quality tracing paper.
- 1.4.2.3. Irrigation plan shall indicate system irrigation head and nozzle layout, location and size of all zones, piping size and layout, fittings, equipment necessary for full installation of entire system, locations and sizes of sleeving.
- 1.5. VERIFICATION OF EXISTING CONDITIONS:
- 1.5.1. Before proceeding with the installation of any section of the irrigation system, verify all existing irrigation conditions.
- 1.6. VERIFICATION OF DIMENSIONS:
- 1.6.1. Before proceeding with the installation of any section of the irrigation system, check and verify correlation between ground measurements and Drawings.
- 1.6.2. Advise Project Representative of discrepancies before proceeding.
- 1.7. VERIFICATION OF WATER PRESSURE:
- 1.7.1. Verify water pressure at point of connection.
- 1.7.2. Submit pressure test results to Project Representative prior to any work.
- 1.8. PROTECTION OF UNFINISHED WORK:
- 1.8.1. Protect work at all times.
- 1.8.2. Keep rock, dirt, gravel, debris and foreign materials from entering pipe, valves and other irrigation equipment.
- 1.8.3. Flag/barricade open trenches, valve locations/boxes, etc. when not actively working in area.
- 1.9. VERIFICATION OF CONTROLLER LOCATION:
- 1.9.1. Verify exact location of controller with Project Representative.
- 1.9.2. Coordinate electrical service, conduit to building exterior and conduit to rain sensor (if wired model is utilized) with other trades.
- 1.10. ENVIRONMENTAL CONDITIONS:
- 1.10.1. No solvent welding of PVC pipe in freezing weather.
- 1.10.2. Protect active utilities. If encountered, notify persons owning same.
- 1.11. UTILITIES:
- 1.11.1. Be responsible for location of underground utilities.
- 1.11.2. Protect active utilities. If encountered, notify persons owning same.
- 1.12. STORAGE:
- 1.12.1. Store on job site only as approved.
- 1.12.2. Be responsible for security and protection.
- 1.12.3. Store no PVC pipe or fittings in direct sunlight.
- 1.13. EQUIPMENT FOR OPERATION:
- 1.13.1. Provide Owner with the following operation equipment.
- 1.13.2. Turn over to Owner at time of Final Inspection:
- 1.13.2.1. (2) lock cap key, Weathermatic RLK-1 or accepted substitute.
- 1.13.2.2. (2) snap-lock unlocking tools for valve box covers.
- 1.13.2.3. (2) quick coupling valve keys.
- 1.13.2.4. (2) hose swivel.
- 1.13.2.5. (2) lock cap key, Rain Bird 2049 or accepted substitute.
- 1.13.2.6. (2) valve operating key, 30-inch handle length.
- 1.13.2.7. (2) irrigation controller keys.
- 1.14. RECORD DRAWINGS:
- 1.14.1. Maintain current with work progress, one red pencil marked print showing all deviations from drawings occurring during installation.
- 1.14.2. Show locations of stubouts, manual drains, valves, pipe lines, splices and other subsurface features as installed.
- 1.14.3. Show dimension references from subsurface features to permanent structural or surface elements sufficient to identify in the field.
- 1.14.4. Submit clean red-lined mylar at end of project.
- 1.14.5. Place one (1) reduced size laminated print inside controller door.
- 1.15. SUBMITTALS:
- 1.15.1. Within 14 days after award of contract, submit:
- 1.15.1.1. Irrigation design plan for new irrigation system.
- 1.15.1.2. Manufacturer's printed product information and catalog cut sheets for all system components.
- 1.15.1.3. Sleeving plan showing sizes and locations of all sleeving.
- 1.15.1.4. Static water pressure test results.
- 1.15.2. Submit to Project Representative at time of inspection for final approval.
- 1.15.2.1. As-built irrigation mylar.
- 1.15.2.2. Copy of guarantees, warranties or affidavits applicable to equipment or materials beyond Contractor's 1-year guarantee period.
- 1.15.2.3. Manufacturer's catalog cuts describing all equipment and material used.
- 1.15.2.4. Names, addresses and phone numbers of manufacturers and local suppliers of equipment.
- 1.15.2.5. Written operating and maintenance instructions for all electrical or mechanical equipment used.
- 1.15.3. Submit to Project Representative three (3) complete copies of the above submittals in hard cover binder.
- 1.16. GUARANTEE:
- 1.16.1. Guarantee the irrigation system or any part thereof, against defective material or workmanship for one (1) year from the date of final acceptance.
- 1.16.2. Repair any settling of backfilled trenches occurring during a one (1) year period after final acceptance.
- 1.16.3. Include restoration of planting, paving or other improvements of any kink associated with corrections.
- 1.16.4. Make corrections without expense to Owner.

2. PART 2 – PRODUCTS

- 2.1. GENERAL:
- 2.1.1. A. New materials and equipment.
- 2.1.2. Manufacturer's catalog numbers indicated below.
- 2.1.3. Substitutions or equals only by written approval of the Landscape Architect.
- 2.2. IRRIGATION HEADS:
- 2.2.1. Construction as specified by model number reference.
- 2.2.2. Manufacturer's catalog numbers indicated below.
- 2.2.3. Lawn heads – 6" pop up.

- 2.2.3.1. Spray heads: Rainbird RD1800 series, plastic body and nozzle or accepted substitute.
- 2.2.3.2. Rotor heads: Rainbird 5000 MPR series, plastic body and nozzle or accepted substitute.
- 2.2.4. Shrub heads – 6" pop up.
- 2.2.3.1. Spray heads: Rainbird RD1800 series, plastic body and nozzle or accepted substitute.
- 2.2.3.2. Rotor heads: Rainbird 5000 MPR series, plastic body and nozzle or accepted substitute.
- 2.2.4. Groundcover heads – 12" pop up.
- 2.2.3.1. Spray heads: Rainbird RD1800 series, plastic body and nozzle or accepted substitute.
- 2.3. PIPE AND FITTINGS:
- 2.3.1. PVC Pipe for Supply Lines: PVC pipe, Polyvinyl Chloride Plastic; PVC 1120, Schedule 40, Type I, normal impact, I.P.S., NSF approved plain and/or bell end; color white; meeting requirements ASTM D2241 and D1784.
- 2.3.2. PVC Pipe for Lateral Lines: PVC pipe, Polyvinyl Chloride Plastic; PVC 1120, Class 200, Type I, normal impact, I.P.S., NSF approved plain and/or bell end; color white; meeting requirements ASTM D2241 and D1784.
- 2.3.3. PVC Pipe Fittings: PVC 1120, Schedule 40, Type I, normal impact, I.P.S., NSF approved; meeting requirements ASTM D2466-74.
- 2.3.4. Galvanized Pipe and Fittings: Standard weight pipe, hot dipped galvanized and threaded. Threaded cast iron or galvanized malleable fittings.
- 2.3.5. PVC Riser: PVC 1120, Type I, normal impact I.P.S., NSF approved Schedule 80 PVC, conform to PS 21-70. Cut to required lengths; threaded both ends, color dark grey.
- 2.4. SLEEVES:
- 2.4.1. Under parking, driveway paving and through walls – Schedule 40 PVC pipe.
- 2.4.2. All other – Class 200 PVC pipe.
- 2.4.3. Sleeve diameter shall be two sizes larger than diameter of pipe installed in sleeve.
- 2.4.4. Install separate sleeve dedicated for irrigation control wire.
- 2.5. PVC SOLVENT CEMENT:
- 2.5.1. NSF approved solvent for PVC to 4" pipe size.
- 2.5.2. Meeting requirements of ASTM D 2584-73a, #705.
- 2.5.3. Weld-On 705 or accepted substitute.
- 2.6. PVC PRIMER AND CLEANER:
- 2.6.1. Weld-On P-70 or accepted substitute.
- 2.7. BALL VALVE:
- 2.7.1. Full port, brass or bronze with stainless steel ball and Teflon seat.
- 2.8. MANUAL DRAIN VALVE:
- 2.8.1. Brass globe valve, 1/2" size with cross-type wheel.
- 2.9. QUICK-COUPLING VALVE:
- 2.9.1. One piece, double slot, 3/4" inlet with vinyl cover and lock top.
- 2.9.2. Rain Bird Model or accepted substitute.
- 2.10. QUICK-COUPLING VALVE KEY:
- 2.10.1. Rain Bird or accepted substitute.
- 2.11. LOCK CAP KEY:
- 2.11.1. Rain Bird or accepted substitute.
- 2.12. HOSE SWIVEL:
- 2.12.1. Rain Bird or accepted substitute.
- 2.13. LOCKING KEY AND LID:
- 2.13.1. Rain Bird or accepted substitute.
- 2.14. LOCKING LID FOR MANUAL DRAIN VALVE:
- 2.14.1. Weathermatic 906L or accepted substitute.
- 2.15. VALVE BOX:
- 2.15.1. Ametek Economy, Standard and Jumbo sized boxes, extensions and locking covers where applicable or accepted substitute.
- 2.16. DRAINAGE ROCK:
- 2.16.1. 1-1/2"-inch clean, washed round drain rock.
- 2.17. BACKFLOW PREVENTION DEVICE:
- 2.17.1. As approved by local jurisdiction. If acceptable, use a double check backflow prevention device.
- 2.17.2. Size as required.
- 2.18. RAIN SENSOR:
- 2.18.1. Rain Bird Model RSD-BEX, WR2 or accepted substitute.
- 2.19. REMOTE CONTROL VALVE:
- 2.19.1. Rain Bird PEB Series, 24 volt electric valve or accepted substitute.
- 2.19.2. Sizes as required.
- 2.20. CONTROL WIRE:
- 2.20.1. Type UF bearing U/L label for direct underground burial, NEC Class II circuits. AWG sizes, #14 minimum.
- 2.21. ELECTRIC CONNECTIONS:
- 2.21.1. 3M DBY connectors or accepted substitute.
- 2.22. IRRIGATION CONTROLLER:
- 2.22.1. Rain Bird Model ESP-LX Modular Series wall mounted controller with lock and two (2) keys or accepted substitute.
- 2.22.2. Number of circuits as determined by planting types and planter layout.

3. PART 3 – EXECUTION

- 3.1. GENERAL:
- 3.1.1. Install materials and equipment in strict accordance with manufacturer's written specifications and commendations.
- 3.1.2. Comply with local and state codes.
- 3.1.3. Maintain job premises clean and free from accumulations of debris or disorder at all times. Remove equipment and surplus materials from each area of work as completed.
- 3.1.4. Leave no work-in condition that would jeopardize other persons or property.
- 3.1.5. Test all lines for one hour minimum at pressure of water source. Receive approval of test prior to back filling work. Test acceptable if no more than 5psi loss after 1 hour. Coordinate with Project Representative.
- 3.2. TRENCH EXCAVATION:
- 3.2.1. Straight or "snaked" slightly.
- 3.2.2. Slope bottoms uniformly, 1/2% minimum grade to drain.
- 3.2.3. Trench depth 18" minimum (lateral lines), 24" minimum (supply lines) and 30" maximum, bottoms free from sharp rocks or objects that may damage pipe.
- 3.2.4. Trench width sufficient to allow proper tamping of backfill around pipe.
- 3.2.5. Keep topsoil separate from subsoils. Replace in order of removal.
- 3.2.6. Do not machine trench through root zones of existing trees to remain. Hand dig only.
- 3.3. TRENCH BACKFILL:
- 3.3.1. Do no backfilling until approval of pressure test.
- 3.3.2. Use excavated soil or sand bedding materials.
- 3.3.3. Material shall be free from rock and/or debris that may damage pipe or prevent proper compaction.
- 3.3.4. Place 6-inch maximum lifts and compact thoroughly.
- 3.3.5. Place mainline backfill only when pipe is filled with water; 25 psi pressure minimum.
- 3.4. INSTALLATION OF PIPE:
- 3.4.1. Sizes, type as specified.
- 3.4.1.1. Lay with support beneath entire lengths.
- 3.4.1.2. Slope all pipe to gravity drain.
- 3.4.1.3. Snake PVC piping to allow for expansion and contraction.
- 3.4.1.4. Combine runs in common trench where feasible with 3-inch minimum vertical and horizontal separation.
- 3.4.1.5. Flush lines prior to installation of valves, irrigating heads and nozzles.
- 3.4.1.6. Install stubouts for future connection(s) as approved. Enclose stubouts in valve box.
- 3.4.2. Cutting and joining:
- 3.4.2.1. Cut pipe square, debur and remove all surface contaminants or moisture.
- 3.4.2.2. Chamber all out ends.
- 3.4.2.3. Apply primer and solvent cement in accordance with manufacturer's recommendations.
- 3.4.2.4. Make threaded joints leak resistant, with freedom of movement.
- 3.4.2.5. Use Teflon thread sealant for threaded joints.
- 3.4.2.6. Clean out threads and use tape or compound joint sealants for all galvanized pipe connections. Leave no more than two (2) threads showing all joints.
- 3.5. INSTALLATION OF SLEEVING:
- 3.5.1. Install sleeving under all asphalt, concrete or other hard surface pavement areas and through walls as required.
- 3.5.2. Size as required for pipe and control valve wiring.
- 3.5.3. Coordinate for placement prior to asphalt/concrete/wall work.
- 3.5.4. Position sleeves so pipe can be easily moved.
- 3.5.5. Jack/boare under existing pavement as required.
- 3.5.6. Install separate sleeve dedicated for irrigation control wiring.
- 3.5.7. Extend sleeves 12 inches minimum beyond walk or pavement edge.
- 3.6. INSTALLATION OF VALVES:
- 3.6.1. Types as specified:
- 3.6.1.1. Install in accordance with manufacturer's specifications and recommendations.
- 3.6.1.2. Install manual drain valves at locations to completely drain all pipe lines. Minimum one manual drain valve per zone.
- 3.7. SYSTEM PURGING:
- 3.7.1. Prior to backfilling installed system, installing irrigation heads and testing the system, purge all system zones with clean water at sufficient pressure and duration to verify that lines are free and clear of any

- rocks, dirt, gravel, debris, foreign materials and/or contaminants.
- 3.7.2. If blockages are discovered, remove sections of system piping and remove blockages as required, reconnect sections and repurge system.
- 3.7.3. Install irrigation heads and test all system zones with clean water of sufficient pressure and duration to ensure the system is capable of handling the loads required and verify that controller and valves are functioning as intended.
- 3.8. INSTALLATION OF IRRIGATION HEADS:
- 3.8.1. Types as specified. Install in accordance with manufacturer's recommendations and specifications.
- 3.8.2. Adjust and balance:
- 3.8.2.1. Adjust and balance each system zone.
- 3.8.2.2. Achieve uniform area coverage by all head types.
- 3.8.2.3. Spray across walks, onto walks, buildings, windows or paved areas is not acceptable.
- 3.9. INSTALLATION OF IRRIGATION CONTROLLER:
- 3.9.1. Type as specified.
- 3.9.1.1. Install wall or pedestal mounted unit or battery-powered unit per manufacturer's recommendations and specifications.
- 3.9.1.2. Enclose all control wiring in conduit.
- 3.9.1.3. Verify exact placement of controller with Project Representative.
- 3.9.1.4. Adjust irrigation controller timing for each zone based on plant type, sun exposure, microclimatic conditions, current industry standards, etc.
- 3.9.2. Work by other trades including the following (Landscape Contractor to coordinate):
- 3.9.2.1. Provision for electrical service to controller location.
- 3.9.2.2. Control wire conduit to exterior of building.
- 3.10. INSTALLATION OF RAIN SENSOR:
- 3.10.1. Install per manufacturer's recommendations and specifications.
- 3.10.2. Location as acceptable to Project Representative.
- 3.10.3. Coordinate conduit from irrigation controller to rain sensor location with appropriate trades.
- 3.11. INSTALLATION OF CONTROL WIRE:
- 3.11.1. For wire sizes, refer to wire sizing chart published by manufacturer of control valves.
- 3.11.2. Use specified electrical connectors at all splices. Place all splices in valve boxes, and note locations on as-built record drawings.
- 3.11.3. Bundle wire together with electrical tape at 10-foot intervals. Provide 12-inch expansion coils every 100 feet where runs exceed this length and at each valve.
- 3.11.4. Place wire at bottom of pipe runs to provide protection.
- 3.11.5. Provide one extra wire to each control valve similar to common wire for use if wire fails. Color to be different. Label as "Extra Wire" at controller. If multiple controllers are utilized, provide an extra wire per controller.
- 3.11.6. Install additional sets of irrigation control wires at stubouts as approved.
- 3.12. FINAL TESTING:
- 3.12.1. Test entire system for one (1) hour at normal operating pressure.
- 3.12.2. Test is acceptable if, after one (1) hour of pressure testing, at normal operating pressure, operating pressure has decreased one (1) percent of loss.
- 3.12.3. If test fails, immediately trace leaks and correct.
- 3.12.4. Replace soils liquefied by system failures with stable materials.
- 3.12.5. Repeat system test as indicated above until testing meets requirements.

END OF IRRIGATION NOTES

LANDING ON THE COWLITZ
CASTLE ROCK, WASHINGTON

IRRIGATION SPECIFICATIONS
PHASE 1 SUBDIVISION PRELIMINARY ENGINEERING



01/24/2025

Mackay Sposito
ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

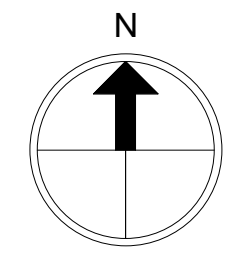
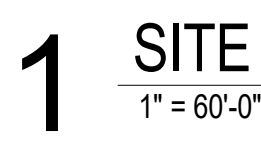
REVISIONS:

JOB NO.: 18591.01
DATE: 3/20/2025
SCALE: H: 1"= 50' V: N/A
DESIGNED BY: MCP
DRAWN BY: MCP
CHECKED BY: TAW

FINAL

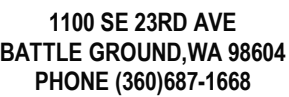
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LUMINAIRE SCHEDULE							
FIXTURE CALLOUT	FIXTURE DESCRIPTION	FIXTURE MODEL #	POLE PART #	MTG. HEIGHT	WATTS	VOLTAGE	QTY
A	LED POLE MTD. ACORN	PT-A850SRLED-5P-6ARC35T3-MDL03-A/CM	3916T5(MOD)/GFI/UC/1-DBA/1-DHPA-Strap/CM	16" - 0"	92 VA	120 V	10
A-EX	EXISTING ACORN	PT-A850SRLED-5P-6ARC35T3-MDL03-A/CM	3916T5(MOD)/GFI/UC/1-DBA/1-DHPA-Strap/CM	16" - 0"	92 VA	120 V	1



TARGET ILLUMINATION LEVELS		
ROADWAY CLASSIFICATION TYPE	AVERAGE* (FC)	UNIFORMITY RATIO** (AVG/MIN)
COLLECTOR	0.4	6:1

ROADWAY SECTION:	AVERAGE:	MINIMUM:	AVG/MIN:
ROAD C	0.92FC	0.2FC	4.6
ROAD E	0.85FC	0.2FC	4.25
ROAD F	0.97FC	0.2FC	4.85
ROAD G	0.96FC	0.2FC	4.8
ROAD H	0.95FC	0.2FC	4.75
OVERALL LIGHTING	0.95FC	0.2FC	4.75

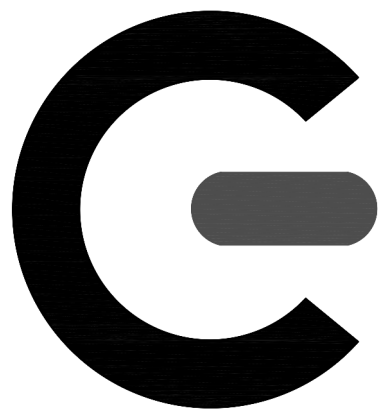


CASTLE ROCK, WA

MARK	DATE	DESCRIPTION
REVISIONS		
PROJECT NUMBER: 25-P04		
ISSUE DATE:		3/26/2025
DESIGNED BY:		DEREK S.
REVIEWED BY:		RAND J.

SHEET

STREET
PHOTOMETRICS
SCALE
As indicated



CASCADE
ELECTRICAL

1100 SE 23RD AVE
BATTLE GROUND, WA 98604
PHONE (360)687-1668

RIVER'S EDGE AT THE LANDING SUBDIVISION

CASTLE ROCK, WA

MARK	DATE	DESCRIPTION
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REVISIONS

PROJECT NUMBER: 25-P04

ISSUE DATE: 3/26/2025

DESIGNED BY: DEREK S.

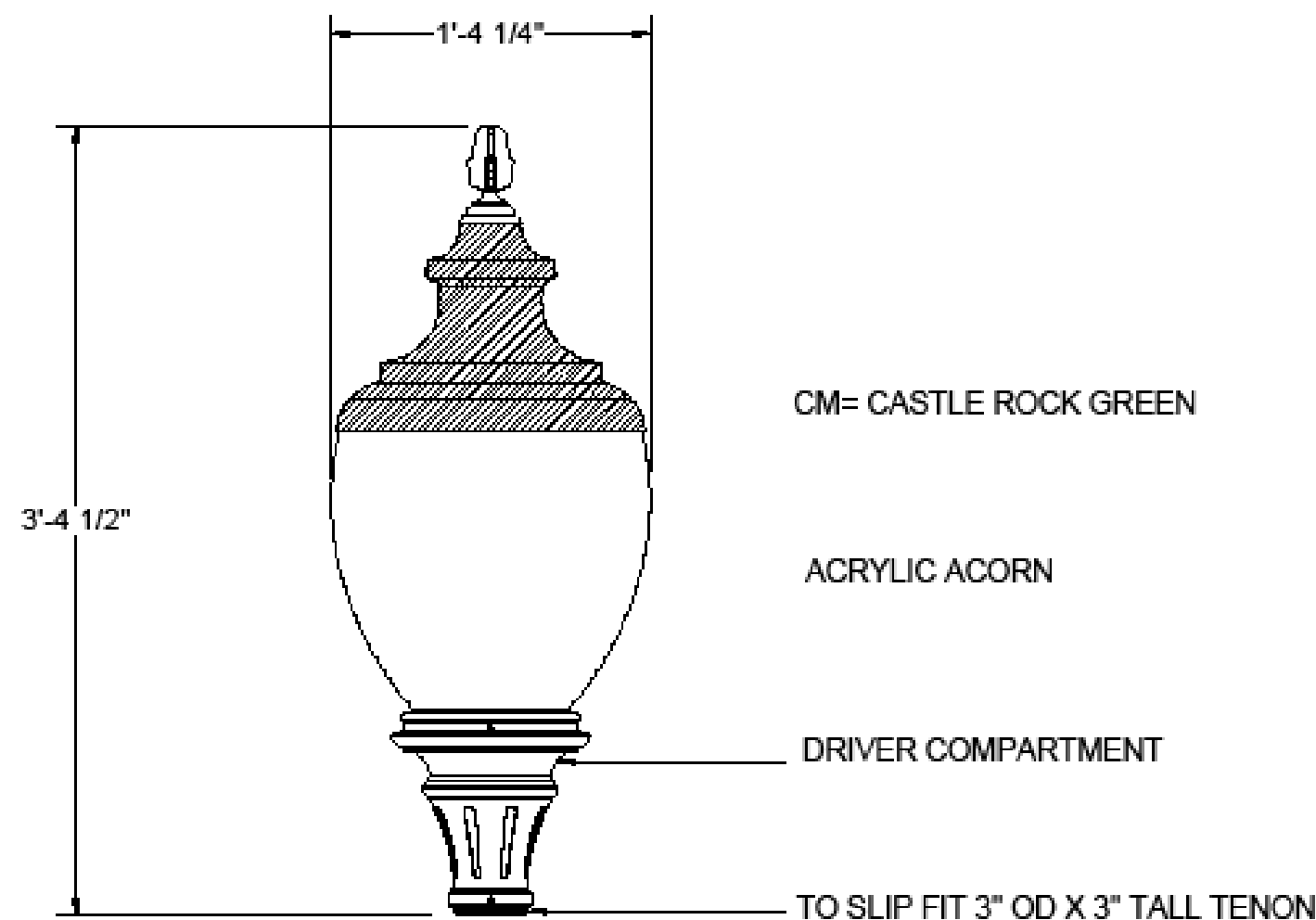
REVIEWED BY: RAND J.

PERMIT SET

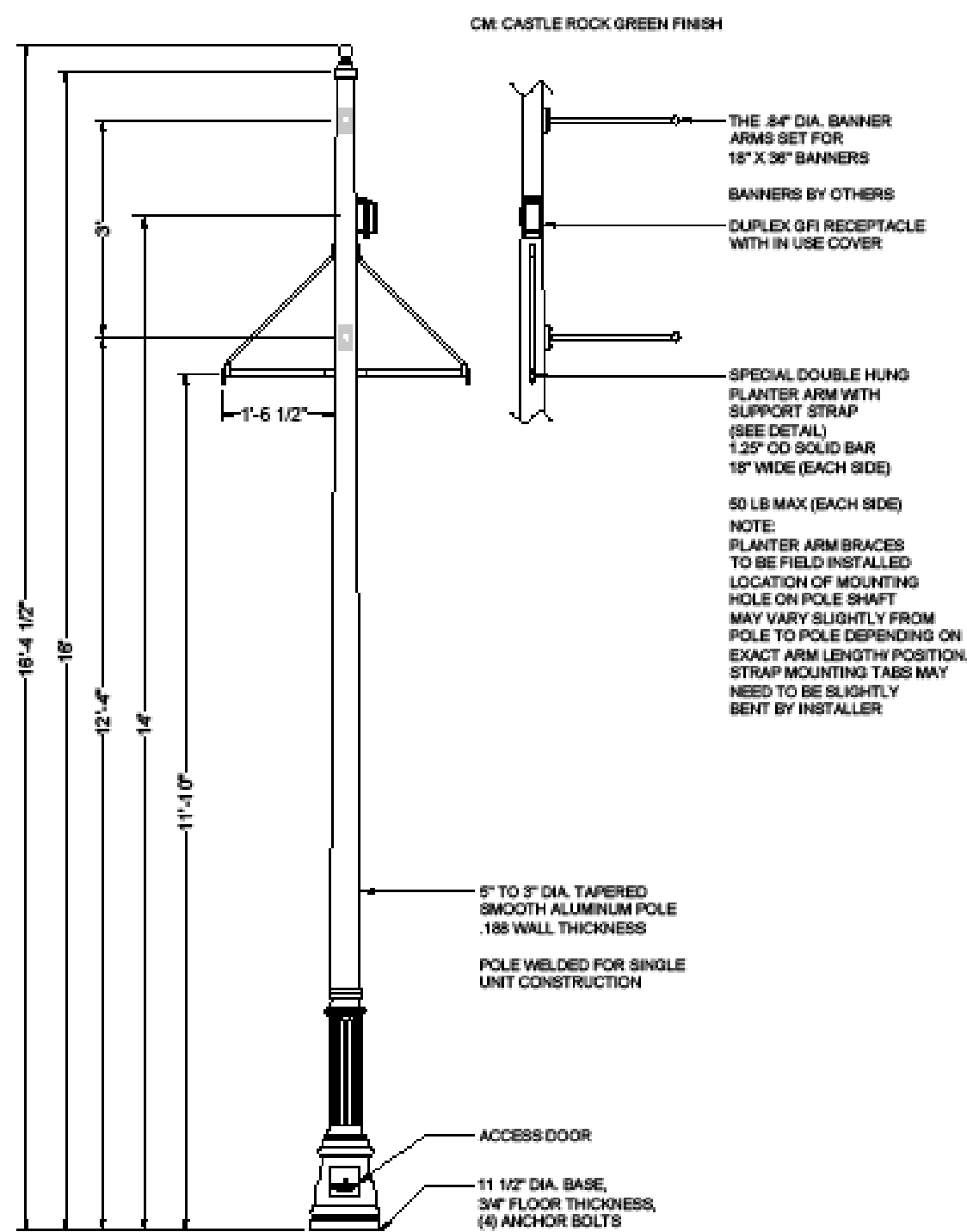
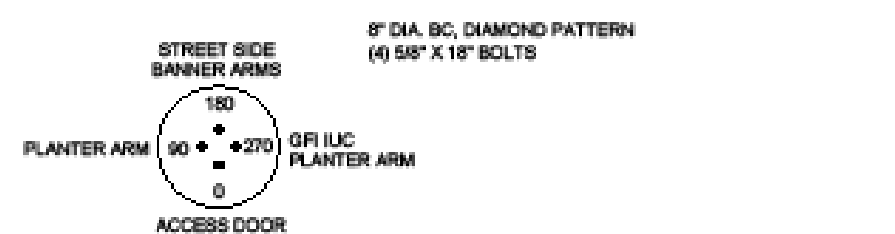
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CL1.1

FIXTURE
SPECIFICATIONS
SCALE

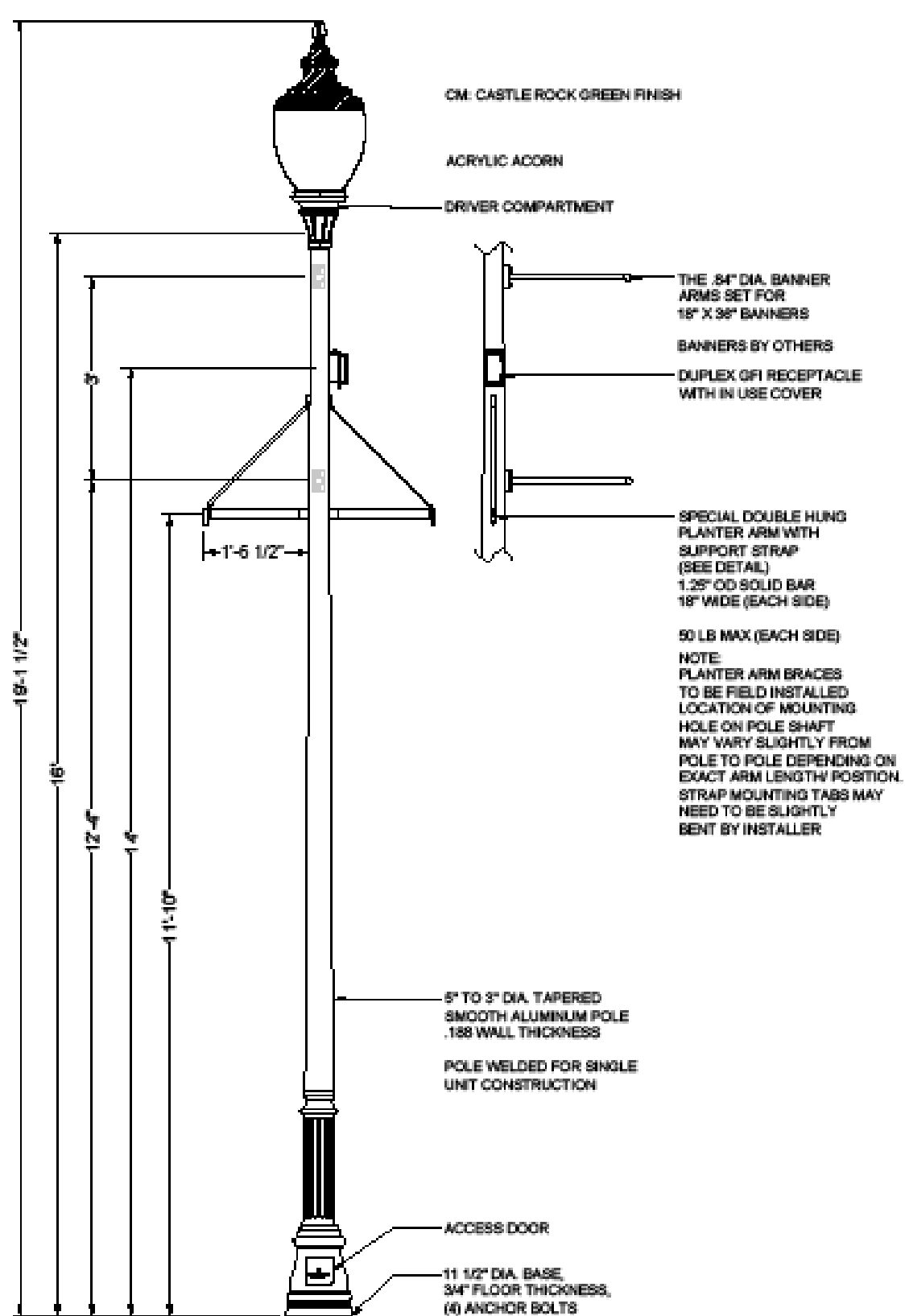
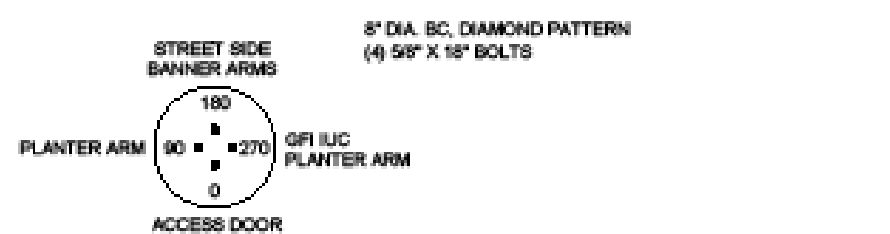


DATE: 2/13/25	DRAWN: EH	CHECKED:	CATALOG NO:
DRAWING NO: SC51144	REVISION: A	PT-AB850SRLED-SP-6ARC3ST3-MDL03-AICM	
REV A	ORIGINAL	DATE: 2/13/25	
REV	REVISIONS	DATE	RVSD
TOLERANCES: POLE: +/- 2" BANNER ARM SPACING: +/- 0.02" MOUNTING HT FOR POLE ACCESSORIES: +/- 0.01"			
JOB NAME: CASTLE ROCK, WA		LOCATION: CASTLE ROCK, WA	



SSP10228
Y0146+ 3000 BASE, MODIFIED FOR 58\"/>

DATE: 2/13/25	DRAWN: EH	CHECKED:	CATALOG NO:
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REV A	ORIGINAL	DATE: 2/13/25	
REV	REVISIONS	DATE	RVSD
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JOB NAME: CASTLE ROCK, WA		LOCATION: CASTLE ROCK, WA	



SSP10228
Y0146+ 3000 BASE, MODIFIED FOR 58\"/>

DATE: 2/13/25	DRAWN: EH	CHECKED:	CATALOG NO:
DRAWING NO: SC51146	REVISION: A	SSP1028-PT-AB850SRLED-SP-6ARC3ST3-MDL03-AICM	
REV A	ORIGINAL	DATE: 2/13/25	
REV	REVISIONS	DATE	RVSD
TOLERANCES: POLE: +/- 2" BANNER ARM SPACING: +/- 0.02" MOUNTING HT FOR POLE ACCESSORIES: +/- 0.01"			
JOB NAME: CASTLE ROCK, WA		LOCATION: CASTLE ROCK, WA	

River's Edge at the Landing

Preliminary

Technical Information Report

River's Edge at the Landing

March 26, 2025

PREPARED FOR :

City of Castle Rock
141 A St SW, Castle Rock, WA 98611

CLIENT :

CT6, LLC
Shane Tapani
360-687-1148
PO Box 1419
Battle Ground, WA 98604

Jurisdiction Project Number : XXXXX

MacKay Sposito

Prepared By : Paton Malley
Project Number : 18591.01

03/26/2025



MacKay  Sposito

March 26, 2025

Vancouver Office

18405 SE Mill Plain Blvd, Suite 100 • Vancouver, WA 98683

360.695.3411 • info@mackaysposito.com

Preliminary Technical Information Report (TIR)
River's Edge at Landing on the Cowlitz

Engineer's Certification

March 26, 2025
City of Castle Rock
Project Engineer

"I hereby state this Technical Information Report (TIR) has been prepared under my supervision and meets the standards of care and expertise which is usual and customary in this community for professional engineers. The TIR includes the required information per City of Castle Rock's Storm Drainage Standards and complies with the 1992 Stormwater Management Manual for the Puget Sound Basin. The proposed stormwater design is feasible."



03/26/2025

Taylor Wilson, PE
Project Manager

Table of Contents

1. Project Overview	1
1.1 Site Information	1
1.2 Determination of Applicable Minimum Requirements	2
2. Minimum Requirements	3
2.1 Meeting the Minimum Requirements	3
2.2 Soil Evaluation	6
3. Conveyance System	7
3.1 Conveyance System Analysis and Design	7
4. References	8

Tables

Table 1 - Existing Basins	2
Table 2 – Proposed Basins	3

Appendices

Appendix A Maps

Appendix B Hydrologic Exhibits and Calculations

Appendix C Geotechnical Report

Appendix D Final Plans

Appendix E Operation and Maintenance

1. Project Overview

1.1 Site Information

The proposed project involves the construction of the River's Edge at the Landing Subdivision, including access and circulation roads, public sewer and water systems, stormwater treatment and conveyance systems, private utility connections for each residence, sidewalks and ADA ramps, and landscaping. Access to the subdivision will be provided by a connection to Road B, which will be constructed as part of Phase 1 construction of the Landing on the Cowlitz (LOT) Master Plan. Water, sewer, and stormwater will all connect to the public utility systems to be constructed during Phase 1 construction. These improvements can be seen in more detail in the plans attached in Appendix D.

Topography

The project site is located in the City of Castle Rock, Cowlitz County, WA. The site is located at Parcel 308640100, as adjusted by BLA #CR-BLA-24-01 (AFN #3762029 and AFN #3763318). Road A, Road B, and Road C/Larsen Ln of the Phase 1 Access & Utilities project bound the residential parcel to the north, east, and south, respectively. Residential properties and the Timberlake Church bound it to the west. Historically, much of this area falls within the FEMA 100-year flood plain elevation of 48.

While the LOTC Phase 1 development has not been constructed at the time of this report, the improvements proposed on those plans are shown as the existing conditions for this phase of the development. By the time this project is constructed, the proposed site will be graded to a pad elevation of 51 feet (above the base flood elevation) and the Phase 1 Roadways and utility systems will be constructed per the grades shown in those plans. With the site raised to an elevation of 51 feet, a maximum slope of 3:1 connects the site to an existing stormwater ditch along the northern property line.

Existing Storm Systems

There are no existing stormwater structures within the site, except for an existing stormwater ditch that captures offsite runoff from the adjacent properties running onto the LOTC development. This ditch drains westerly along the northern property line, turns south for a short stretch, passes under Larsen Lane through a culvert, and into a detention pond tied to the offsite LOTC Outfall system. The Phase 1 roadways surrounding the subdivision parcel drains to the onsite detention pond/ditch and LOTC Outfall system.

Assumptions and Design Parameters

This report is being prepared as a supplement to the Stormwater Master Plan that has been prepared for the full LOTC Development. From this point forward, the proposed onsite storm system for the subdivision will be referred to as the "River's Edge storm system" and the Phase 1 Access and Utilities storm system will be referred to as the "Phase 1 storm system". All proposed residential lots and impervious areas of the River's Edge site will drain to a storm system within the site roadways, while some of the pervious landscaped areas along the northern and western edges of the site will drain to a drainage swale along the property line. The existing swale along that northern property line will need some minor re-grading to ensure that the proposed grading onsite works with all perimeter conditions. However, the redesigned ditch will still follow the same drainage pattern as the existing ditch with the addition of a few area drains and a conveyance pipe. This offsite run-on was analyzed as part of the

LOTC Stormwater Master Plan, and a conveyance analysis of the proposed ditch and pipe will be provided at the time of final design. The River's Edge storm system within the roadway will connect to the Phase 1 storm system at the entrance to the subdivision via a manhole that will be constructed during Phase 1. Therefore, all runoff onsite will eventually be conveyed to the outfall system to the Cowlitz River (whether that be through the onsite or offsite system).

Per the City of castle Rock Design Standards, the stormwater design for this project must conform with the regulations outlined in the 1992 Stormwater Management Manual for the Puget Sound Basin (SWMMPBSB). However, this project proposes using mechanical treatment catch basins. Because these facilities are not included in the 1992 SWMMPSB, the design will also need to meet some requirements from the 2024 Stormwater Management Manual for Western Washington (SWMMWW).

As part of the LOTC Stormwater Master Plan, it was assumed that each lot will have a roof area of 1,500 square feet. This assumption was used in all modeling done for the preliminary storm design as well. Adjustments to these assumptions will be made at final engineering, after a builder selects floor plans for the lots.

1.2 Determination of Applicable Minimum Requirements

The stormwater management design of this project is required to comply with Section 5 of the City of Castle Rock Development Policies and Public Works Standards, and the 1992 SWMMPSB. Per Section I-2.4.1 of the 1992 SWMMPSB and Figure I-2.1 'Flowchart for Determining Minimum Requirements,' attached in Appendix B, Minimum Requirements 1-11 will apply to the site development.

The Existing Basin Map attached in Appendix A represents only the proposed development. Analysis of all offsite run-on to the proposed ditch will be included with the LOTC Stormwater Master Plan. A Proposed Basin Map is also attached in Appendix A. Given that this report is being prepared for preliminary engineering and not final design, a conveyance analysis was not completed at this time. However, an emphasis was put on preliminary treatment design to approximate the locations of mechanical filter catch basins and roughly size the filters needed. Therefore, the proposed basin map only provides more detailed information on the areas that have been modeled for treatment (proposed roadways, driveways, private driveway tracts, etc). As previously mentioned, the assumed roof area used in the Stormwater Master Plan is 1,500 square feet per lot. For now, the areas associated with these lots have been omitted from in depth analysis because the roof areas will bypass treatment. This will be achieved by a private storm system within easements on the front of the lots, connecting directly to storm manholes after treatment. This piping and all associated easements are shown in the preliminary plans. A more detailed proposed basin map will be completed at the time of final engineering, along with full conveyance modeling for the River's Edge storm system.

Table 1 - Existing Basins

Basin	Drainage System	Pervious Area (AC)	Impervious Area (AC)	Total Area (AC)
1	Onsite	7.65	0.00	7.65
2	Onsite	1.21	0.00	1.21
3	Offsite	0.18	0.00	0.18
Total		9.04	0.00	9.04

Table 2 – Proposed Basins

Basin	Drainage System	Pervious Area (AC)	Impervious Area (AC)	Total Area (AC)
1	Onsite	0.11	0.22	0.33
2	Onsite	0.03	0.07	0.10
3	Onsite	0.10	0.25	0.35
4	Onsite	0.11	0.21	0.32
5	Onsite	0.05	0.13	0.18
6	Onsite	0.13	0.25	0.38
7	Onsite	0.07	0.12	0.19
8	Onsite	0.09	0.17	0.26
9	Onsite	0.06	0.08	0.14
10	Onsite	0.07	0.17	0.14
11	Onsite	0.12	0.27	0.39
12	Onsite	0.12	0.10	0.22
Lots	Onsite (Bypassing Treatment)	3.29	1.55 (1,500 SF per lot)	4.84
13	Offsite	1.10	0	1.10
Total		5.43	3.61	9.04

2. Minimum Requirements

2.1 Meeting the Minimum Requirements

The stormwater management design for this project complies with the City of Castle Rock Storm Drainage Standards and the 1992 Stormwater Management Manual for the Puget Sound Basin. All required information is included in this stormwater report and the proposed stormwater facilities are feasible.

I-2.5 Minimum Requirement #1: Erosion and Sediment Control

A Preliminary Erosion Control Plan has been included with the project plans and are attached in Appendixes D. There is an existing SWPPP in place for the Mass Grading and Phase 1 construction onsite. An updated SWPPP will be included for this phase at the time of Final Engineering.

I-2.6 Minimum Requirement #2: Preservation of Natural Drainage Systems

Natural drainage patterns have been mimicked where possible or improved to direct all runoff onsite to the LOTC outfall to the Cowlitz River.

I-2.7 Minimum Requirement #3: Source Control of Pollution

The proposed use of this site is residential, therefore there are no source control BMPs required. However, the following BMPs are proposed:

BMP S2.00 Maintenance of Storm Drainage Facilities

I-2.8 Minimum Requirement #4: Runoff Treatment BMPs

Per Table I-4.2, because Oil/Water Separation, Nutrient Control, and Streambank Erosion Control are not required, Conventional Treatment is all that is required onsite (WADOE, 1992). Runoff onsite will be treated by Contech StormFilter mechanical treatment catch basins. Per Section V-11 Manufactured Treatment Devices as BMPs, the proposed devices are adequate for providing basic treatment (WADOE, 2024). The proposed basins shown in the Proposed Basin Map have been modeled in WWHM to determine their respective water quality flow rates. The combined water quality flow rate for the areas receiving treatment is 137.57 GPM, which equates to eight 27" PSORB cartridges or eleven 12" SPORB cartridges. The preliminary WWHM2012 calculations for the sizing of the treatment filters can be found in Appendix B. A more detailed layout of the proposed cartridge locations is included in the preliminary stormwater plan, attached in Appendix D. For more detailed information on the contributing areas to each facility, see the Proposed Basin Map attached in Appendix A.

Because a treatment method from the 2024 SWMMWW has been selected, the Minimum Requirements from the 2024 manual have been reviewed. Per Figure I-3.1 'Flow Chart for Determining Requirements for New Development,' nearly all proposed basins onsite result in over 5,000 square feet of new impervious surface area. All Minimum Requirements apply to those sub basins. For simplicity, every basin will be designed to meet all Minimum Requirements. Per Figure I-3.3 'Flowchart for Determining MR #5 Requirements,' attached in Appendix B, the developer will meet the LID Performance Standards onsite by implementing LID devices where practical. The site is flow control exempt, but perforated pipes within infiltration trenches will reduce the runoff leaving the site. The proposed infiltration trenches will be designed to ensure runoff flows from the site comply with all models done for the LOTC Stormwater Master Plan. More detailed infiltration models will be provided at the time of Final Engineering. BMP T5.13 Post Construction Soil Quality and Depth will also be implemented to all landscaped areas.

I-2.9 Minimum Requirement #5: Streambank Erosion Control

All runoff onsite will outlet to the Cowlitz River, a flow control exempt water body, or will be infiltrated. As discussed above, some infiltration will be conducted onsite to ensure that flows to the LOTC Master Outfall comply with the values used in the Master Stormwater Plan. There is no streambank erosion present in the current condition. The proposed condition will result in no excess runoff to the streams onsite, so streambank erosion is not expected as part of this project. The discussion between the city regarding this issue is detailed in the Stormwater Master Plan.

I-2.10 Minimum Requirement #6: Wetlands

No runoff onsite will be directed to the onsite wetlands in the proposed conditions. Therefore, this minimum requirement is not required.

I-2.11 Minimum Requirement #7: Water Quality Sensitive Areas

There are no water quality sensitive areas that will be affected by this project. Therefore, this minimum requirement is not required.

I-2.12 Minimum Requirement #8: Off-site Analysis and Mitigation

An offsite analysis was conducted a quarter mile downstream from the outlet to the Cowlitz River using the available data. The following items were analyzed for both existing and proposed conditions.

- i. Excessive sedimentation: There is no excessive sedimentation present in the current condition. The proposed condition will greatly increase the impervious surface area, resulting in increases to both runoff volume and flow. Sedimentation prevention measures will be implemented both during construction and in the final condition. Measures taken during construction are detailed further in the SWPPP for this project. Stormwater treatment onsite will be provided by bioretention facilities before runoff is conveyed to the site outfall to the Cowlitz River. Further Erosion Control measures are detailed in the associated plan set and storm report for the outfall itself.
- ii. Streambank Erosion: There is no streambank erosion present in the current condition. The proposed condition will result in no excess runoff to the streams onsite, so streambank erosion is not expected as part of this project.
- iii. Discharges to Groundwater or Recharge Zones: Runoff onsite will outlet directly to the Cowlitz River
- iv. Violations of Water Quality Standards: Not present in the current or proposed condition
- v. Spills and Discharges of Priority Pollutants: Not present in the current or proposed condition

I-2.13 Minimum Requirement #9: Basin Planning

Basin Planning will not be required to modify any other Minimum Requirements.

I-2.14 Minimum Requirement #10: Operation and Maintenance

The City will take ownership of the public storm drain system upon completion of the construction. A private HOA will be responsible for the operation and maintenance of the proposed private stormwater facilities onsite. Pages from the 1992 SWMMPSB are attached in Appendix E detailing maintenance requirements for applicable components onsite. The site will be inspected for defects and maintained as needed at least once every season, as well as after all major storm events (including an in excess of the 100-year storm event).

I-2.15 Minimum Requirement #11: Financial Liability

A performance bond or other appropriate financial instruments (as approved by the City) shall be provided to ensure compliance with these standards.

2.2 Soil Evaluation

A geotechnical report was conducted by Columbia West for the whole LOTC development, dated March 30, 2023, as well as a follow up exploration in March of 2024. These reports are attached in Appendix C. The soils onsite are categorized as Hydrologic Group A.

Groundwater Data

Groundwater was not encountered in depths up to 13 feet below ground surface (BGS) in test pits 20, 21, and 22 as part of the follow up exploration. Site groundwater was observed between 15 to 35 feet below ground surface (BGS) during boring and was reported from 9 to 35 feet BGS in exploration logs. According to the geotechnical report, perched groundwater may be present in localized areas.

3. Conveyance System

3.1 Conveyance System Analysis and Design

All runoff onsite that does not infiltrate within the proposed infiltration trench will be conveyed to the Phase 1 storm system, and ultimately the onsite and offsite outfall systems. Conveyance models will be included at the time of Final Engineering to ensure that all storm systems onsite are adequately sized for onsite runoff as well as offsite run-on from surrounding areas.

A conveyance model has already been conducted as part of the Stormwater Master Plan to ensure that runoff generated by this development was appropriately factored into the ultimate design. Models will be included to ensure that flows leaving the site comply with all assumptions made in the Stormwater Master Plan.

4. References

- Castle Rock Public Works Department. 2020. *Development Policies and Public Works Standards*. Castle Rock, WA: City of Castle Rock.
- Cowlitz County Public Works Department. 2017. *Cowlitz County Stormwater Drainage Manual*. Cowlitz County.
- Hinman, Curtis. 2012. *Low Impact Development Technical Guidance Manual for Puget Sound*. PSP 2012-3. Puyallup, WA: Washington State University Extension.
- Ridgefield Public Works Department. 2017. *Engineering Standards for Public Works Construction*. Ridgefield, WA: City of Ridgefield.
- USDA Natural Resources Conservation Service. 2023. *National Soil Survey Handbook, Title 430*. United States Department of Agriculture.
- USDA Soil Conservation Service. 1972. *Soil Survey of Clark County*. United States Department of Agriculture.
- USDA Soil Science Division Staff. 2018. *Soil Survey Manual*. United States Department of Agriculture.
- WADOE. 2006. *Guidance for UIC Wells that Manage Stormwater*. 05-10-067. Olympia, WA: Washington State Department of Ecology.
- . 1992. *Stormwater Management Manual for the Puget Sound Basin*.
- . 2024. *Stormwater Manual for Western Washington*. 24-10-013. Olympia, WA: Washington State Department of Ecology.

Appendix A Maps

Vicinity Map

Aerial Map with Contours

WWHM Soil Group Classification

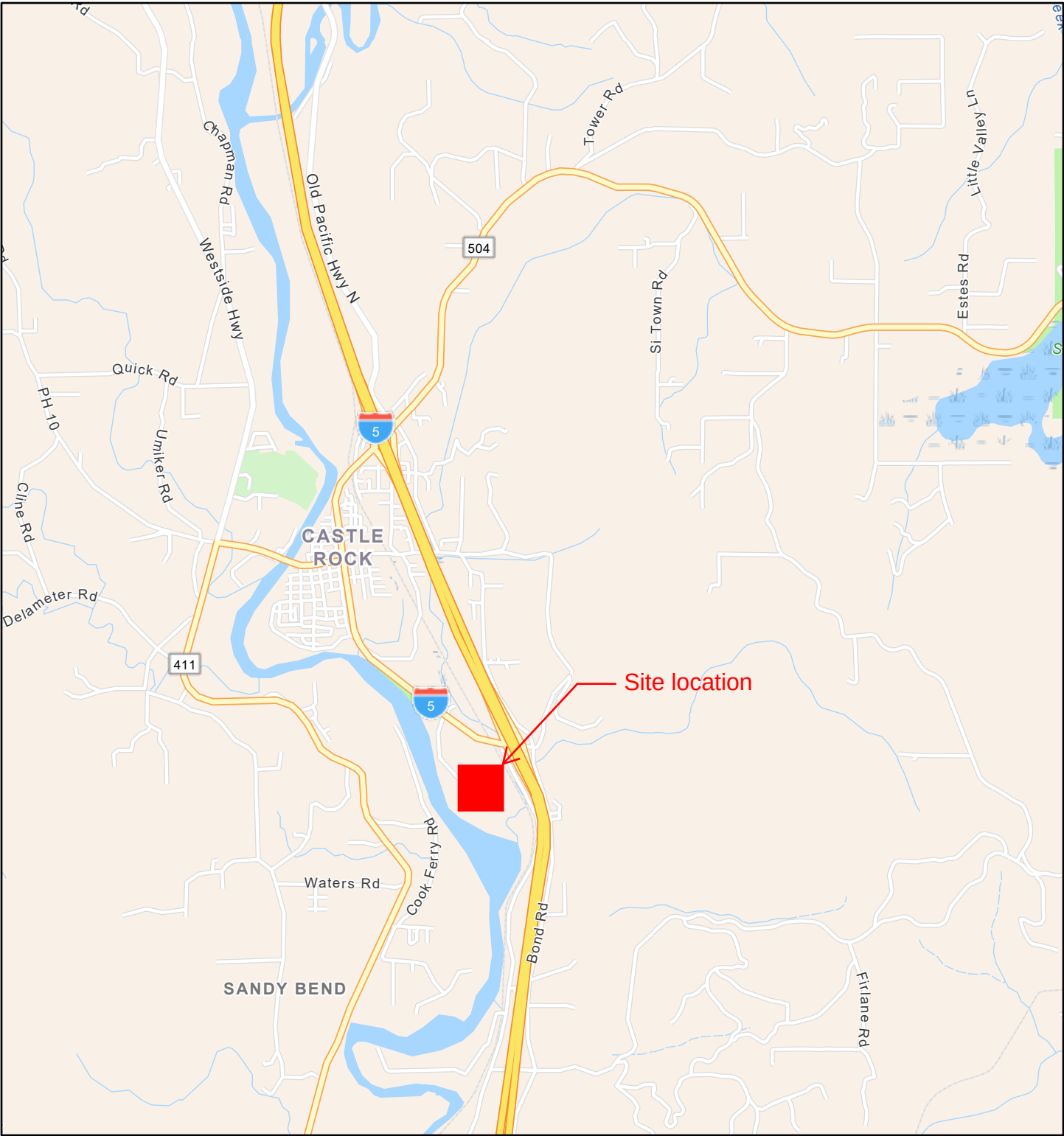
NRCS Soil Map

Isopluvial Maps

Existing Basin Map

Proposed Basin Map

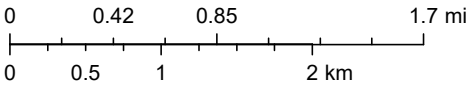
Vicinity Map



11/1/2024, 10:40:00 AM

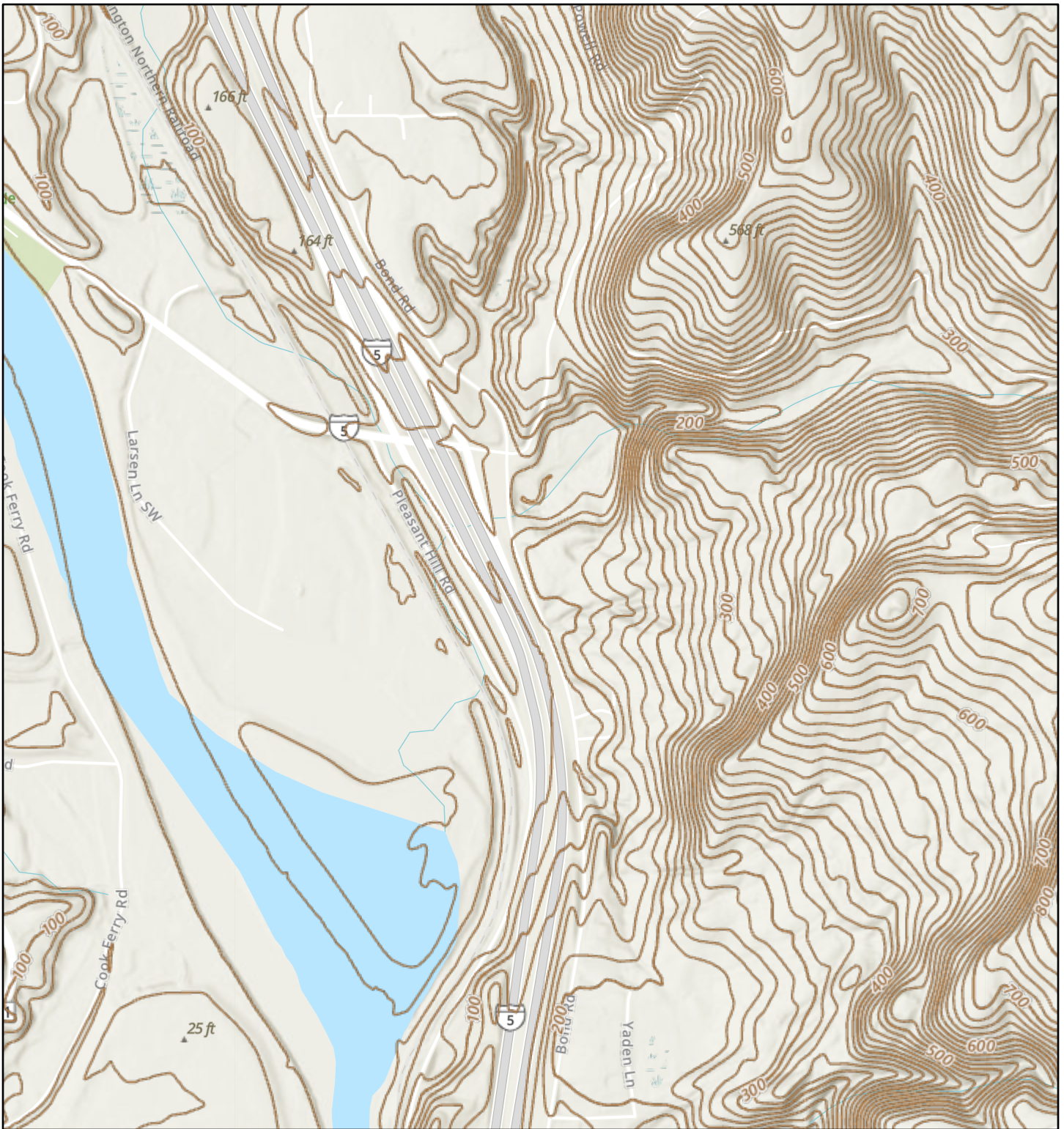
 County Boundary

1:72,224



Oregon State Parks, State of Oregon GEO, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS

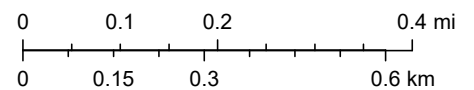
Aerial with Contours



11/1/2024, 10:44:46 AM

-  County Boundary
-  Normal Intermediate Contours
-  Normal Index Contours

1:18,056



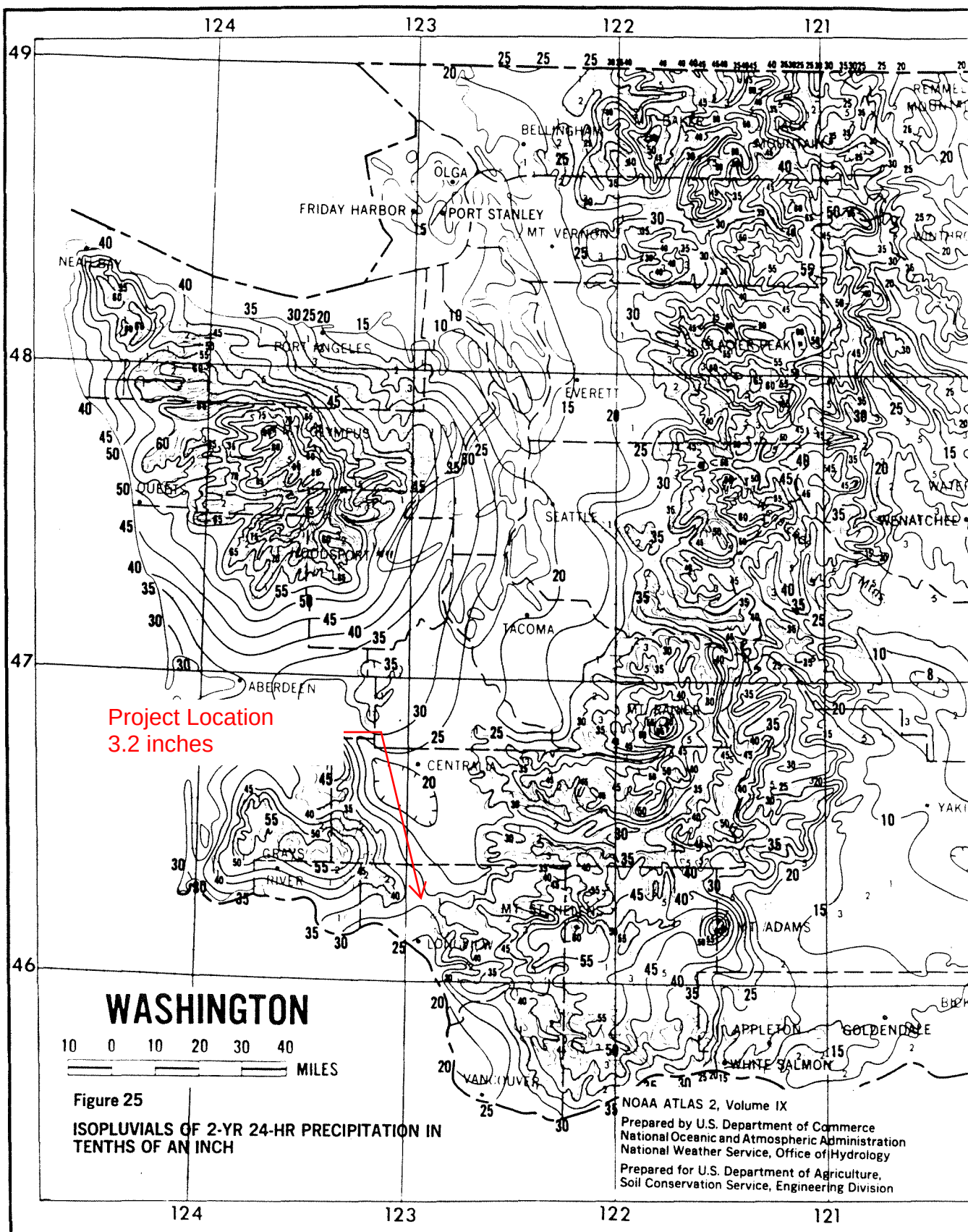
USGS The National Map: 3D Elevation Program. Data Refreshed September, 2024., Esri Community Maps Contributors, Oregon State Parks, State of Oregon GEO, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, NASA, NGA, USGS,

Web AppBuilder for ArcGIS

APPENDIX AIII-1.1

ISOPLUVIAL MAPS FOR DESIGN STORMS

Included in this appendix are the 2, 10 and 100-year, 24-hour design storm and mean annual precipitation isopluvial maps for the Puget Sound basin. These have been taken from NOAA Atlas 2 "Precipitation - Frequency Atlas of the Western United States, Volume IX, Washington.



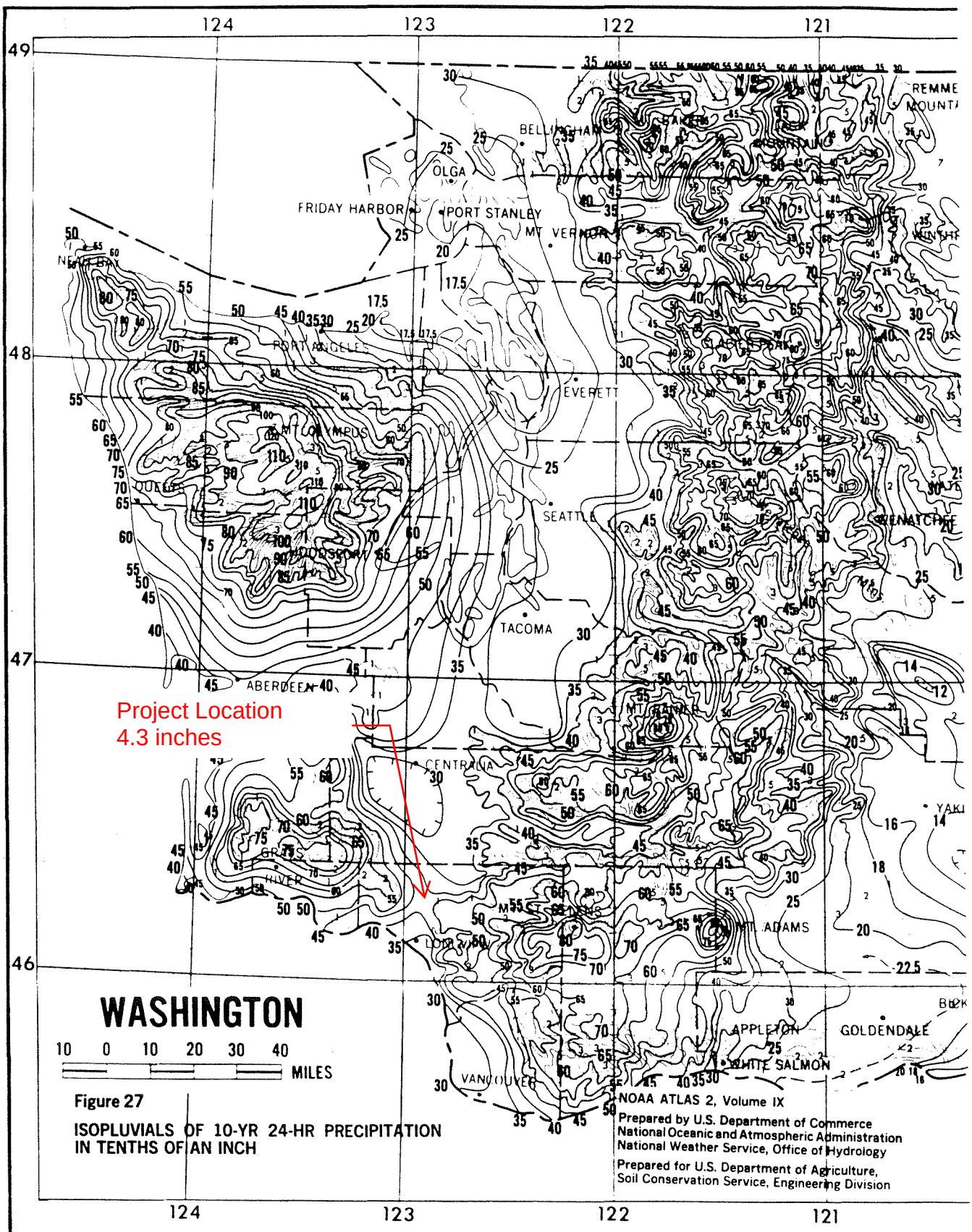
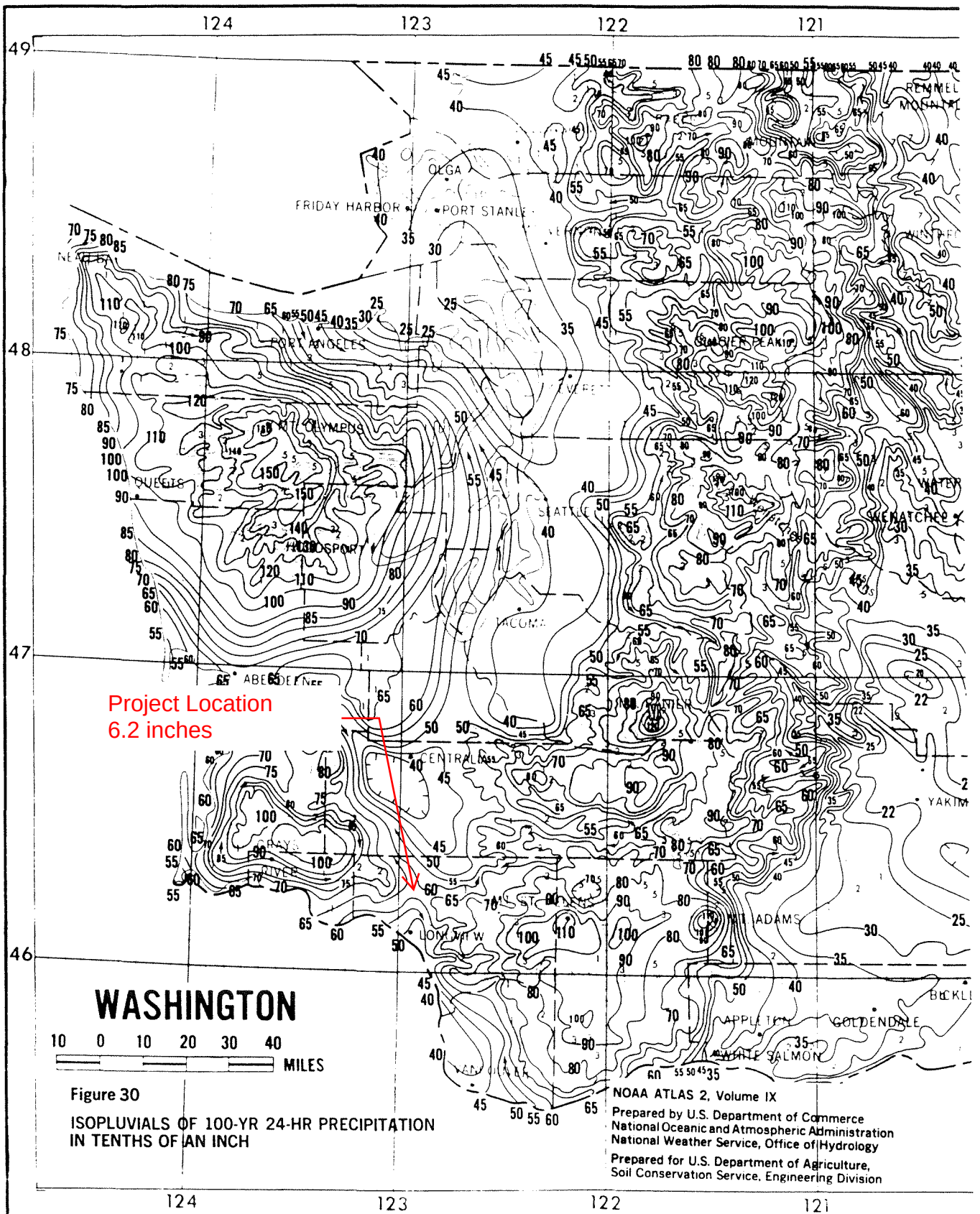
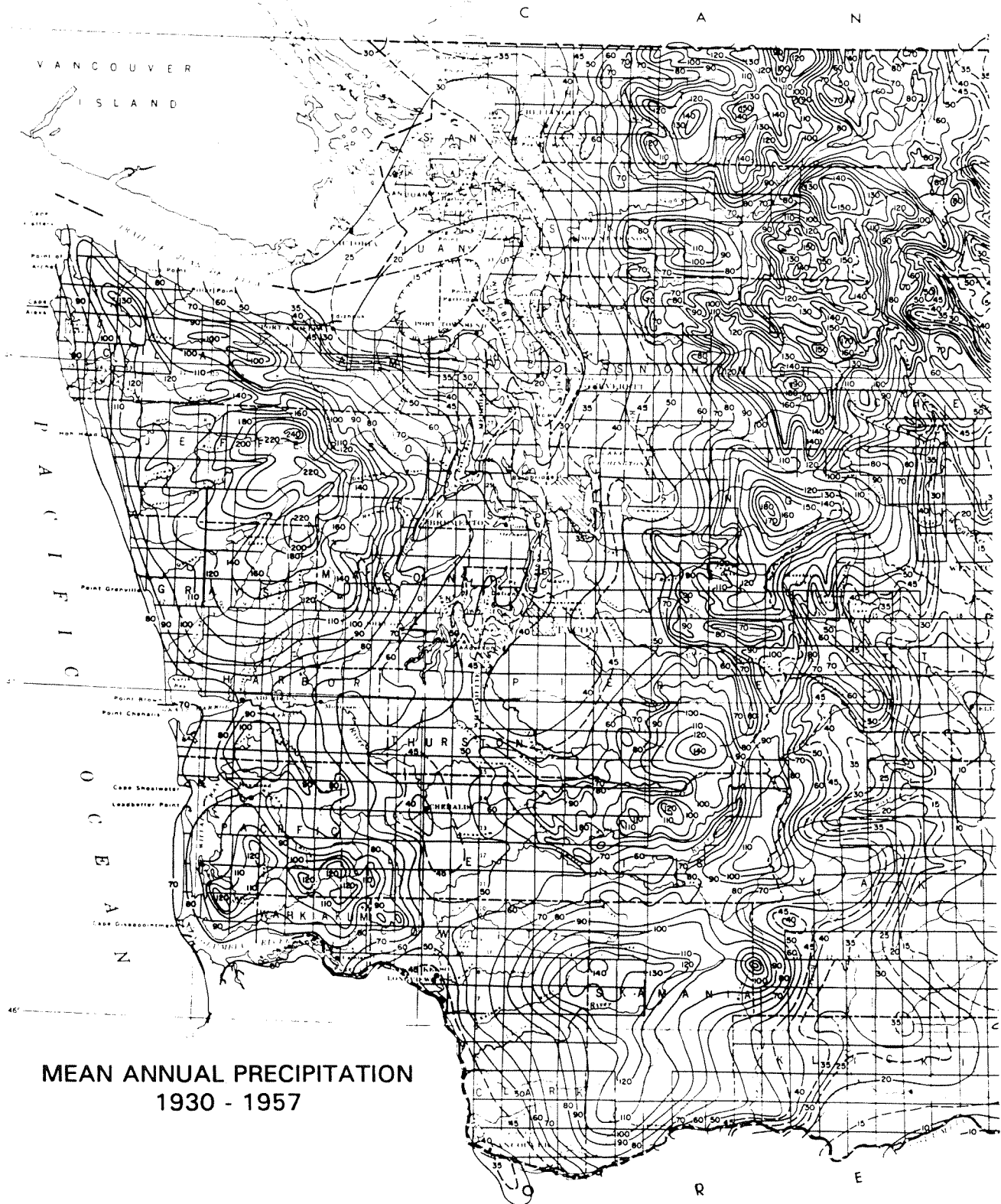


Figure 27
ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION
IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume IX
Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division





Soil Map—Cowlitz County, Washington
(Soil Map)



Soil Map—Cowlitz County, Washington (Soil Map)

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 1:24,000.

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: Cowlitz County, Washington

Survey Area Data: Version 25, Aug 26, 2024

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

Date(s) aerial images were photographed: May 26, 2023—Aug 14, 2023

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
19	Carrolls loamy sand, 0 to 2 percent slopes	5.0	60.2%
141	Newberg fine sandy loam, 0 to 3 percent slopes	0.4	4.5%
160	Pilchuck loamy fine sand, 0 to 8 percent slopes	3.0	35.4%
Totals for Area of Interest		8.4	100.0%

Hydrologic Soil Group—Cowlitz County, Washington (Hydrologic Soil Group)



Hydrologic Soil Group—Cowlitz County, Washington
(Hydrologic Soil Group)

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

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Cowlitz County, Washington
Survey Area Data: Version 25, Aug 26, 2024

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

Date(s) aerial images were photographed: May 26, 2023—Aug 14, 2023

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
19	Carrolls loamy sand, 0 to 2 percent slopes	A/D	5.0	60.2%
141	Newberg fine sandy loam, 0 to 3 percent slopes	A	0.4	4.5%
160	Pilchuck loamy fine sand, 0 to 8 percent slopes	A	3.0	35.4%
Totals for Area of Interest			8.4	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.

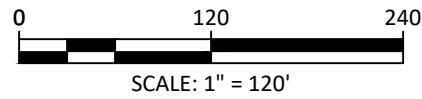
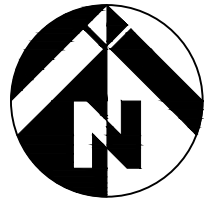
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

FILE: W:\18591 LOTC Phase 1\500 Design\501 Documents\Technical Files\Working Docs\Stormwater\Subdivision\TIR\Prelim\ar\01 Appendices\Appendix A - Maps\Existing Basin Map.dwg



Basin	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	Total (AC)
1	0	0.00	333319	7.65	7.65
2	0	0.00	52512	1.21	1.21
3	0	0.00	7943	0.18	0.18
Total	0	0.00	393774	9.04	9.04

LEGEND



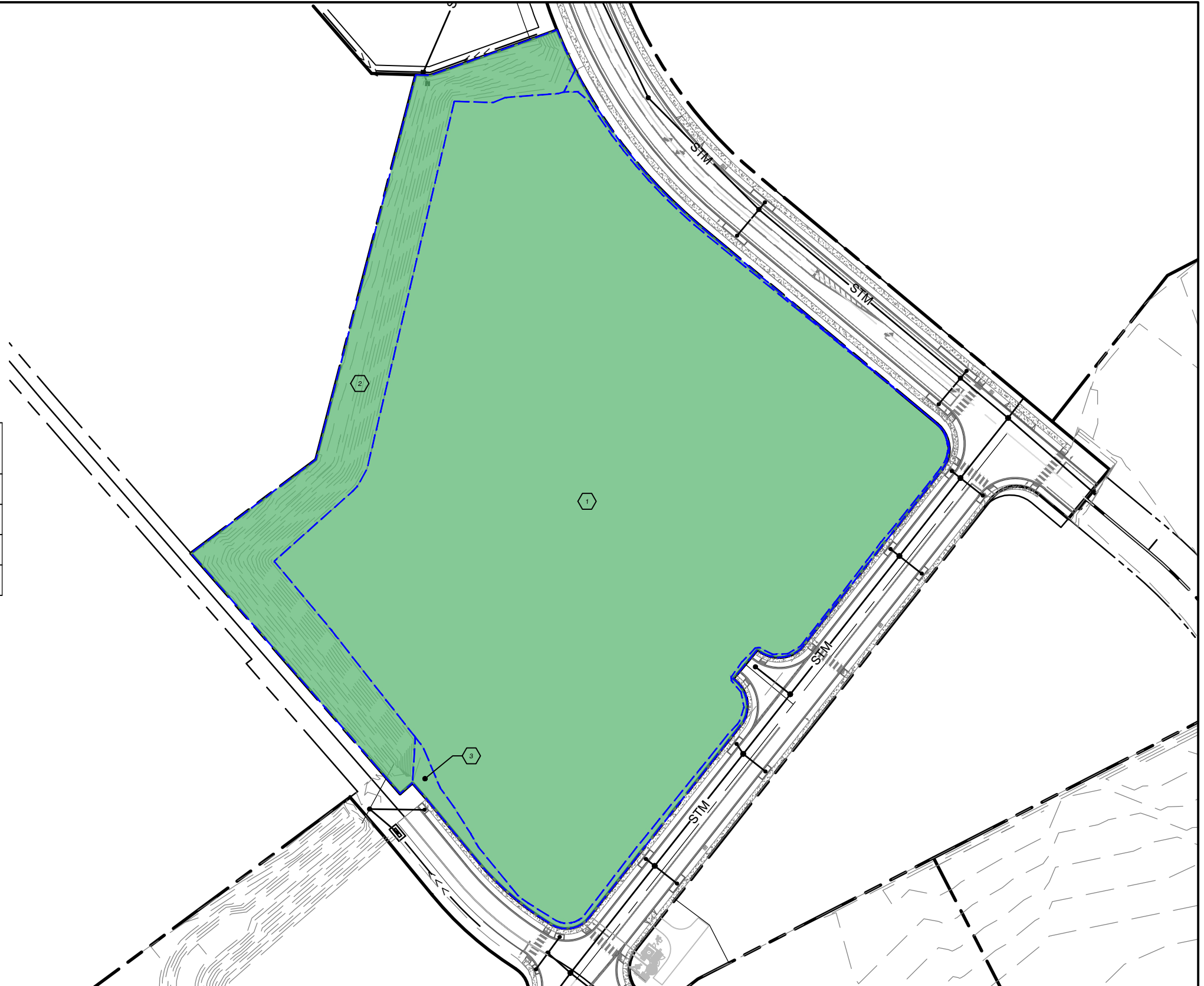
BASIN LINE



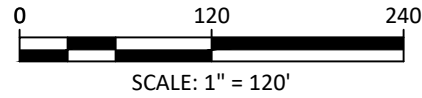
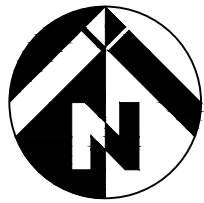
IMPERVIOUS AREA



PERVIOUS AREA

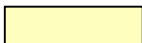


FILE: W:\18591 LOTC Phase 1\500 Design\501 Documents\Technical Files\Working Docs\Stormwater\Subdivision\TIR\Prelim\A - Maps\Proposed Basin Map.dwg



Basin	Impervious Area (SF)	Impervious Area (AC)	Pervious Area (SF)	Pervious Area (AC)	Total (AC)
1	9791	0.22	4601	0.11	0.33
2	3191	0.07	1270	0.03	0.10
3	11090	0.25	4232	0.10	0.35
4	9284	0.21	4620	0.11	0.32
5	5870	0.13	2278	0.05	0.19
6	10840	0.25	5530	0.13	0.38
7	5041	0.12	2854	0.07	0.18
8	7233	0.17	3892	0.09	0.26
9	3593	0.08	2538	0.06	0.14
10	7598	0.17	3206	0.07	0.25
11	11937	0.27	5438	0.12	0.40
12	4154	0.10	5203	0.12	0.21
13	0	0.00	47814	1.10	1.10
Lots	67500	1.55	143176	3.29	4.84
Total	157122	3.61	236652	5.43	9.04

LEGEND

-  BASIN LINE
-  IMPERVIOUS AREA
-  PERVIOUS AREA
-  RESIDENTIAL LOTS (BYPASSING TREATMENT)
-  PARK/OPEN SPACE (OFFSITE SYSTEM)



RIVER'S EDGE AT THE LANDING
PROPOSED BASIN MAP

PROJECT NO.:	18591.01
DRAWN BY:	PJM
CHECKED BY:	TAW
DATE:	3/27/2025
SHEET NO.	A7

Appendix B Hydrologic Exhibits and Calculations

Figure I-2.1 Flowchart for Determining Minimum Requirements (1992 SWMMSWB)

Figure I-3.1 Flowchart for Determining Minimum Requirements for New Development (2024 SWMMWW)

Figure I-3.3 Flowchart for Determining MR #5 Requirements (2024 SWMMWW)

WWHM Water Quality Flow Rate Calculations

Figure I-2.1 Flowchart Demonstrating Minimum Requirements

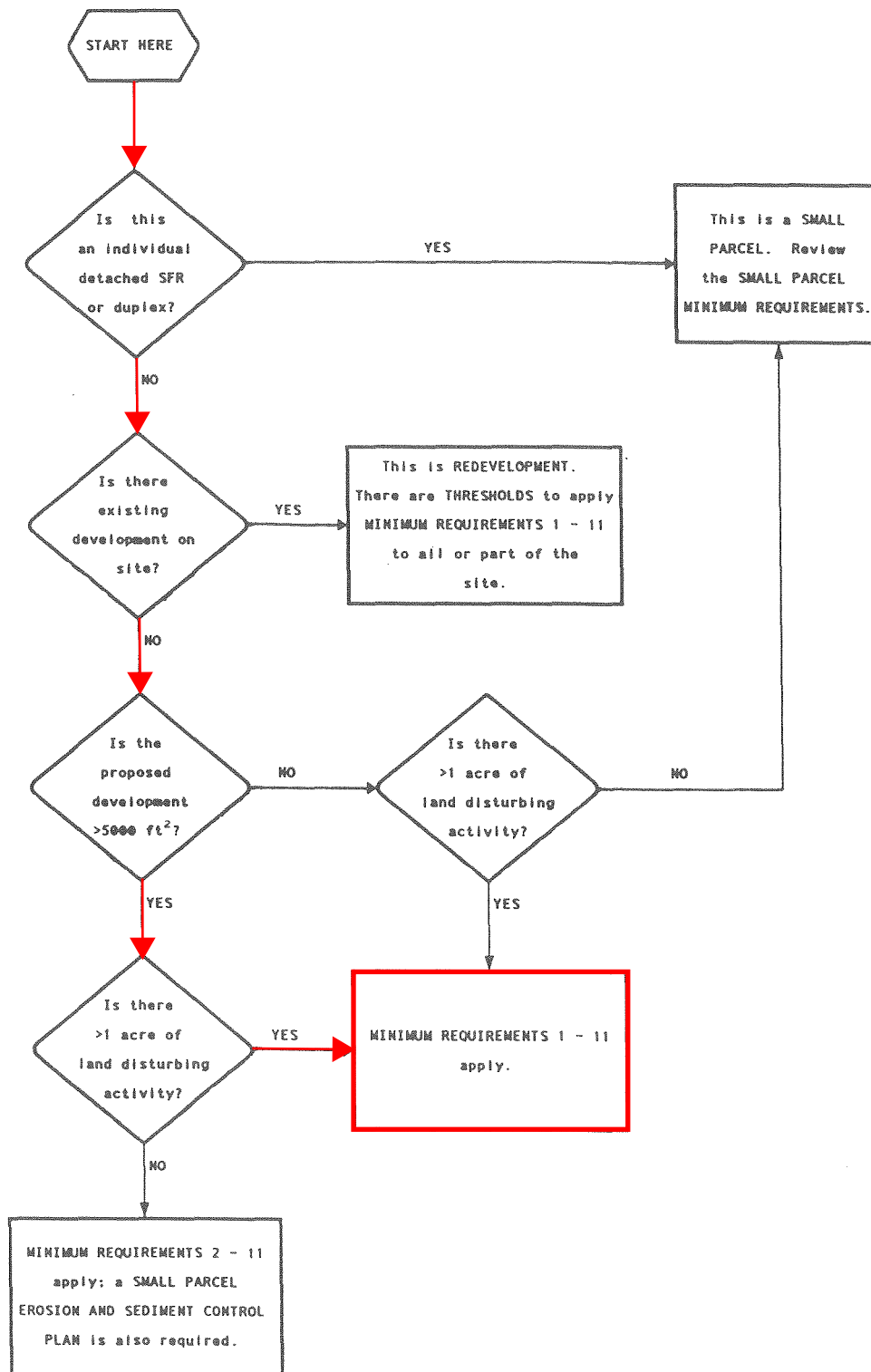
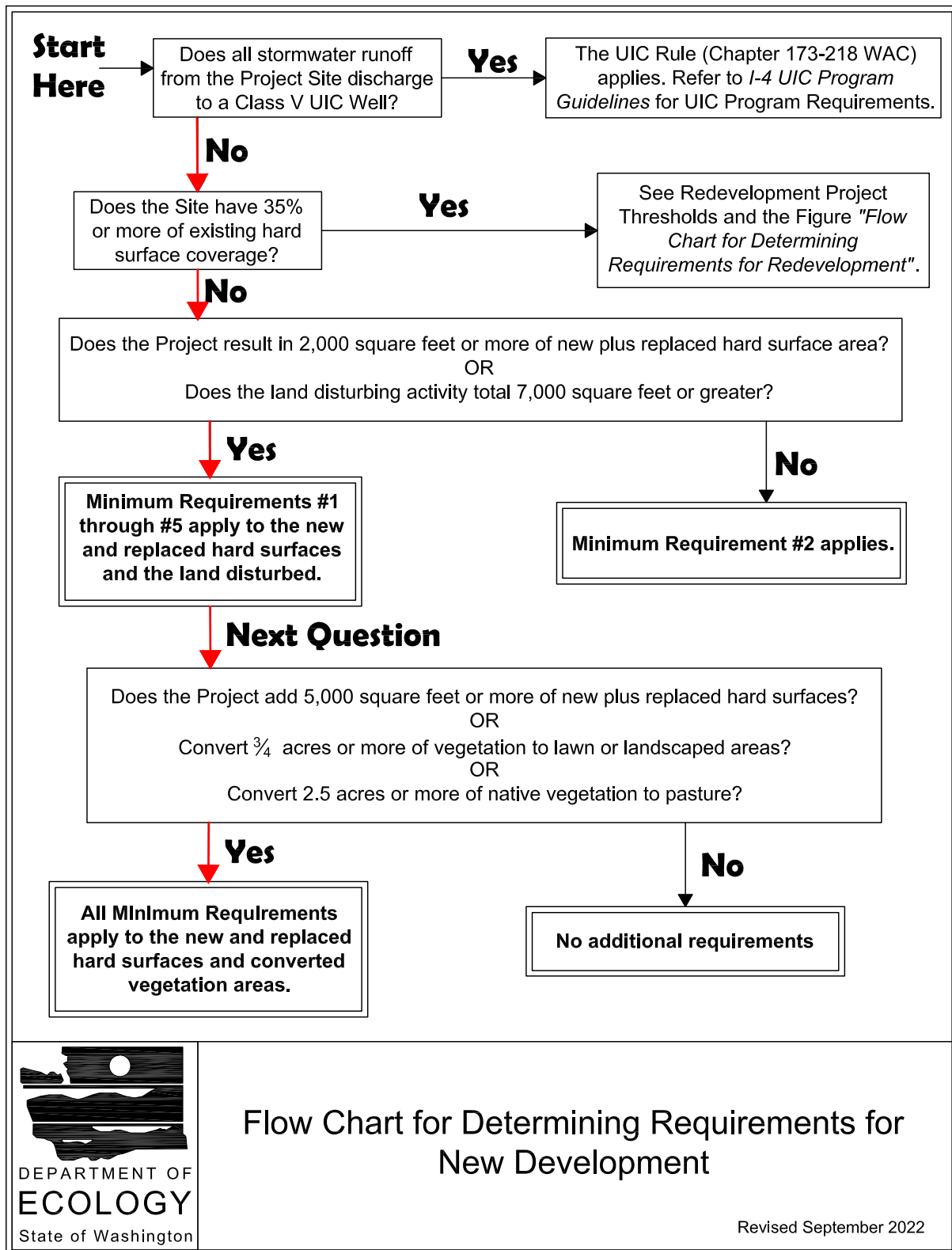


Figure I-3.1: Flow Chart for Determining Requirements for New Development



```

graph TD
    Q1[Does the entire project qualify as Flow Control exempt (per MR #7)?] -- Yes --> Q2_1[Did the project developer choose to meet the LID Performance Standard?]
    Q1 -- No --> Q2_2[Does the project trigger only MRs #1 - #5? (Per the Project Thresholds in Applicability of the Minimum Requirements Section).]
    Q2_1 -- Yes --> R1[REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.  
REQUIRED: Apply BMP T5.13 Post Construction Soil Quality and Depth.  
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.]
    Q2_1 -- No --> R2[REQUIRED: For each surface, consider the BMPs in the order listed in List #3 for that type of surface. Use the first BMP that is considered feasible.  
NOT REQUIRED: Achievement of the LID Performance Standard.]
    Q2_2 -- Yes --> Q3_1[Did the project developer choose to meet the LID Performance Standard?]
    Q2_2 -- No --> Q3_2[Is the project outside the UGA on a parcel that is 5 acres or larger?]
    Q3_1 -- Yes --> R3[REQUIRED: For each surface, consider the BMPs in the order listed in List #2 for that type of surface. Use the first BMP that is considered feasible.  
NOT REQUIRED: Achievement of the LID Performance Standard.]
    Q3_1 -- No --> R4[REQUIRED: For each surface, consider the BMPs in the order listed in List #1 for that type of surface. Use the first BMP that is considered feasible.  
NOT REQUIRED: Achievement of the LID Performance Standard.]
    Q3_2 -- Yes --> R5[REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.  
REQUIRED: Apply BMP T5.13 Post-Construction Soil Quality and Depth.  
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.]
    Q3_2 -- No --> Q3_3[Did the project developer choose to meet the LID Performance Standard?]
    Q3_3 -- Yes --> R3
    Q3_3 -- No --> R5
  
```


WWHM2012
PROJECT REPORT

General Model Information

WWHM2012 Project Name: 18591.01 - Mechicanial Treatment

Site Name: LOTC Subdivision

Site Address:

City: Castle Rock

Report Date: 3/26/2025

Gage: Longview

Data Start: 1955/10/01

Data End: 2009/09/30

Timestep: 15 Minute

Precip Scale: 1.429

Version Date: 2024/06/28

Version: 4.3.1

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

A1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Mod	1.44
Pervious Total	1.44
Impervious Land Use	acre
Impervious Total	0
Basin Total	1.44

Element Flow Component:		
Surface	Interflow	Groundwater
Component Flows To:		
POC 1	POC 1	

Mitigated Land Use

1

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.11

Pervious Total 0.11

Impervious Land Use acre
ROADS FLAT 0.22

Impervious Total 0.22

Basin Total 0.33

Element Flow Components:

Surface Interflow

Groundwater

Component Flows To:

Treatment CB #1 Treatment CB #1

The screenshot displays the 'Analysis' window of a software application. The interface is divided into several sections:

- Water Quality:** Contains two sub-sections:
 - On-Line BMP:** Includes input fields for '24 hour Volume (ac-ft)' with a value of 0.0400 and 'Standard Flow Rate (cfs)' with a value of 0.0603.
 - Off-Line BMP:** Includes an input field for 'Standard Flow Rate (cfs)' with a value of 0.0325.
- Analysis Tools:** A row of buttons including 'Run Analysis', 'Stream Protection Duration', 'LID Duration', 'Flow Frequency', 'Water Quality', 'Hydrograph', 'Wetland Input Volumes', 'LID Report', 'Recharge Duration', 'Recharge Predeveloped', and 'Recharge Mitigated'.
- Analyze datasets:** A list of datasets with '1000 Treatment CB #1 ALL OUTLETS Mitigated' selected. Other datasets include '811 POC 11 Mitigated flow', '812 POC 12 Mitigated flow', '1001 Treatment CB #1 OUTLET 1 Mitigated', '1002 Treatment CB #1 OUTLET 2 Mitigated', '1003 Treatment CB #1 STAGE Mitigated', '1004 Treatment CB #2 ALL OUTLETS Mitigated', and '1005 Treatment CB #2 OUTLET 1 Mitigated'.
- Duration Settings:** Includes a 'Duration Chart' button, 'Duration Bounds' (Minimum: 0.0100, Maximum: 2), and a checkbox for 'Seasonal Durations (mm/dd)'.
- Flood Frequency Method:** A section with radio buttons for 'Log Pearson Type III 17B' (selected), 'Weibull', 'Cunnane', and 'Gringorten'.
- Method 2 Data:** A button at the bottom right.

2

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.03

Pervious Total 0.03

Impervious Land Use acre
ROADS FLAT 0.07

Impervious Total 0.07

Basin Total 0.1

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Treatment CB #2 Treatment CB #2

Analysis

Run Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0126

Standard Flow Rate (cfs) 0.0190

Off-Line BMP

Standard Flow Rate (cfs) 0.0102

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

Duration Bounds 0.0100 Minimum 2 Maximum

Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Method 2 Data

1004 Treatment CB #2 ALL OUTLETS Mitigated

1005 Treatment CB #2 OUTLET 1 Mitigated

1006 Treatment CB #2 OUTLET 2 Mitigated

1007 Treatment CB #2 STAGE Mitigated

1008 Treatment CB #3 ALL OUTLETS Mitigated

1009 Treatment CB #3 OUTLET 1 Mitigated

1010 Treatment CB #3 OUTLET 2 Mitigated

1011 Treatment CB #3 STAGE Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

3

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.1

Pervious Total 0.1

Impervious Land Use acre
ROADS FLAT 0.25

Impervious Total 0.25

Basin Total 0.35

Element Flow Componentants:

Surface Interflow

Groundwater

Component Flows To:

Treatment CB #3 Treatment CB #3

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0451

Standard Flow Rate (cfs) 0.0677

Off-Line BMP

Standard Flow Rate (cfs) 0.0366

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

Duration Bounds 0.0100 Minimum 2 Maximum

Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Method 2 Data

1007 Treatment CB #2 STAGE Mitigated

1008 Treatment CB #3 ALL OUTLETS Mitigated

1009 Treatment CB #3 OUTLET 1 Mitigated

1010 Treatment CB #3 OUTLET 2 Mitigated

1011 Treatment CB #3 STAGE Mitigated

1012 Treatment CB #4 ALL OUTLETS Mitigated

1013 Treatment CB #4 OUTLET 1 Mitigated

1014 Treatment CB #4 OUTLET 2 Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

Duration Chart

4

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.11

Pervious Total 0.11

Impervious Land Use acre
ROADS FLAT 0.21

Impervious Total 0.21

Basin Total 0.32

Element Flow Components:
Surface Interflow Groundwater

Component Flows To:
Treatment CB #4 Treatment CB #4

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0382

Standard Flow Rate (cfs) 0.0577

Off-Line BMP

Standard Flow Rate (cfs) 0.0311

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

Duration Bounds 0.0100 Minimum 2 Maximum

☐ Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Method 2 Data

1010 Treatment CB #3 OUTLET 2 Mitigated

1011 Treatment CB #3 STAGE Mitigated

1012 Treatment CB #4 ALL OUTLETS Mitigated

1013 Treatment CB #4 OUTLET 1 Mitigated

1014 Treatment CB #4 OUTLET 2 Mitigated

1015 Treatment CB #4 STAGE Mitigated

1016 Treatment CB #5 ALL OUTLETS Mitigated

1017 Treatment CB #5 OUTLET 1 Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

5

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.05

Pervious Total 0.05

Impervious Land Use acre
ROADS FLAT 0.13

Impervious Total 0.13

Basin Total 0.18

Element Flow Components:
Surface Interflow Groundwater

Component Flows To:
Treatment CB #5 Treatment CB #5

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0234

Standard Flow Rate (cfs) 0.0351

Off-Line BMP

Standard Flow Rate (cfs) 0.0190

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

Duration Bounds 0.0100 Minimum 2 Maximum

☐ Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Method 2 Data

1016 Treatment CB #5 ALL OUTLETS Mitigated

1017 Treatment CB #5 OUTLET 1 Mitigated

1018 Treatment CB #5 OUTLET 2 Mitigated

1019 Treatment CB #5 STAGE Mitigated

1020 Treatment CB #6 ALL OUTLETS Mitigated

1021 Treatment CB #6 OUTLET 1 Mitigated

1022 Treatment CB #6 OUTLET 2 Mitigated

1023 Treatment CB #6 STAGE Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

6

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Mod 0.13

Pervious Total 0.13

Impervious Land Use acre
ROADS FLAT 0.25

Impervious Total 0.25

Basin Total 0.38

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Treatment CB #6 Treatment CB #6

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0455

Standard Flow Rate (cfs) 0.0694

Off-Line BMP

Standard Flow Rate (cfs) 0.0373

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected

1019 Treatment CB #5 STAGE Mitigated

1020 Treatment CB #6 ALL OUTLETS Mitigated

1021 Treatment CB #6 OUTLET 1 Mitigated

1022 Treatment CB #6 OUTLET 2 Mitigated

1023 Treatment CB #6 STAGE Mitigated

1024 Treatment CB #7 ALL OUTLETS Mitigated

1025 Treatment CB #7 OUTLET 1 Mitigated

1026 Treatment CB #7 OUTLET 2 Mitigated

Duration Bounds

0.0100 Minimum 2 Maximum

Seasonal Durations (mm/dd)

Start Date

End Date

Flood Frequency Method

Log Pearson Type III 17B

Weibull

Cunnane

Gringorten

Method 2 Data

7

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.07

Pervious Total 0.07

Impervious Land Use acre
ROADS FLAT 0.12

Impervious Total 0.12

Basin Total 0.19

Element Flow Component: Surface Interflow Groundwater

Component Flows To: Treatment CB #7 Treatment CB #7

Analysis

Run Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0219
Standard Flow Rate (cfs) 0.0332

Off-Line BMP

Standard Flow Rate (cfs) 0.0179

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph
Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

1022 Treatment CB #6 OUTLET 2 Mitigated
1023 Treatment CB #6 STAGE Mitigated
1024 Treatment CB #7 ALL OUTLETS Mitigated
1025 Treatment CB #7 OUTLET 1 Mitigated
1026 Treatment CB #7 OUTLET 2 Mitigated
1027 Treatment CB #7 STAGE Mitigated
1028 Treatment CB #8 ALL OUTLETS Mitigated
1029 Treatment CB #8 OUTLET 1 Mitigated

All Datasets Flow Stage Precip Evap POC 1
POC 8 POC 9 POC 10 POC 11 POC 12
POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

Duration Bounds
0.0100 Minimum 2 Maximum
Seasonal Durations (mm/dd)
Start Date
End Date
Flood Frequency Method
Log Pearson Type III 17B
Weibull
Cunnane
Gringorten
Method 2 Data

8

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.09

Pervious Total 0.09

Impervious Land Use acre
ROADS FLAT 0.17

Impervious Total 0.17

Basin Total 0.26

Element Flow Components:

Surface Interflow

Groundwater

Component Flows To:

Treatment CB #8 Treatment CB #8

The screenshot displays the 'Analysis' window of a software application. The 'Water Quality' tab is active, showing 'On-Line BMP' and 'Off-Line BMP' sections. The 'On-Line BMP' section has input fields for '24 hour Volume (ac-ft)' with a value of 0.0309 and 'Standard Flow Rate (cfs)' with a value of 0.0468. The 'Off-Line BMP' section has a 'Standard Flow Rate (cfs)' input field with a value of 0.0252. Below these sections are several tabs: 'Stream Protection Duration', 'LID Duration', 'Flow Frequency', 'Water Quality', 'Hydrograph', 'Wetland Input Volumes', 'LID Report', 'Recharge Duration', 'Recharge Predeveloped', and 'Recharge Mitigated'. The 'Analyze datasets' section includes buttons for 'Compact WDM' and 'Delete Selected', and a checkbox for 'Monthly FF'. A list of datasets is shown, with '1028 Treatment CB #8 ALL OUTLETS Mitigated' selected. Other datasets include '1029 Treatment CB #8 OUTLET 1 Mitigated', '1030 Treatment CB #8 OUTLET 2 Mitigated', '1031 Treatment CB #8 STAGE Mitigated', '1032 Treatment CB #9 ALL OUTLETS Mitigated', '1033 Treatment CB #9 OUTLET 1 Mitigated', '1034 Treatment CB #9 OUTLET 2 Mitigated', and '1035 Treatment CB #9 STAGE Mitigated'. The 'Duration Bounds' section has input fields for 'Minimum' (0.0100) and 'Maximum' (2). The 'Flood Frequency Method' section has radio buttons for 'Log Pearson Type III 17B' (selected), 'Weibull', 'Cunnane', and 'Gringorten'. A 'Method 2 Data' button is at the bottom.

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0309

Standard Flow Rate (cfs) 0.0468

Off-Line BMP

Standard Flow Rate (cfs) 0.0252

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

Duration Bounds 0.0100 Minimum 2 Maximum

Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

Log Pearson Type III 17B Weibull Cunnane Gringorten

Method 2 Data

1028 Treatment CB #8 ALL OUTLETS Mitigated

1029 Treatment CB #8 OUTLET 1 Mitigated

1030 Treatment CB #8 OUTLET 2 Mitigated

1031 Treatment CB #8 STAGE Mitigated

1032 Treatment CB #9 ALL OUTLETS Mitigated

1033 Treatment CB #9 OUTLET 1 Mitigated

1034 Treatment CB #9 OUTLET 2 Mitigated

1035 Treatment CB #9 STAGE Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

9

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Lawn, Flat	0.06
Pervious Total	0.06
Impervious Land Use	acre
ROADS FLAT	0.08
Impervious Total	0.08
Basin Total	0.14

Element Flow Componentants:
Surface Interflow Groundwater
Component Flows To:
Treatment CB #9 Treatment CB #9

The screenshot displays the 'Analysis' window of a software application. The 'Water Quality' tab is active, showing 'On-Line BMP' and 'Off-Line BMP' sections. The 'On-Line BMP' section includes '24 hour Volume (ac-ft)' set to 0.0148 and 'Standard Flow Rate (cfs)' set to 0.0226. The 'Off-Line BMP' section includes 'Standard Flow Rate (cfs)' set to 0.0121. Below these sections are several tabs: 'Stream Protection Duration', 'LID Duration', 'Flow Frequency', 'Water Quality', 'Hydrograph', 'Wetland Input Volumes', 'LID Report', 'Recharge Duration', 'Recharge Predeveloped', and 'Recharge Mitigated'. The 'Analyze datasets' section is visible, showing a list of datasets with '1032 Treatment CB #9 ALL OUTLETS Mitigated' selected. Below the dataset list are buttons for 'All Datasets', 'Flow', 'Stage', 'Precip', 'Evap', and 'POC 1' through 'POC 12'. The 'Duration Bounds' section shows '0.0100' for Minimum and '2' for Maximum. The 'Flood Frequency Method' section has 'Log Pearson Type III 17B' selected. The 'Method 2 Data' button is at the bottom right.

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0148

Standard Flow Rate (cfs) 0.0226

Off-Line BMP

Standard Flow Rate (cfs) 0.0121

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected

1031 Treatment CB #8 STAGE Mitigated

1032 Treatment CB #9 ALL OUTLETS Mitigated

1033 Treatment CB #9 OUTLET 1 Mitigated

1034 Treatment CB #9 OUTLET 2 Mitigated

1035 Treatment CB #9 STAGE Mitigated

1036 Treatment CB #10 ALL OUTLETS Mitigated

1037 Treatment CB #10 OUTLET 1 Mitigated

1038 Treatment CB #10 OUTLET 2 Mitigated

All Datasets Flow Stage Precip Evap POC 1

POC 8 POC 9 POC 10 POC 11 POC 12

POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

Duration Bounds 0.0100 Minimum 2 Maximum

Seasonal Durations (mm/dd)

Start Date

End Date

Flood Frequency Method

Log Pearson Type III 17B

Weibull

Cunnane

Gringorten

Method 2 Data

10

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.07

Pervious Total 0.07

Impervious Land Use acre
ROADS FLAT 0.17

Impervious Total 0.17

Basin Total 0.24

Element Flow Component: Surface Interflow Groundwater

Component Flows To: Treatment CB #10 Treatment CB #10

Analysis

Run Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0306

Standard Flow Rate (cfs) 0.0461

Off-Line BMP

Standard Flow Rate (cfs) 0.0249

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

1034 Treatment CB #9 OUTLET 2 Mitigated
1035 Treatment CB #9 STAGE Mitigated
1036 Treatment CB #10 ALL OUTLETS Mitigated
1037 Treatment CB #10 OUTLET 1 Mitigated
1038 Treatment CB #10 OUTLET 2 Mitigated
1039 Treatment CB #10 STAGE Mitigated
1040 Treatment CB #11 ALL OUTLETS Mitigated
1041 Treatment CB #11 OUTLET 1 Mitigated

All Datasets Flow Stage Precip Evap POC 1
POC 8 POC 9 POC 10 POC 11 POC 12
POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

Duration Bounds 0.0100 Minimum 2 Maximum

☐ Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method
☒ Log Pearson Type III 17B
☐ Weibull
☐ Cunnane
☐ Gringorten

Method 2 Data

11

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.12

Pervious Total 0.12

Impervious Land Use acre
ROADS FLAT 0.27

Impervious Total 0.27

Basin Total 0.39

Element Flow Components:
Surface Interflow Groundwater

Component Flows To:
Treatment CB #11 Treatment CB #11

Water Quality

Run Analysis

On-Line BMP

24 hour Volume (ac-ft) 0.0487
Standard Flow Rate (cfs) 0.0736

Off-Line BMP

Standard Flow Rate (cfs) 0.0397

Stream Protection Duration

LID Duration

Flow Frequency

Water Quality

Hydrograph

Wetland Input Volumes

LID Report

Recharge Duration

Recharge Predeveloped

Recharge Mitigated

Analyze datasets

Compact WDM

Delete Selected

☐ Monthly FF

1040 Treatment CB #11 ALL OUTLETS Mitigated
1041 Treatment CB #11 OUTLET 1 Mitigated
1042 Treatment CB #11 OUTLET 2 Mitigated
1043 Treatment CB #11 STAGE Mitigated
1044 Treatment CB #12 ALL OUTLETS Mitigated
1045 Treatment CB #12 OUTLET 1 Mitigated
1046 Treatment CB #12 OUTLET 2 Mitigated
1047 Treatment CB #12 STAGE Mitigated

Duration Bounds

0.0100 Minimum 2 Maximum

☐ Seasonal Durations (mm/dd)

Start Date
End Date

All Datasets
Flow
Stage
Precip
Evap
POC 1
POC 8
POC 9
POC 10
POC 11
POC 12
POC 2
POC 3
POC 4
POC 5
POC 6
POC 7

Flood Frequency Method

☒ Log Pearson Type III 17B
☐ Weibull
☐ Cunnane
☐ Gringorten

Method 2 Data

Duration Chart

12

Bypass: No

GroundWater: No

Pervious Land Use acre
A B, Lawn, Flat 0.12

Pervious Total 0.12

Impervious Land Use acre
ROADS FLAT 0.1

Impervious Total 0.1

Basin Total 0.22

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Treatment CB #12 Treatment CB #12

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0191

Standard Flow Rate (cfs) 0.0300

Off-Line BMP

Standard Flow Rate (cfs) 0.0159

Run Analysis

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected ☐ Monthly FF

1040 Treatment CB #11 ALL OUTLETS Mitigated
1041 Treatment CB #11 OUTLET 1 Mitigated
1042 Treatment CB #11 OUTLET 2 Mitigated
1043 Treatment CB #11 STAGE Mitigated
1044 Treatment CB #12 ALL OUTLETS Mitigated
1045 Treatment CB #12 OUTLET 1 Mitigated
1046 Treatment CB #12 OUTLET 2 Mitigated
1047 Treatment CB #12 STAGE Mitigated

Duration Bounds 0.0100 Minimum 2 Maximum

☐ Seasonal Durations (mm/dd)

Start Date End Date

Flood Frequency Method

☒ Log Pearson Type III 17B
☐ Weibull
☐ Cunnane
☐ Gringorten

Method 2 Data

All Datasets Flow Stage Precip Evap POC 1
POC 8 POC 9 POC 10 POC 11 POC 12
POC 2 POC 3 POC 4 POC 5 POC 6 POC 7

Routing Elements

Predeveloped Routing

Mitigated Routing

Treatment CB #1

Bottom Length: 10.00 ft.
Bottom Length: 10.00 ft.
Depth: 10 ft.
Side slope 1: 0 To 1
Side slope 2: 0 To 1
Side slope 3: 0 To 1
Side slope 4: 0 To 1
Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000

5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000
5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #2

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #3

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #4

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #5

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #6

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #7

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #8

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #9

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #10

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #11

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Treatment CB #12

Bottom Length: 10.00 ft.
 Bottom Length: 10.00 ft.
 Depth: 10 ft.
 Side slope 1: 0 To 1
 Side slope 2: 0 To 1
 Side slope 3: 0 To 1
 Side slope 4: 0 To 1

Threshold Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	2.000	0.000
0.111	0.002	0.000	2.000	0.000
0.222	0.002	0.000	2.000	0.000
0.333	0.002	0.000	2.000	0.000
0.444	0.002	0.001	2.000	0.000
0.555	0.002	0.001	2.000	0.000
0.666	0.002	0.001	2.000	0.000
0.777	0.002	0.001	2.000	0.000
0.888	0.002	0.002	2.000	0.000
1.000	0.002	0.002	2.000	0.000
1.111	0.002	0.002	2.000	0.000
1.222	0.002	0.002	2.000	0.000
1.333	0.002	0.003	2.000	0.000
1.444	0.002	0.003	2.000	0.000
1.555	0.002	0.003	2.000	0.000
1.666	0.002	0.003	2.000	0.000
1.777	0.002	0.004	2.000	0.000
1.888	0.002	0.004	2.000	0.000
2.000	0.002	0.004	2.000	0.000
2.111	0.002	0.004	2.000	0.000
2.222	0.002	0.005	2.000	0.000
2.333	0.002	0.005	2.000	0.000
2.444	0.002	0.005	2.000	0.000
2.555	0.002	0.005	2.000	0.000
2.666	0.002	0.006	2.000	0.000
2.777	0.002	0.006	2.000	0.000
2.888	0.002	0.006	2.000	1000
3.000	0.002	0.006	2.000	1000
3.111	0.002	0.007	2.000	1000
3.222	0.002	0.007	2.000	1000
3.333	0.002	0.007	2.000	1000
3.444	0.002	0.007	2.000	1000
3.555	0.002	0.008	2.000	1000
3.666	0.002	0.008	2.000	1000
3.777	0.002	0.008	2.000	1000
3.888	0.002	0.008	2.000	1000
4.000	0.002	0.009	2.000	1000
4.111	0.002	0.009	2.000	1000
4.222	0.002	0.009	2.000	1000
4.333	0.002	0.009	2.000	1000
4.444	0.002	0.010	2.000	1000
4.555	0.002	0.010	2.000	1000
4.666	0.002	0.010	2.000	1000
4.777	0.002	0.011	2.000	1000
4.888	0.002	0.011	2.000	1000
5.000	0.002	0.011	2.000	1000
5.111	0.002	0.011	2.000	1000

5.222	0.002	0.012	2.000	1000
5.333	0.002	0.012	2.000	1000
5.444	0.002	0.012	2.000	1000
5.555	0.002	0.012	2.000	1000
5.666	0.002	0.013	2.000	1000
5.777	0.002	0.013	2.000	1000
5.888	0.002	0.013	2.000	1000
6.000	0.002	0.013	2.000	1000
6.111	0.002	0.014	2.000	1000
6.222	0.002	0.014	2.000	1000
6.333	0.002	0.014	2.000	1000
6.444	0.002	0.014	2.000	1000
6.555	0.002	0.015	2.000	1000
6.666	0.002	0.015	2.000	1000
6.777	0.002	0.015	2.000	1000
6.888	0.002	0.015	2.000	1000
7.000	0.002	0.016	2.000	1000
7.111	0.002	0.016	2.000	1000
7.222	0.002	0.016	2.000	1000
7.333	0.002	0.016	2.000	1000
7.444	0.002	0.017	2.000	1000
7.555	0.002	0.017	2.000	1000
7.666	0.002	0.017	2.000	1000
7.777	0.002	0.017	2.000	1000
7.888	0.002	0.018	2.000	1000
8.000	0.002	0.018	2.000	1000
8.111	0.002	0.018	2.000	1000
8.222	0.002	0.018	2.000	1000
8.333	0.002	0.019	2.000	1000
8.444	0.002	0.019	2.000	1000
8.555	0.002	0.019	2.000	1000
8.666	0.002	0.019	2.000	1000
8.777	0.002	0.020	2.000	1000
8.888	0.002	0.020	2.000	1000
9.000	0.002	0.020	2.000	1000
9.111	0.002	0.020	2.000	1000
9.222	0.002	0.021	2.000	1000
9.333	0.002	0.021	2.000	1000
9.444	0.002	0.021	2.000	1000
9.555	0.002	0.021	2.000	1000
9.666	0.002	0.022	2.000	1000
9.777	0.002	0.022	2.000	1000
9.888	0.002	0.022	2.000	1000
10.00	0.002	0.023	2.000	1000
10.11	0.002	0.023	2.000	1000

Discharge Structure

Riser Height: 0 ft.

Riser Diameter: 0 in.

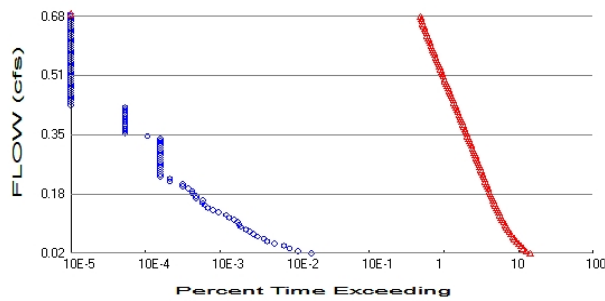
Element Outlets:

Outlet 1 Outlet 2

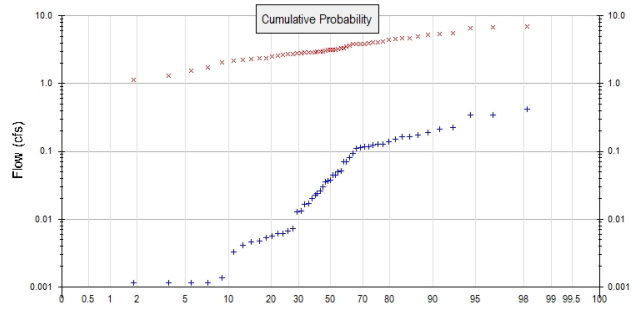
Outlet Flows To:

Analysis Results

POC 1



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #1

Total Pervious Area: 1.44
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 1.06
Total Impervious Area: 2.04

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.031703
5 year	0.124202
10 year	0.238198
25 year	0.455668
50 year	0.676105
100 year	0.948859

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	3.266628
5 year	4.477324
10 year	5.164345
25 year	5.919529
50 year	6.411893
100 year	6.853152

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1956	0.224	4.225
1957	0.023	4.618
1958	0.343	4.690
1959	0.082	3.109
1960	0.341	4.901
1961	0.166	3.842
1962	0.423	4.487
1963	0.125	5.411
1964	0.070	3.366
1965	0.037	3.119

1966	0.005	2.898
1967	0.017	2.346
1968	0.003	2.025
1969	0.017	2.967
1970	0.024	2.240
1971	0.152	3.539
1972	0.113	2.869
1973	0.005	2.200
1974	0.163	4.035
1975	0.175	6.716
1976	0.095	3.900
1977	0.001	2.641
1978	0.190	4.059
1979	0.006	2.303
1980	0.013	2.882
1981	0.020	3.236
1982	0.111	2.829
1983	0.045	3.806
1984	0.138	2.870
1985	0.004	2.930
1986	0.129	3.882
1987	0.007	3.653
1988	0.001	2.733
1989	0.005	1.309
1990	0.050	2.718
1991	0.119	3.351
1992	0.006	2.561
1993	0.030	2.391
1994	0.026	1.738
1995	0.007	4.388
1996	0.215	5.226
1997	0.052	3.128
1998	0.044	6.645
1999	0.006	1.545
2000	0.013	2.940
2001	0.001	0.847
2002	0.036	6.972
2003	0.001	5.579
2004	0.001	1.133
2005	0.001	3.064
2006	0.071	2.776
2007	0.117	3.816
2008	0.036	2.504
2009	0.129	3.110

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.4231	6.9720
2	0.3434	6.7156
3	0.3407	6.6448
4	0.2237	5.5794
5	0.2149	5.4110
6	0.1900	5.2256
7	0.1752	4.9009
8	0.1659	4.6895
9	0.1626	4.6185
10	0.1516	4.4867

11	0.1378	4.3884
12	0.1287	4.2251
13	0.1285	4.0595
14	0.1246	4.0346
15	0.1188	3.9001
16	0.1166	3.8816
17	0.1126	3.8422
18	0.1105	3.8160
19	0.0946	3.8061
20	0.0817	3.6529
21	0.0706	3.5386
22	0.0700	3.3656
23	0.0520	3.3509
24	0.0503	3.2365
25	0.0452	3.1283
26	0.0440	3.1190
27	0.0371	3.1103
28	0.0362	3.1095
29	0.0360	3.0639
30	0.0299	2.9665
31	0.0259	2.9402
32	0.0237	2.9296
33	0.0227	2.8984
34	0.0202	2.8815
35	0.0170	2.8703
36	0.0167	2.8686
37	0.0130	2.8285
38	0.0127	2.7761
39	0.0072	2.7327
40	0.0066	2.7181
41	0.0062	2.6413
42	0.0061	2.5609
43	0.0056	2.5045
44	0.0054	2.3907
45	0.0047	2.3461
46	0.0046	2.3033
47	0.0041	2.2401
48	0.0032	2.2002
49	0.0013	2.0253
50	0.0012	1.7385
51	0.0012	1.5452
52	0.0011	1.3092
53	0.0011	1.1327
54	0.0010	0.8471

Duration Flows

The Duration Matching **Failed**

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0159	315	270392	85838	Fail
0.0225	209	239718	114697	Fail
0.0292	161	217942	135367	Fail
0.0359	136	202984	149252	Fail
0.0425	101	188688	186819	Fail
0.0492	81	175963	217238	Fail
0.0559	73	166325	227842	Fail
0.0625	60	156934	261556	Fail
0.0692	52	148413	285409	Fail
0.0759	47	142164	302476	Fail
0.0825	42	135215	321940	Fail
0.0892	36	129061	358502	Fail
0.0959	34	124403	365891	Fail
0.1026	32	119310	372843	Fail
0.1092	29	114633	395286	Fail
0.1159	25	110827	443308	Fail
0.1226	23	106737	464073	Fail
0.1292	18	102798	571100	Fail
0.1359	15	99617	664113	Fail
0.1426	13	96095	739192	Fail
0.1492	12	92744	772866	Fail
0.1559	11	90074	818854	Fail
0.1626	11	87025	791136	Fail
0.1692	9	84204	935600	Fail
0.1759	9	81762	908466	Fail
0.1826	8	79148	989350	Fail
0.1893	8	76630	957875	Fail
0.1959	7	74509	1064414	Fail
0.2026	6	72237	1203950	Fail
0.2093	6	70003	1166716	Fail
0.2159	4	68185	1704625	Fail
0.2226	4	66216	1655400	Fail
0.2293	3	64209	2140300	Fail
0.2359	3	62505	2083500	Fail
0.2426	3	60649	2021633	Fail
0.2493	3	58869	1962300	Fail
0.2559	3	57468	1915600	Fail
0.2626	3	55726	1857533	Fail
0.2693	3	54116	1803866	Fail
0.2760	3	52734	1757800	Fail
0.2826	3	51144	1704800	Fail
0.2893	3	49572	1652400	Fail
0.2960	3	48284	1609466	Fail
0.3026	3	46883	1562766	Fail
0.3093	3	45444	1514800	Fail
0.3160	3	44213	1473766	Fail
0.3226	3	42831	1427700	Fail
0.3293	3	41581	1386033	Fail
0.3360	3	40483	1349433	Fail
0.3426	2	39271	1963550	Fail
0.3493	1	38078	3807800	Fail
0.3560	1	37075	3707500	Fail
0.3627	1	35920	3592000	Fail
0.3693	1	34803	3480300	Fail

0.3760	1	33875	3387500	Fail
0.3827	1	32758	3275800	Fail
0.3893	1	31811	3181100	Fail
0.3960	1	30997	3099700	Fail
0.4027	1	30050	3005000	Fail
0.4093	1	29122	2912200	Fail
0.4160	1	28213	2821300	Fail
0.4227	1	27475	2747500	Fail
0.4293	0	26661	n/a	Fail
0.4360	0	25846	n/a	Fail
0.4427	0	25203	n/a	Fail
0.4494	0	24445	n/a	Fail
0.4560	0	23688	n/a	Fail
0.4627	0	23006	n/a	Fail
0.4694	0	22135	n/a	Fail
0.4760	0	21472	n/a	Fail
0.4827	0	20885	n/a	Fail
0.4894	0	20242	n/a	Fail
0.4960	0	19636	n/a	Fail
0.5027	0	19143	n/a	Fail
0.5094	0	18520	n/a	Fail
0.5160	0	17996	n/a	Fail
0.5227	0	17564	n/a	Fail
0.5294	0	17081	n/a	Fail
0.5361	0	16574	n/a	Fail
0.5427	0	16116	n/a	Fail
0.5494	0	15601	n/a	Fail
0.5561	0	15091	n/a	Fail
0.5627	0	14701	n/a	Fail
0.5694	0	14258	n/a	Fail
0.5761	0	13842	n/a	Fail
0.5827	0	13476	n/a	Fail
0.5894	0	13101	n/a	Fail
0.5961	0	12709	n/a	Fail
0.6027	0	12366	n/a	Fail
0.6094	0	11997	n/a	Fail
0.6161	0	11622	n/a	Fail
0.6228	0	11331	n/a	Fail
0.6294	0	11030	n/a	Fail
0.6361	0	10702	n/a	Fail
0.6428	0	10439	n/a	Fail
0.6494	0	10144	n/a	Fail
0.6561	0	9873	n/a	Fail
0.6628	0	9640	n/a	Fail
0.6694	0	9367	n/a	Fail
0.6761	0	9144	n/a	Fail

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.

The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.04 acre-feet
On-line facility target flow:	0.0603 cfs.
Adjusted for 15 min:	0.0603 cfs.
Off-line facility target flow:	0.0325 cfs.
Adjusted for 15 min:	0.0325 cfs.

POC 2

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 3

POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 4

POC #4 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 5

POC #5 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 6

POC #6 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 7

POC #7 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 8

POC #8 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 9

POC #9 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 10

POC #10 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 11

POC #11 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 12

POC #12 was not reported because POC must exist in both scenarios and both scenarios must have been run.

Model Default Modifications

Total of 344 changes have been made.

PERLND Changes

Name	Property	Original	Changed
A/B; Forest; Flat	LZSN	12	5
A/B; Forest; Flat	KVARY	0	0.3
A/B; Forest; Flat	AGWRC	0.96	0.996
A/B; Forest; Flat	UZSN	1.5	0.5
A/B; Forest; Flat	IRC	0.4	0.7
A/B; Forest; Mod	LZSN	12	5
A/B; Forest; Mod	KVARY	0	0.3
A/B; Forest; Mod	AGWRC	0.96	0.996
A/B; Forest; Mod	UZSN	1.5	0.5
A/B; Forest; Mod	IRC	0.4	0.7
A/B; Forest; Steep	LZSN	12	5
A/B; Forest; Steep	KVARY	0	0.3
A/B; Forest; Steep	AGWRC	0.96	0.996
A/B; Forest; Steep	UZSN	1.5	0.5
A/B; Forest; Steep	IRC	0.4	0.7
A/B; Pasture; Flat	LZSN	12	5
A/B; Pasture; Flat	KVARY	0	0.3
A/B; Pasture; Flat	AGWRC	0.96	0.996
A/B; Pasture; Flat	UZSN	1.5	0.5
A/B; Pasture; Flat	IRC	0.4	0.7
A/B; Pasture; Mod	LZSN	12	5
A/B; Pasture; Mod	KVARY	0	0.3
A/B; Pasture; Mod	AGWRC	0.96	0.996
A/B; Pasture; Mod	UZSN	1.5	0.5
A/B; Pasture; Mod	IRC	0.4	0.7
A/B; Pasture; Steep	LZSN	12	5
A/B; Pasture; Steep	KVARY	0	0.3
A/B; Pasture; Steep	AGWRC	0.96	0.996
A/B; Pasture; Steep	UZSN	1.5	0.5
A/B; Pasture; Steep	IRC	0.4	0.7
A/B; Lawn; Flat	LZSN	12	5
A/B; Lawn; Flat	INFILT	1	0.8
A/B; Lawn; Flat	KVARY	0	0.3
A/B; Lawn; Flat	AGWRC	0.96	0.996
A/B; Lawn; Flat	UZSN	1.3	0.5
A/B; Lawn; Flat	IRC	0.4	0.7
A/B; Lawn; Mod	LZSN	12	5
A/B; Lawn; Mod	INFILT	1	0.8
A/B; Lawn; Mod	KVARY	0	0.3
A/B; Lawn; Mod	AGWRC	0.96	0.996
A/B; Lawn; Mod	UZSN	1.3	0.5
A/B; Lawn; Mod	IRC	0.4	0.7
A/B; Lawn; Steep	LZSN	12	5
A/B; Lawn; Steep	INFILT	1	0.8

A/B; Lawn; Steep	KVARY	0	0.3
A/B; Lawn; Steep	AGWRC	0.96	0.996
A/B; Lawn; Steep	UZSN	1.3	0.5
A/B; Lawn; Steep	IRC	0.4	0.7
C; Forest; Flat	LZSN	11	4.5
C; Forest; Flat	INFILT	0.2	0.08
C; Forest; Flat	KVARY	0	0.5
C; Forest; Flat	AGWRC	0.96	0.996
C; Forest; Flat	UZSN	1.4	0.5
C; Forest; Flat	INTFW	1	6
C; Forest; Flat	IRC	0.4	0.5
C; Forest; Mod	LZSN	11	4.5
C; Forest; Mod	INFILT	0.2	0.08
C; Forest; Mod	KVARY	0	0.5
C; Forest; Mod	AGWRC	0.96	0.996
C; Forest; Mod	UZSN	1.4	0.5
C; Forest; Mod	INTFW	1	6
C; Forest; Mod	IRC	0.4	0.5
C; Forest; Steep	LZSN	11	4.5
C; Forest; Steep	INFILT	0.2	0.08
C; Forest; Steep	KVARY	0	0.5
C; Forest; Steep	AGWRC	0.96	0.996
C; Forest; Steep	UZSN	1.4	0.3
C; Forest; Steep	INTFW	1	6
C; Forest; Steep	IRC	0.4	0.3
C; Pasture; Flat	LZSN	11	4.5
C; Pasture; Flat	INFILT	0.15	0.06
C; Pasture; Flat	KVARY	0	0.5
C; Pasture; Flat	AGWRC	0.96	0.996
C; Pasture; Flat	UZSN	1.4	0.4
C; Pasture; Flat	INTFW	1	6
C; Pasture; Flat	IRC	0.4	0.5
C; Pasture; Mod	LZSN	11	4.5
C; Pasture; Mod	INFILT	0.15	0.06
C; Pasture; Mod	KVARY	0	0.5
C; Pasture; Mod	AGWRC	0.96	0.996
C; Pasture; Mod	UZSN	1.4	0.4
C; Pasture; Mod	INTFW	1	6
C; Pasture; Mod	IRC	0.4	0.5
C; Pasture; Steep	LZSN	11	4.5
C; Pasture; Steep	INFILT	0.15	0.06
C; Pasture; Steep	KVARY	0	0.5
C; Pasture; Steep	AGWRC	0.96	0.996
C; Pasture; Steep	UZSN	1.4	0.25
C; Pasture; Steep	INTFW	1	6
C; Pasture; Steep	IRC	0.4	0.3
C; Lawn; Flat	LZSN	11	4.5
C; Lawn; Flat	INFILT	0.1	0.03
C; Lawn; Flat	KVARY	0	0.5
C; Lawn; Flat	AGWRC	0.96	0.996
C; Lawn; Flat	UZSN	1.2	0.25
C; Lawn; Flat	INTFW	1	6

C; Lawn; Flat	IRC	0.4	0.5
C; Lawn; Mod	LZSN	11	4.5
C; Lawn; Mod	INFILT	0.1	0.03
C; Lawn; Mod	KVARY	0	0.5
C; Lawn; Mod	AGWRC	0.96	0.996
C; Lawn; Mod	UZSN	1.2	0.25
C; Lawn; Mod	INTFW	1	6
C; Lawn; Mod	IRC	0.4	0.5
C; Lawn; Steep	LZSN	11	4.5
C; Lawn; Steep	INFILT	0.1	0.03
C; Lawn; Steep	KVARY	0	0.5
C; Lawn; Steep	AGWRC	0.96	0.996
C; Lawn; Steep	UZSN	1.2	0.15
C; Lawn; Steep	INTFW	1	6
C; Lawn; Steep	IRC	0.4	0.3
SAT; Forest; Flat	LZSN	9	4
SAT; Forest; Flat	INFILT	0.08	2
SAT; Forest; Flat	LSUR	400	100
SAT; Forest; Flat	SLSUR	0.05	0.001
SAT; Forest; Flat	KVARY	0	0.5
SAT; Forest; Flat	AGWRC	0.96	0.996
SAT; Forest; Flat	INFEXP	2.5	10
SAT; Forest; Flat	AGWETP	0	0.7
SAT; Forest; Flat	UZSN	1	3
SAT; Forest; Flat	NSUR	0.35	0.5
SAT; Forest; Flat	INTFW	4	1
SAT; Forest; Flat	IRC	0.4	0.7
SAT; Forest; Flat	LZETP	0.7	0.8
SAT; Forest; Mod	LZSN	9	4
SAT; Forest; Mod	INFILT	0.08	2
SAT; Forest; Mod	LSUR	400	100
SAT; Forest; Mod	SLSUR	0.1	0.01
SAT; Forest; Mod	KVARY	0	0.5
SAT; Forest; Mod	AGWRC	0.96	0.996
SAT; Forest; Mod	INFEXP	2.5	10
SAT; Forest; Mod	AGWETP	0	0.7
SAT; Forest; Mod	UZSN	1	3
SAT; Forest; Mod	NSUR	0.35	0.5
SAT; Forest; Mod	INTFW	4	1
SAT; Forest; Mod	IRC	0.4	0.7
SAT; Forest; Mod	LZETP	0.7	0.8
SAT; Forest; Steep	LZSN	9	4
SAT; Forest; Steep	INFILT	0.08	2
SAT; Forest; Steep	LSUR	400	100
SAT; Forest; Steep	SLSUR	0.15	0.1
SAT; Forest; Steep	KVARY	0	0.5
SAT; Forest; Steep	AGWRC	0.96	0.996
SAT; Forest; Steep	INFEXP	2.5	10
SAT; Forest; Steep	AGWETP	0	0.7
SAT; Forest; Steep	UZSN	1	3
SAT; Forest; Steep	NSUR	0.35	0.5

SAT; Forest; Steep	INTFW	4	1
SAT; Forest; Steep	IRC	0.4	0.7
SAT; Forest; Steep	LZETP	0.7	0.8
SAT; Pasture; Flat	LZSN	9	4
SAT; Pasture; Flat	INFILT	0.06	1.8
SAT; Pasture; Flat	LSUR	400	100
SAT; Pasture; Flat	SLSUR	0.05	0.001
SAT; Pasture; Flat	KVARY	0	0.5
SAT; Pasture; Flat	AGWRC	0.96	0.996
SAT; Pasture; Flat	INFEXP	2.5	10
SAT; Pasture; Flat	AGWETP	0	0.5
SAT; Pasture; Flat	UZSN	1	3
SAT; Pasture; Flat	NSUR	0.3	0.5
SAT; Pasture; Flat	INTFW	4	1
SAT; Pasture; Flat	IRC	0.4	0.7
SAT; Pasture; Flat	LZETP	0.4	0.6
SAT; Pasture; Mod	LZSN	9	4
SAT; Pasture; Mod	INFILT	0.06	1.8
SAT; Pasture; Mod	LSUR	400	100
SAT; Pasture; Mod	SLSUR	0.1	0.01
SAT; Pasture; Mod	KVARY	0	0.5
SAT; Pasture; Mod	AGWRC	0.96	0.996
SAT; Pasture; Mod	INFEXP	2.5	10
SAT; Pasture; Mod	AGWETP	0	0.5
SAT; Pasture; Mod	UZSN	1	3
SAT; Pasture; Mod	NSUR	0.3	0.5
SAT; Pasture; Mod	INTFW	4	1
SAT; Pasture; Mod	IRC	0.4	0.7
SAT; Pasture; Mod	LZETP	0.4	0.6
SAT; Pasture; Steep	LZSN	9	4
SAT; Pasture; Steep	INFILT	0.06	1.8
SAT; Pasture; Steep	LSUR	400	100
SAT; Pasture; Steep	SLSUR	0.15	0.1
SAT; Pasture; Steep	KVARY	0	0.5
SAT; Pasture; Steep	AGWRC	0.96	0.996
SAT; Pasture; Steep	INFEXP	2.5	10
SAT; Pasture; Steep	AGWETP	0	0.5
SAT; Pasture; Steep	UZSN	1	3
SAT; Pasture; Steep	NSUR	0.3	0.5
SAT; Pasture; Steep	INTFW	4	1
SAT; Pasture; Steep	IRC	0.4	0.7
SAT; Pasture; Steep	LZETP	0.4	0.6
SAT; Lawn; Flat	LZSN	9	4
SAT; Lawn; Flat	INFILT	0.05	1
SAT; Lawn; Flat	LSUR	400	100
SAT; Lawn; Flat	SLSUR	0.05	0.001
SAT; Lawn; Flat	KVARY	0	0.5
SAT; Lawn; Flat	AGWRC	0.96	0.996
SAT; Lawn; Flat	INFEXP	2.5	10
SAT; Lawn; Flat	AGWETP	0	0.35
SAT; Lawn; Flat	UZSN	0.8	3
SAT; Lawn; Flat	NSUR	0.25	0.5

SAT; Lawn; Flat	INTFW	4	1
SAT; Lawn; Flat	IRC	0.4	0.7
SAT; Lawn; Flat	LZETP	0.25	0.4
SAT; Lawn; Mod	LZSN	9	4
SAT; Lawn; Mod	INFILT	0.05	1
SAT; Lawn; Mod	LSUR	400	100
SAT; Lawn; Mod	SLSUR	0.1	0.01
SAT; Lawn; Mod	KVARY	0	0.5
SAT; Lawn; Mod	AGWRC	0.96	0.996
SAT; Lawn; Mod	INFEXP	2.5	10
SAT; Lawn; Mod	AGWETP	0	0.35
SAT; Lawn; Mod	UZSN	0.8	3
SAT; Lawn; Mod	NSUR	0.25	0.5
SAT; Lawn; Mod	INTFW	4	1
SAT; Lawn; Mod	IRC	0.4	0.7
SAT; Lawn; Mod	LZETP	0.25	0.4
SAT; Lawn; Steep	LZSN	9	4
SAT; Lawn; Steep	INFILT	0.05	1
SAT; Lawn; Steep	LSUR	400	100
SAT; Lawn; Steep	SLSUR	0.15	0.1
SAT; Lawn; Steep	KVARY	0	0.5
SAT; Lawn; Steep	AGWRC	0.96	0.996
SAT; Lawn; Steep	INFEXP	2.5	10
SAT; Lawn; Steep	AGWETP	0	0.35
SAT; Lawn; Steep	UZSN	0.8	3
SAT; Lawn; Steep	NSUR	0.25	0.5
SAT; Lawn; Steep	INTFW	4	1
SAT; Lawn; Steep	IRC	0.4	0.7
SAT; Lawn; Steep	LZETP	0.25	0.4
C/IMP DISP /FLAT	LZSN	6	4.5
C/IMP DISP /FLAT	INFILT	0.04	0.03
C/IMP DISP /FLAT	KVARY	0	0.5
C/IMP DISP /FLAT	AGWRC	0.96	0.996
C/IMP DISP /FLAT	INFEXP	3	2
C/IMP DISP /FLAT	CEPSC	0.2	0.1
C/IMP DISP /FLAT	UZSN	0.4	0.25
C/IMP DISP /FLAT	NSUR	0.35	0.25
C/IMP DISP /FLAT	INTFW	2	6
C/IMP DISP /FLAT	IRC	0.4	0.5
C/IMP DISP /FLAT	LZETP	0.7	0.25
C/IMP DISP /MOD	LZSN	6	4.5
C/IMP DISP /MOD	INFILT	0.04	0.03
C/IMP DISP /MOD	KVARY	0	0.5
C/IMP DISP /MOD	AGWRC	0.96	0.996
C/IMP DISP /MOD	INFEXP	3	2
C/IMP DISP /MOD	CEPSC	0.2	0.1
C/IMP DISP /MOD	UZSN	0.4	0.25
C/IMP DISP /MOD	NSUR	0.35	0.25
C/IMP DISP /MOD	INTFW	2	6
C/IMP DISP /MOD	IRC	0.4	0.5
C/IMP DISP /MOD	LZETP	0.7	0.25
C/IMP DISP /STEE	LZSN	6	4.5

C/IMP DISP /STEE	INFILT	0.04	0.03
C/IMP DISP /STEE	KVARY	0	0.5
C/IMP DISP /STEE	AGWRC	0.96	0.996
C/IMP DISP /STEE	INFEXP	3	2
C/IMP DISP /STEE	CEPSC	0.2	0.1
C/IMP DISP /STEE	UZZN	0.4	0.15
C/IMP DISP /STEE	NSUR	0.35	0.25
C/IMP DISP /STEE	INTFW	2	6
C/IMP DISP /STEE	IRC	0.4	0.3
C/IMP DISP /STEE	LZETP	0.7	0.25
A/B/IMP INF/FLAT	LZZN	6	5
A/B/IMP INF/FLAT	INFILT	0.03	0.8
A/B/IMP INF/FLAT	KVARY	0	0.3
A/B/IMP INF/FLAT	AGWRC	0.96	0.996
A/B/IMP INF/FLAT	INFEXP	3	2
A/B/IMP INF/FLAT	CEPSC	0.15	0.1
A/B/IMP INF/FLAT	UZZN	0.4	0.5
A/B/IMP INF/FLAT	NSUR	0.3	0.25
A/B/IMP INF/FLAT	INTFW	2	0
A/B/IMP INF/FLAT	IRC	0.4	0.7
A/B/IMP INF/FLAT	LZETP	0.4	0.25
A/B/IMP INF/MOD	LZZN	6	5
A/B/IMP INF/MOD	INFILT	0.03	0.8
A/B/IMP INF/MOD	KVARY	0	0.3
A/B/IMP INF/MOD	AGWRC	0.96	0.996
A/B/IMP INF/MOD	INFEXP	3	2
A/B/IMP INF/MOD	CEPSC	0.15	0.1
A/B/IMP INF/MOD	UZZN	0.4	0.5
A/B/IMP INF/MOD	NSUR	0.3	0.25
A/B/IMP INF/MOD	INTFW	2	0
A/B/IMP INF/MOD	IRC	0.4	0.7
A/B/IMP INF/MOD	LZETP	0.4	0.25
A/B/IMP INF/STEE	LZZN	6	5
A/B/IMP INF/STEE	INFILT	0.03	0.8
A/B/IMP INF/STEE	KVARY	0	0.3
A/B/IMP INF/STEE	AGWRC	0.96	0.996
A/B/IMP INF/STEE	INFEXP	3	2
A/B/IMP INF/STEE	CEPSC	0.15	0.1
A/B/IMP INF/STEE	UZZN	0.4	0.5
A/B/IMP INF/STEE	NSUR	0.3	0.25
A/B/IMP INF/STEE	INTFW	2	0
A/B/IMP INF/STEE	IRC	0.4	0.7
A/B/IMP INF/STEE	LZETP	0.4	0.25
SAT/IMP DIS/FLAT	LZZN	6	4
SAT/IMP DIS/FLAT	INFILT	0.02	1
SAT/IMP DIS/FLAT	LSUR	400	100
SAT/IMP DIS/FLAT	SLSUR	0.05	0.001
SAT/IMP DIS/FLAT	KVARY	0	0.5
SAT/IMP DIS/FLAT	AGWRC	0.96	0.996
SAT/IMP DIS/FLAT	INFEXP	3	10
SAT/IMP DIS/FLAT	AGWETP	0	0.35
SAT/IMP DIS/FLAT	UZZN	0.2	3

SAT/IMP DIS/FLAT	NSUR	0.25	0.5
SAT/IMP DIS/FLAT	INTFW	2	1
SAT/IMP DIS/FLAT	IRC	0.4	0.7
SAT/IMP DIS/FLAT	LZETP	0.25	0.4
SAT/IMP DIS/MOD	LZSN	6	4
SAT/IMP DIS/MOD	INFILT	0.02	1
SAT/IMP DIS/MOD	LSUR	400	100
SAT/IMP DIS/MOD	SLSUR	0.1	0.01
SAT/IMP DIS/MOD	KVARY	0	0.5
SAT/IMP DIS/MOD	AGWRC	0.96	0.996
SAT/IMP DIS/MOD	INFEXP	3	10
SAT/IMP DIS/MOD	AGWETP	0	0.35
SAT/IMP DIS/MOD	UZSN	0.2	3
SAT/IMP DIS/MOD	NSUR	0.25	0.5
SAT/IMP DIS/MOD	INTFW	2	1
SAT/IMP DIS/MOD	IRC	0.4	0.7
SAT/IMP DIS/MOD	LZETP	0.25	0.4
SAT/IMP DIS/STEE	LZSN	6	4
SAT/IMP DIS/STEE	INFILT	0.02	1
SAT/IMP DIS/STEE	LSUR	400	100
SAT/IMP DIS/STEE	SLSUR	0.15	0.1
SAT/IMP DIS/STEE	KVARY	0	0.5
SAT/IMP DIS/STEE	AGWRC	0.96	0.996
SAT/IMP DIS/STEE	INFEXP	3	10
SAT/IMP DIS/STEE	AGWETP	0	0.35
SAT/IMP DIS/STEE	UZSN	0.2	3
SAT/IMP DIS/STEE	NSUR	0.25	0.5
SAT/IMP DIS/STEE	INTFW	2	1
SAT/IMP DIS/STEE	IRC	0.4	0.7
SAT/IMP DIS/STEE	LZETP	0.25	0.4
Green/ECO/ROOF	LZSN	6	1
Green/ECO/ROOF	INFILT	0.5	0.05
Green/ECO/ROOF	LSUR	100	50
Green/ECO/ROOF	KVARY	0	0.5
Green/ECO/ROOF	AGWRC	0.96	0.1
Green/ECO/ROOF	INFEXP	10	2
Green/ECO/ROOF	AGWETP	0.7	0.8
Green/ECO/ROOF	CEPSC	0.2	0.1
Green/ECO/ROOF	UZSN	3	0.1
Green/ECO/ROOF	NSUR	0.5	0.55
Green/ECO/ROOF	IRC	0.7	0.1

IMPLND Changes

No IMPLND changes have been made.

Appendix

Predeveloped Schematic



A1
1.44ac

Mitigated Schematic



Predeveloped UCI File

RUN

GLOBAL

```
WWM4 model simulation
START      1955 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL    3      0
RESUME     0 RUN      1      UNIT SYSTEM      1
END GLOBAL
```

FILES

```
<File>  <Un#>  <-----File Name----->***
<-ID->                                     ***
WDM      26      18591.01 - Mechicanial Treatment.wdm
MESSU    25      Pre18591.01 - Mechicanial Treatment.MES
          27      Pre18591.01 - Mechicanial Treatment.L61
          28      Pre18591.01 - Mechicanial Treatment.L62
          30      POC18591.01 - Mechicanial Treatment1.dat
```

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

```
PERLND      2
COPY        501
DISPLY      1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
1      A1      MAX      1      2      30      9
```

END DISPLY-INF01

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501    1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCD ***
```

END OPCODE

PARM

```
#      #      K ***
```

END PARM

END GENER

PERLND

GEN-INFO

```
<PLS ><-----Name----->NBLKS      Unit-systems      Printer ***
# - #      User      t-series      Engl Metr      ***
```

```
in out
```

```
2      A/B, Forest, Mod      1      1      1      1      27      0
```

END GEN-INFO

*** Section PWATER***

ACTIVITY

```
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC ***
2      0      0      1      0      0      0      0      0      0      0      0      0
```

END ACTIVITY

PRINT-INFO

```
<PLS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
2      0      0      4      0      0      0      0      0      0      0      0      0      1      9
```

END PRINT-INFO

```

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
2 0 0 0 0 0 0 0 0 0 0 0
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
2 0 5 2 400 0.1 0.3 0.996
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
2 0 0 2 2 0 0 0
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
2 0.2 0.5 0.35 0 0.7 0.7 ***
END PWAT-PARM4

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
2 0 0 0 0 3 1 0
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out ***

END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
END PRINT-INFO

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
END IWAT-PARM1

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC
END IWAT-PARM2

IWAT-PARM3
<PLS > IWATER input info: Part 3 ***
# - # ***PETMAX PETMIN
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # *** RETS SURS
END IWAT-STATE1

```

SCHEMATIC					
<-Source->		<--Area-->	<-Target->	MBLK	***
<Name>	#	<-factor->	<Name>	#	Tbl#

A1	2	1.44	COPY	501	12
PERLND	2	1.44	COPY	501	13

NETWORK											
<-Volume->	<-Grp>	<-Member->	<-Mult-->	Tran	<-Target	vols>	<-Grp>	<-Member->	***		
<Name>	#	<Name>	#	#<-factor->	strg	<Name>	#	#	<Name>	#	***
COPY	501	OUTPUT	MEAN	1	1	48.4	DISPLY	1	INPUT	TIMSER	1

```
ACTIVITY
  <PLS > ***** Active Sections *****
  # - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
END ACTIVITY
```

```
PRINT-INFO
  <PLS > ***** Print-flags ***** PIVL  PYR
  # - # HYDR ADCA CONS HEAT  SED  GQL  OXRX  NUTR  PLNK  PHCB  PIVL  PYR  *****
END PRINT-INFO
```

HYDR-PARM1						
RCHRES	Flags for each HYDR Section ***					
# - #	VC A1 A2 A3 ODFVFG	for each	***	ODGTFG	for each	FUNCT for each
	FG FG FG FG	possible exit	***	possible exit		possible exit
	* * * *	* * * *	*	* * *	* * *	***

```

HYDR - PARM2
# - # FTABNO LEN DELTH STCOR KS DB50 ***
<-----><-----><-----><-----><-----><-----><-----> ***

```

```

HYDR-INIT
  RCHRES Initial conditions for each HYDR section ***
  # - # *** VOL Initial value of COLIND Initial value of OUTDGT
      *** ac-ft for each possible exit for each possible exit
<-----><-----> <-----><-----><-----> *** <-----><-----><-----><----->

```

```
SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES
```

Page 196 of 515

WDM	1	EVAP	ENGL	0.76	PERLND	1	999	EXTNL	PETINP
WDM	1	EVAP	ENGL	0.76	IMPLND	1	999	EXTNL	PETINP

END EXT SOURCES

EXT TARGETS

<-Volume->	<-Grp>	<-Member->	<--Mult-->	Tran	<-Volume->	<Member>	Tsys	Tgap	Amd	***	
<Name>	#	<Name>	#	#<-factor->	strg	<Name>	#	<Name>	tem	strg	strg***
COPY	501	OUTPUT	MEAN	1	1	48.4	WDM	501	FLOW	ENGL	REPL

END EXT TARGETS

MASS-LINK

<Volume>	<-Grp>	<-Member->	<--Mult-->	<Target>	<-Grp>	<-Member->	***
<Name>	#	<Name>	#	#<-factor->	<Name>	#	#***
MASS-LINK	12						
PERLND	PWATER	SURO		0.083333	COPY	INPUT	MEAN
END MASS-LINK	12						

MASS-LINK	13						
PERLND	PWATER	IFW0		0.083333	COPY	INPUT	MEAN
END MASS-LINK	13						

END MASS-LINK

END RUN

Mitigated UCI File

RUN

GLOBAL

```
WWM4 model simulation
START      1955 10 01      END      2009 09 30
RUN INTERP OUTPUT LEVEL    3      0
RESUME     0 RUN      1
UNIT SYSTEM      1
END GLOBAL
```

FILES

```
<File>  <Un#>  <-----File Name----->***
<-ID->                                     ***
WDM      26      18591.01 - Mechicanial Treatment.wdm
MESSU    25      Mit18591.01 - Mechicanial Treatment.MES
          27      Mit18591.01 - Mechicanial Treatment.L61
          28      Mit18591.01 - Mechicanial Treatment.L62
          30      POC18591.01 - Mechicanial Treatment1.dat
```

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

```
PERLND      7
IMPLND      1
PERLND      8
RCHRES      1
RCHRES      2
RCHRES      3
RCHRES      4
RCHRES      5
RCHRES      6
RCHRES      7
RCHRES      8
RCHRES      9
RCHRES     10
RCHRES     11
RCHRES     12
COPY        1
COPY       501
DISPLY      1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
1      Treatment CB #1      MAX      1      2      30      9
```

END DISPLY-INF01

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501     1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCD ***
```

END OPCODE

PARM

```
#      #      K ***
```

END PARM

END GENER

PERLND

GEN-INFO

```
<PLS ><-----Name----->NBLKS  Unit-systems  Printer ***
# - #      User  t-series  Engl Metr ***
          in  out
7      A/B, Lawn, Flat      1      1      1      1      27      0
```

8 A/B, Lawn, Mod 1 1 1 1 27 0
 END GEN-INFO
 *** Section PWATER***

ACTIVITY
 <PLS > ***** Active Sections *****
 # - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC ***
 7 0 0 1 0 0 0 0 0 0 0 0 0
 8 0 0 1 0 0 0 0 0 0 0 0 0
 END ACTIVITY

PRINT-INFO
 <PLS > ***** Print-flags ***** PIVL PYR
 # - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
 7 0 0 4 0 0 0 0 0 0 0 0 0 1 9
 8 0 0 4 0 0 0 0 0 0 0 0 0 1 9
 END PRINT-INFO

PWAT-PARM1
 <PLS > PWATER variable monthly parameter value flags ***
 # - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
 7 0 0 0 0 0 0 0 0 0 0 0
 8 0 0 0 0 0 0 0 0 0 0 0
 END PWAT-PARM1

PWAT-PARM2
 <PLS > PWATER input info: Part 2 ***
 # - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
 7 0 5 0.8 400 0.05 0.3 0.996
 8 0 5 0.8 400 0.1 0.3 0.996
 END PWAT-PARM2

PWAT-PARM3
 <PLS > PWATER input info: Part 3 ***
 # - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
 7 0 0 2 2 0 0 0
 8 0 0 2 2 0 0 0
 END PWAT-PARM3

PWAT-PARM4
 <PLS > PWATER input info: Part 4 ***
 # - # CEPSC UZSN NSUR INTFW IRC LZETP ***
 7 0.1 0.5 0.25 0 0.7 0.25
 8 0.1 0.5 0.25 0 0.7 0.25
 END PWAT-PARM4

PWAT-STATE1
 <PLS > *** Initial conditions at start of simulation
 ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
 # - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
 7 0 0 0 0 3 1 0
 8 0 0 0 0 3 1 0
 END PWAT-STATE1

END PERLND

IMPLND
 GEN-INFO
 <PLS ><-----Name-----> Unit-systems Printer ***
 # - # User t-series Engl Metr ***
 in out ***
 1 ROADS/FLAT 1 1 1 27 0
 END GEN-INFO
 *** Section IWATER***

ACTIVITY
 <PLS > ***** Active Sections *****
 # - # ATMP SNOW IWAT SLD IWG IQAL ***
 1 0 0 1 0 0 0
 END ACTIVITY

```

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW IWAT  SLD  IWG IQAL  *****
1      0      0      4      0      0      4      1      9
END PRINT-INFO

IWAT-PARM1
<PLS >  IWATER variable monthly parameter value flags  ***
# - # CSNO RTOP  VRS  VNN RTLI  ***
1      0      0      0      0      0
END IWAT-PARM1

IWAT-PARM2
<PLS >      IWATER input info: Part 2      ***
# - # ***  LSUR      SLSUR      NSUR      RETSC
1      400      0.01      0.1      0.1
END IWAT-PARM2

IWAT-PARM3
<PLS >      IWATER input info: Part 3      ***
# - # ***PETMAX      PETMIN
1      0      0
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # ***  RETS      SURS
1      0      0
END IWAT-STATE1

```

END IMPLND

SCHEMATIC		<--Area-->		<-Target-->		MBLK	***
<-Source-->		<-factor-->		<Name>		Tbl#	***
<Name>	#				#		
1***							
PERLND	7	0.11	RCHRES	1	2		
PERLND	7	0.11	RCHRES	1	3		
IMPLND	1	0.22	RCHRES	1	5		
2***							
PERLND	7	0.03	RCHRES	2	2		
PERLND	7	0.03	RCHRES	2	3		
IMPLND	1	0.07	RCHRES	2	5		
3***							
PERLND	7	0.1	RCHRES	3	2		
PERLND	7	0.1	RCHRES	3	3		
IMPLND	1	0.25	RCHRES	3	5		
4***							
PERLND	7	0.11	RCHRES	4	2		
PERLND	7	0.11	RCHRES	4	3		
IMPLND	1	0.21	RCHRES	4	5		
5***							
PERLND	7	0.05	RCHRES	5	2		
PERLND	7	0.05	RCHRES	5	3		
IMPLND	1	0.13	RCHRES	5	5		
6***							
PERLND	8	0.13	RCHRES	6	2		
PERLND	8	0.13	RCHRES	6	3		
IMPLND	1	0.25	RCHRES	6	5		
7***							
PERLND	7	0.07	RCHRES	7	2		
PERLND	7	0.07	RCHRES	7	3		
IMPLND	1	0.12	RCHRES	7	5		
8***							
PERLND	7	0.09	RCHRES	8	2		
PERLND	7	0.09	RCHRES	8	3		
IMPLND	1	0.17	RCHRES	8	5		
9***							
PERLND	7	0.06	RCHRES	9	2		
PERLND	7	0.06	RCHRES	9	3		

IMPLND	1	0.08	RCHRES	9	5
10***					
PERLND	7	0.07	RCHRES	10	2
PERLND	7	0.07	RCHRES	10	3
IMPLND	1	0.17	RCHRES	10	5
11***					
PERLND	7	0.12	RCHRES	11	2
PERLND	7	0.12	RCHRES	11	3
IMPLND	1	0.27	RCHRES	11	5
12***					
PERLND	7	0.12	RCHRES	12	2
PERLND	7	0.12	RCHRES	12	3
IMPLND	1	0.1	RCHRES	12	5

*****Routing*****

PERLND	7	0.11	COPY	1	12
IMPLND	1	0.22	COPY	1	15
PERLND	7	0.11	COPY	1	13
PERLND	7	0.03	COPY	1	12
IMPLND	1	0.07	COPY	1	15
PERLND	7	0.03	COPY	1	13
PERLND	7	0.1	COPY	1	12
IMPLND	1	0.25	COPY	1	15
PERLND	7	0.1	COPY	1	13
PERLND	7	0.11	COPY	1	12
IMPLND	1	0.21	COPY	1	15
PERLND	7	0.11	COPY	1	13
PERLND	7	0.05	COPY	1	12
IMPLND	1	0.13	COPY	1	15
PERLND	7	0.05	COPY	1	13
PERLND	8	0.13	COPY	1	12
IMPLND	1	0.25	COPY	1	15
PERLND	8	0.13	COPY	1	13
PERLND	7	0.07	COPY	1	12
IMPLND	1	0.12	COPY	1	15
PERLND	7	0.07	COPY	1	13
PERLND	7	0.09	COPY	1	12
IMPLND	1	0.17	COPY	1	15
PERLND	7	0.09	COPY	1	13
PERLND	7	0.06	COPY	1	12
IMPLND	1	0.08	COPY	1	15
PERLND	7	0.06	COPY	1	13
PERLND	7	0.07	COPY	1	12
IMPLND	1	0.17	COPY	1	15
PERLND	7	0.07	COPY	1	13
PERLND	7	0.12	COPY	1	12
IMPLND	1	0.27	COPY	1	15
PERLND	7	0.12	COPY	1	13
PERLND	7	0.12	COPY	1	12
IMPLND	1	0.1	COPY	1	15
PERLND	7	0.12	COPY	1	13
RCHRES	1	1	COPY	501	17
RCHRES	1	1	COPY	601	17
RCHRES	1	1	COPY	501	17
RCHRES	1	1	COPY	601	17
RCHRES	2	1	COPY	501	17
RCHRES	2	1	COPY	601	17
RCHRES	2	1	COPY	501	17
RCHRES	2	1	COPY	601	17
RCHRES	3	1	COPY	501	17
RCHRES	3	1	COPY	601	17
RCHRES	3	1	COPY	501	17
RCHRES	3	1	COPY	601	17
RCHRES	4	1	COPY	501	17
RCHRES	4	1	COPY	601	17
RCHRES	4	1	COPY	501	17
RCHRES	4	1	COPY	601	17
RCHRES	5	1	COPY	501	17
RCHRES	5	1	COPY	601	17
RCHRES	5	1	COPY	501	17

RCHRES	5	1	COPY	601	17
RCHRES	6	1	COPY	501	17
RCHRES	6	1	COPY	601	17
RCHRES	6	1	COPY	501	17
RCHRES	6	1	COPY	601	17
RCHRES	7	1	COPY	501	17
RCHRES	7	1	COPY	601	17
RCHRES	7	1	COPY	501	17
RCHRES	7	1	COPY	601	17
RCHRES	8	1	COPY	501	17
RCHRES	8	1	COPY	601	17
RCHRES	8	1	COPY	501	17
RCHRES	8	1	COPY	601	17
RCHRES	9	1	COPY	501	17
RCHRES	9	1	COPY	601	17
RCHRES	9	1	COPY	501	17
RCHRES	9	1	COPY	601	17
RCHRES	10	1	COPY	501	17
RCHRES	10	1	COPY	601	17
RCHRES	10	1	COPY	501	17
RCHRES	10	1	COPY	601	17
RCHRES	11	1	COPY	501	17
RCHRES	11	1	COPY	601	17
RCHRES	11	1	COPY	501	17
RCHRES	11	1	COPY	601	17
RCHRES	12	1	COPY	501	17
RCHRES	12	1	COPY	601	17
RCHRES	12	1	COPY	501	17
RCHRES	12	1	COPY	601	17

END SCHEMATIC

NETWORK

<-Volume->	<-Grp>	<-Member->	<-Mult-->	Tran	<-Target	vols>	<-Grp>	<-Member->	***
<Name>	#	<Name>	#	<-factor->	strg	<Name>	#	<Name>	#
COPY	501	OUTPUT	MEAN	1 1	48.4	DISPLY	1	INPUT	TIMSER 1

<-Volume->	<-Grp>	<-Member->	<-Mult-->	Tran	<-Target	vols>	<-Grp>	<-Member->	***
<Name>	#	<Name>	#	<-factor->	strg	<Name>	#	<Name>	#

END NETWORK

RCHRES

GEN-INFO

RCHRES	Name	Nexits	Unit	Systems	Printer			
#	-	#	----	----	User	T-series	Engl	Metr
						in	out	LKFG
1	Treatment CB #1	2	1	1	1	1	28	0
2	Treatment CB #2	2	1	1	1	1	28	0
3	Treatment CB #3	2	1	1	1	1	28	0
4	Treatment CB #4	2	1	1	1	1	28	0
5	Treatment CB #5	2	1	1	1	1	28	0
6	Treatment CB #6	2	1	1	1	1	28	0
7	Treatment CB #7	2	1	1	1	1	28	0
8	Treatment CB #8	2	1	1	1	1	28	0
9	Treatment CB #9	2	1	1	1	1	28	0
10	Treatment CB #10-079	2	1	1	1	1	28	0
11	Treatment CB #11-080	2	1	1	1	1	28	0
12	Treatment CB #12-081	2	1	1	1	1	28	0

END GEN-INFO

*** Section RCHRES***

ACTIVITY

<PLS > ***** Active Sections *****

#	-	#	HYFG	ADFG	CNFG	HTFG	SDFG	GQFG	OXFG	NUFG	PKFG	PHFG	***
1		1	0	0	0	0	0	0	0	0	0	0	
2		1	0	0	0	0	0	0	0	0	0	0	
3		1	0	0	0	0	0	0	0	0	0	0	
4		1	0	0	0	0	0	0	0	0	0	0	
5		1	0	0	0	0	0	0	0	0	0	0	

6	1	0	0	0	0	0	0	0	0	0	0
7	1	0	0	0	0	0	0	0	0	0	0
8	1	0	0	0	0	0	0	0	0	0	0
9	1	0	0	0	0	0	0	0	0	0	0
10	1	0	0	0	0	0	0	0	0	0	0
11	1	0	0	0	0	0	0	0	0	0	0
12	1	0	0	0	0	0	0	0	0	0	0

END ACTIVITY

PRINT-INFO

<PLS> ***** Print-flags ***** PIVL PYR *****												
# - #	HYDR	ADCA	CONS	HEAT	SED	GQL	OXRX	NUTR	PLNK	PHCB	PIVL	PYR
1	4	0	0	0	0	0	0	0	0	0	1	9
2	4	0	0	0	0	0	0	0	0	0	1	9
3	4	0	0	0	0	0	0	0	0	0	1	9
4	4	0	0	0	0	0	0	0	0	0	1	9
5	4	0	0	0	0	0	0	0	0	0	1	9
6	4	0	0	0	0	0	0	0	0	0	1	9
7	4	0	0	0	0	0	0	0	0	0	1	9
8	4	0	0	0	0	0	0	0	0	0	1	9
9	4	0	0	0	0	0	0	0	0	0	1	9
10	4	0	0	0	0	0	0	0	0	0	1	9
11	4	0	0	0	0	0	0	0	0	0	1	9
12	4	0	0	0	0	0	0	0	0	0	1	9

END PRINT-INFO

HYDR-PARM1

RCHRES Flags for each HYDR Section										***									
# - #	VC	A1	A2	A3	ODFVFG for each possible exit				***	ODGTFG for each possible exit				***	FUNCT for each possible exit				
	FG	FG	FG	FG	*	*	*	*	*		*	*	*	*	*	*	*	*	*
1	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
2	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
3	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
4	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
5	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
6	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
7	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
8	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
9	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
10	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
11	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2
12	0	1	0	0	4	5	0	0	0		0	0	0	0	0		2	2	2

END HYDR-PARM1

HYDR-PARM2

# - #	FTABNO	LEN	DELTH	STCOR	KS	DB50	***	
<----->	<----->	<----->	<----->	<----->	<----->	<----->	***	***
1	1	0.01	0.0	0.0	0.0	0.0		
2	2	0.01	0.0	0.0	0.0	0.0		
3	3	0.01	0.0	0.0	0.0	0.0		
4	4	0.01	0.0	0.0	0.0	0.0		
5	5	0.01	0.0	0.0	0.0	0.0		
6	6	0.01	0.0	0.0	0.0	0.0		
7	7	0.01	0.0	0.0	0.0	0.0		
8	8	0.01	0.0	0.0	0.0	0.0		
9	9	0.01	0.0	0.0	0.0	0.0		
10	10	0.01	0.0	0.0	0.0	0.0		
11	11	0.01	0.0	0.0	0.0	0.0		
12	12	0.01	0.0	0.0	0.0	0.0		

END HYDR-PARM2

HYDR-INIT

RCHRES Initial conditions for each HYDR section ***												
# - #	*** VOL	Initial value of COLIND					Initial value of OUTDGT					
	*** ac-ft	for each possible exit					for each possible exit					
<----->	<----->	<----->	<----->	<----->	<----->	<----->	***	<----->	<----->	<----->	<----->	<----->
1	0	4.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
2	0	4.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
3	0	4.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
4	0	4.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0

5	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES

FTABLE 1
90 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.002296	0.000000	2.000000	0.000000		
0.111111	0.002296	0.000255	2.000000	0.000000		
0.222222	0.002296	0.000510	2.000000	0.000000		
0.333333	0.002296	0.000765	2.000000	0.000000		
0.444444	0.002296	0.001020	2.000000	0.000000		
0.555556	0.002296	0.001275	2.000000	0.000000		
0.666667	0.002296	0.001530	2.000000	11.00000		
0.777778	0.002296	0.001786	2.000000	21.00000		
0.888889	0.002296	0.002041	2.000000	31.00000		
1.000000	0.002296	0.002296	2.000000	41.00000		
1.111111	0.002296	0.002551	2.000000	51.00000		
1.222222	0.002296	0.002806	2.000000	61.00000		
1.333333	0.002296	0.003061	2.000000	71.00000		
1.444444	0.002296	0.003316	2.000000	81.00000		
1.555556	0.002296	0.003571	2.000000	91.00000		
1.666667	0.002296	0.003826	2.000000	101.0000		
1.777778	0.002296	0.004081	2.000000	111.0000		
1.888889	0.002296	0.004336	2.000000	121.0000		
2.000000	0.002296	0.004591	2.000000	131.0000		
2.111111	0.002296	0.004846	2.000000	141.0000		
2.222222	0.002296	0.005102	2.000000	151.0000		
2.333333	0.002296	0.005357	2.000000	161.0000		
2.444444	0.002296	0.005612	2.000000	171.0000		
2.555556	0.002296	0.005867	2.000000	181.0000		
2.666667	0.002296	0.006122	2.000000	191.0000		
2.777778	0.002296	0.006377	2.000000	201.0000		
2.888889	0.002296	0.006632	2.000000	211.0000		
3.000000	0.002296	0.006887	2.000000	221.0000		
3.111111	0.002296	0.007142	2.000000	231.0000		
3.222222	0.002296	0.007397	2.000000	241.0000		
3.333333	0.002296	0.007652	2.000000	251.0000		
3.444444	0.002296	0.007907	2.000000	261.0000		
3.555556	0.002296	0.008162	2.000000	271.0000		
3.666667	0.002296	0.008418	2.000000	281.0000		
3.777778	0.002296	0.008673	2.000000	291.0000		
3.888889	0.002296	0.008928	2.000000	301.0000		
4.000000	0.002296	0.009183	2.000000	311.0000		
4.111111	0.002296	0.009438	2.000000	321.0000		
4.222222	0.002296	0.009693	2.000000	331.0000		
4.333333	0.002296	0.009948	2.000000	341.0000		
4.444444	0.002296	0.010203	2.000000	351.0000		
4.555556	0.002296	0.010458	2.000000	361.0000		
4.666667	0.002296	0.010713	2.000000	371.0000		
4.777778	0.002296	0.010968	2.000000	381.0000		
4.888889	0.002296	0.011223	2.000000	391.0000		
5.000000	0.002296	0.011478	2.000000	401.0000		
5.111111	0.002296	0.011733	2.000000	411.0000		
5.222222	0.002296	0.011989	2.000000	421.0000		
5.333333	0.002296	0.012244	2.000000	431.0000		
5.444444	0.002296	0.012499	2.000000	441.0000		
5.555556	0.002296	0.012754	2.000000	451.0000		
5.666667	0.002296	0.013009	2.000000	461.0000		

5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 1

FTABLE 2

90 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.002296	0.000000	2.000000	0.000000		
0.111111	0.002296	0.000255	2.000000	0.000000		
0.222222	0.002296	0.000510	2.000000	0.000000		
0.333333	0.002296	0.000765	2.000000	0.000000		
0.444444	0.002296	0.001020	2.000000	0.000000		
0.555556	0.002296	0.001275	2.000000	0.000000		
0.666667	0.002296	0.001530	2.000000	11.00000		
0.777778	0.002296	0.001786	2.000000	21.00000		
0.888889	0.002296	0.002041	2.000000	31.00000		
1.000000	0.002296	0.002296	2.000000	41.00000		
1.111111	0.002296	0.002551	2.000000	51.00000		
1.222222	0.002296	0.002806	2.000000	61.00000		
1.333333	0.002296	0.003061	2.000000	71.00000		
1.444444	0.002296	0.003316	2.000000	81.00000		
1.555556	0.002296	0.003571	2.000000	91.00000		
1.666667	0.002296	0.003826	2.000000	101.0000		
1.777778	0.002296	0.004081	2.000000	111.0000		
1.888889	0.002296	0.004336	2.000000	121.0000		
2.000000	0.002296	0.004591	2.000000	131.0000		
2.111111	0.002296	0.004846	2.000000	141.0000		
2.222222	0.002296	0.005102	2.000000	151.0000		
2.333333	0.002296	0.005357	2.000000	161.0000		
2.444444	0.002296	0.005612	2.000000	171.0000		
2.555556	0.002296	0.005867	2.000000	181.0000		
2.666667	0.002296	0.006122	2.000000	191.0000		
2.777778	0.002296	0.006377	2.000000	201.0000		
2.888889	0.002296	0.006632	2.000000	211.0000		

3.000000	0.002296	0.006887	2.000000	221.0000
3.111111	0.002296	0.007142	2.000000	231.0000
3.222222	0.002296	0.007397	2.000000	241.0000
3.333333	0.002296	0.007652	2.000000	251.0000
3.444444	0.002296	0.007907	2.000000	261.0000
3.555556	0.002296	0.008162	2.000000	271.0000
3.666667	0.002296	0.008418	2.000000	281.0000
3.777778	0.002296	0.008673	2.000000	291.0000
3.888889	0.002296	0.008928	2.000000	301.0000
4.000000	0.002296	0.009183	2.000000	311.0000
4.111111	0.002296	0.009438	2.000000	321.0000
4.222222	0.002296	0.009693	2.000000	331.0000
4.333333	0.002296	0.009948	2.000000	341.0000
4.444444	0.002296	0.010203	2.000000	351.0000
4.555556	0.002296	0.010458	2.000000	361.0000
4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
5.111111	0.002296	0.011733	2.000000	411.0000
5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 2

FTABLE 3

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			

0.222222	0.002296	0.000510	2.000000	0.000000
0.333333	0.002296	0.000765	2.000000	0.000000
0.444444	0.002296	0.001020	2.000000	0.000000
0.555556	0.002296	0.001275	2.000000	0.000000
0.666667	0.002296	0.001530	2.000000	11.000000
0.777778	0.002296	0.001786	2.000000	21.000000
0.888889	0.002296	0.002041	2.000000	31.000000
1.000000	0.002296	0.002296	2.000000	41.000000
1.111111	0.002296	0.002551	2.000000	51.000000
1.222222	0.002296	0.002806	2.000000	61.000000
1.333333	0.002296	0.003061	2.000000	71.000000
1.444444	0.002296	0.003316	2.000000	81.000000
1.555556	0.002296	0.003571	2.000000	91.000000
1.666667	0.002296	0.003826	2.000000	101.000000
1.777778	0.002296	0.004081	2.000000	111.000000
1.888889	0.002296	0.004336	2.000000	121.000000
2.000000	0.002296	0.004591	2.000000	131.000000
2.111111	0.002296	0.004846	2.000000	141.000000
2.222222	0.002296	0.005102	2.000000	151.000000
2.333333	0.002296	0.005357	2.000000	161.000000
2.444444	0.002296	0.005612	2.000000	171.000000
2.555556	0.002296	0.005867	2.000000	181.000000
2.666667	0.002296	0.006122	2.000000	191.000000
2.777778	0.002296	0.006377	2.000000	201.000000
2.888889	0.002296	0.006632	2.000000	211.000000
3.000000	0.002296	0.006887	2.000000	221.000000
3.111111	0.002296	0.007142	2.000000	231.000000
3.222222	0.002296	0.007397	2.000000	241.000000
3.333333	0.002296	0.007652	2.000000	251.000000
3.444444	0.002296	0.007907	2.000000	261.000000
3.555556	0.002296	0.008162	2.000000	271.000000
3.666667	0.002296	0.008418	2.000000	281.000000
3.777778	0.002296	0.008673	2.000000	291.000000
3.888889	0.002296	0.008928	2.000000	301.000000
4.000000	0.002296	0.009183	2.000000	311.000000
4.111111	0.002296	0.009438	2.000000	321.000000
4.222222	0.002296	0.009693	2.000000	331.000000
4.333333	0.002296	0.009948	2.000000	341.000000
4.444444	0.002296	0.010203	2.000000	351.000000
4.555556	0.002296	0.010458	2.000000	361.000000
4.666667	0.002296	0.010713	2.000000	371.000000
4.777778	0.002296	0.010968	2.000000	381.000000
4.888889	0.002296	0.011223	2.000000	391.000000
5.000000	0.002296	0.011478	2.000000	401.000000
5.111111	0.002296	0.011733	2.000000	411.000000
5.222222	0.002296	0.011989	2.000000	421.000000
5.333333	0.002296	0.012244	2.000000	431.000000
5.444444	0.002296	0.012499	2.000000	441.000000
5.555556	0.002296	0.012754	2.000000	451.000000
5.666667	0.002296	0.013009	2.000000	461.000000
5.777778	0.002296	0.013264	2.000000	471.000000
5.888889	0.002296	0.013519	2.000000	481.000000
6.000000	0.002296	0.013774	2.000000	491.000000
6.111111	0.002296	0.014029	2.000000	501.000000
6.222222	0.002296	0.014284	2.000000	511.000000
6.333333	0.002296	0.014539	2.000000	521.000000
6.444444	0.002296	0.014794	2.000000	531.000000
6.555556	0.002296	0.015049	2.000000	541.000000
6.666667	0.002296	0.015305	2.000000	551.000000
6.777778	0.002296	0.015560	2.000000	561.000000
6.888889	0.002296	0.015815	2.000000	571.000000
7.000000	0.002296	0.016070	2.000000	581.000000
7.111111	0.002296	0.016325	2.000000	591.000000
7.222222	0.002296	0.016580	2.000000	601.000000
7.333333	0.002296	0.016835	2.000000	611.000000
7.444444	0.002296	0.017090	2.000000	621.000000
7.555556	0.002296	0.017345	2.000000	631.000000
7.666667	0.002296	0.017600	2.000000	641.000000
7.777778	0.002296	0.017855	2.000000	651.000000
7.888889	0.002296	0.018110	2.000000	661.000000

8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 3

FTABLE 4

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.00000			
0.777778	0.002296	0.001786	2.000000	21.00000			
0.888889	0.002296	0.002041	2.000000	31.00000			
1.000000	0.002296	0.002296	2.000000	41.00000			
1.111111	0.002296	0.002551	2.000000	51.00000			
1.222222	0.002296	0.002806	2.000000	61.00000			
1.333333	0.002296	0.003061	2.000000	71.00000			
1.444444	0.002296	0.003316	2.000000	81.00000			
1.555556	0.002296	0.003571	2.000000	91.00000			
1.666667	0.002296	0.003826	2.000000	101.0000			
1.777778	0.002296	0.004081	2.000000	111.0000			
1.888889	0.002296	0.004336	2.000000	121.0000			
2.000000	0.002296	0.004591	2.000000	131.0000			
2.111111	0.002296	0.004846	2.000000	141.0000			
2.222222	0.002296	0.005102	2.000000	151.0000			
2.333333	0.002296	0.005357	2.000000	161.0000			
2.444444	0.002296	0.005612	2.000000	171.0000			
2.555556	0.002296	0.005867	2.000000	181.0000			
2.666667	0.002296	0.006122	2.000000	191.0000			
2.777778	0.002296	0.006377	2.000000	201.0000			
2.888889	0.002296	0.006632	2.000000	211.0000			
3.000000	0.002296	0.006887	2.000000	221.0000			
3.111111	0.002296	0.007142	2.000000	231.0000			
3.222222	0.002296	0.007397	2.000000	241.0000			
3.333333	0.002296	0.007652	2.000000	251.0000			
3.444444	0.002296	0.007907	2.000000	261.0000			
3.555556	0.002296	0.008162	2.000000	271.0000			
3.666667	0.002296	0.008418	2.000000	281.0000			
3.777778	0.002296	0.008673	2.000000	291.0000			
3.888889	0.002296	0.008928	2.000000	301.0000			
4.000000	0.002296	0.009183	2.000000	311.0000			
4.111111	0.002296	0.009438	2.000000	321.0000			
4.222222	0.002296	0.009693	2.000000	331.0000			
4.333333	0.002296	0.009948	2.000000	341.0000			
4.444444	0.002296	0.010203	2.000000	351.0000			
4.555556	0.002296	0.010458	2.000000	361.0000			
4.666667	0.002296	0.010713	2.000000	371.0000			
4.777778	0.002296	0.010968	2.000000	381.0000			
4.888889	0.002296	0.011223	2.000000	391.0000			
5.000000	0.002296	0.011478	2.000000	401.0000			
5.111111	0.002296	0.011733	2.000000	411.0000			

5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 4

FTABLE 5

90 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.002296	0.000000	2.000000	0.000000		
0.111111	0.002296	0.000255	2.000000	0.000000		
0.222222	0.002296	0.000510	2.000000	0.000000		
0.333333	0.002296	0.000765	2.000000	0.000000		
0.444444	0.002296	0.001020	2.000000	0.000000		
0.555556	0.002296	0.001275	2.000000	0.000000		
0.666667	0.002296	0.001530	2.000000	11.00000		
0.777778	0.002296	0.001786	2.000000	21.00000		
0.888889	0.002296	0.002041	2.000000	31.00000		
1.000000	0.002296	0.002296	2.000000	41.00000		
1.111111	0.002296	0.002551	2.000000	51.00000		
1.222222	0.002296	0.002806	2.000000	61.00000		
1.333333	0.002296	0.003061	2.000000	71.00000		
1.444444	0.002296	0.003316	2.000000	81.00000		
1.555556	0.002296	0.003571	2.000000	91.00000		
1.666667	0.002296	0.003826	2.000000	101.0000		
1.777778	0.002296	0.004081	2.000000	111.0000		
1.888889	0.002296	0.004336	2.000000	121.0000		
2.000000	0.002296	0.004591	2.000000	131.0000		
2.111111	0.002296	0.004846	2.000000	141.0000		
2.222222	0.002296	0.005102	2.000000	151.0000		
2.333333	0.002296	0.005357	2.000000	161.0000		

2.444444	0.002296	0.005612	2.000000	171.0000
2.555556	0.002296	0.005867	2.000000	181.0000
2.666667	0.002296	0.006122	2.000000	191.0000
2.777778	0.002296	0.006377	2.000000	201.0000
2.888889	0.002296	0.006632	2.000000	211.0000
3.000000	0.002296	0.006887	2.000000	221.0000
3.111111	0.002296	0.007142	2.000000	231.0000
3.222222	0.002296	0.007397	2.000000	241.0000
3.333333	0.002296	0.007652	2.000000	251.0000
3.444444	0.002296	0.007907	2.000000	261.0000
3.555556	0.002296	0.008162	2.000000	271.0000
3.666667	0.002296	0.008418	2.000000	281.0000
3.777778	0.002296	0.008673	2.000000	291.0000
3.888889	0.002296	0.008928	2.000000	301.0000
4.000000	0.002296	0.009183	2.000000	311.0000
4.111111	0.002296	0.009438	2.000000	321.0000
4.222222	0.002296	0.009693	2.000000	331.0000
4.333333	0.002296	0.009948	2.000000	341.0000
4.444444	0.002296	0.010203	2.000000	351.0000
4.555556	0.002296	0.010458	2.000000	361.0000
4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
5.111111	0.002296	0.011733	2.000000	411.0000
5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000
END FTABLE	5			
FTABLE	6			

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.00000			
0.777778	0.002296	0.001786	2.000000	21.00000			
0.888889	0.002296	0.002041	2.000000	31.00000			
1.000000	0.002296	0.002296	2.000000	41.00000			
1.111111	0.002296	0.002551	2.000000	51.00000			
1.222222	0.002296	0.002806	2.000000	61.00000			
1.333333	0.002296	0.003061	2.000000	71.00000			
1.444444	0.002296	0.003316	2.000000	81.00000			
1.555556	0.002296	0.003571	2.000000	91.00000			
1.666667	0.002296	0.003826	2.000000	101.0000			
1.777778	0.002296	0.004081	2.000000	111.0000			
1.888889	0.002296	0.004336	2.000000	121.0000			
2.000000	0.002296	0.004591	2.000000	131.0000			
2.111111	0.002296	0.004846	2.000000	141.0000			
2.222222	0.002296	0.005102	2.000000	151.0000			
2.333333	0.002296	0.005357	2.000000	161.0000			
2.444444	0.002296	0.005612	2.000000	171.0000			
2.555556	0.002296	0.005867	2.000000	181.0000			
2.666667	0.002296	0.006122	2.000000	191.0000			
2.777778	0.002296	0.006377	2.000000	201.0000			
2.888889	0.002296	0.006632	2.000000	211.0000			
3.000000	0.002296	0.006887	2.000000	221.0000			
3.111111	0.002296	0.007142	2.000000	231.0000			
3.222222	0.002296	0.007397	2.000000	241.0000			
3.333333	0.002296	0.007652	2.000000	251.0000			
3.444444	0.002296	0.007907	2.000000	261.0000			
3.555556	0.002296	0.008162	2.000000	271.0000			
3.666667	0.002296	0.008418	2.000000	281.0000			
3.777778	0.002296	0.008673	2.000000	291.0000			
3.888889	0.002296	0.008928	2.000000	301.0000			
4.000000	0.002296	0.009183	2.000000	311.0000			
4.111111	0.002296	0.009438	2.000000	321.0000			
4.222222	0.002296	0.009693	2.000000	331.0000			
4.333333	0.002296	0.009948	2.000000	341.0000			
4.444444	0.002296	0.010203	2.000000	351.0000			
4.555556	0.002296	0.010458	2.000000	361.0000			
4.666667	0.002296	0.010713	2.000000	371.0000			
4.777778	0.002296	0.010968	2.000000	381.0000			
4.888889	0.002296	0.011223	2.000000	391.0000			
5.000000	0.002296	0.011478	2.000000	401.0000			
5.111111	0.002296	0.011733	2.000000	411.0000			
5.222222	0.002296	0.011989	2.000000	421.0000			
5.333333	0.002296	0.012244	2.000000	431.0000			
5.444444	0.002296	0.012499	2.000000	441.0000			
5.555556	0.002296	0.012754	2.000000	451.0000			
5.666667	0.002296	0.013009	2.000000	461.0000			
5.777778	0.002296	0.013264	2.000000	471.0000			
5.888889	0.002296	0.013519	2.000000	481.0000			
6.000000	0.002296	0.013774	2.000000	491.0000			
6.111111	0.002296	0.014029	2.000000	501.0000			
6.222222	0.002296	0.014284	2.000000	511.0000			
6.333333	0.002296	0.014539	2.000000	521.0000			
6.444444	0.002296	0.014794	2.000000	531.0000			
6.555556	0.002296	0.015049	2.000000	541.0000			
6.666667	0.002296	0.015305	2.000000	551.0000			
6.777778	0.002296	0.015560	2.000000	561.0000			
6.888889	0.002296	0.015815	2.000000	571.0000			
7.000000	0.002296	0.016070	2.000000	581.0000			
7.111111	0.002296	0.016325	2.000000	591.0000			
7.222222	0.002296	0.016580	2.000000	601.0000			
7.333333	0.002296	0.016835	2.000000	611.0000			

7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 6

FTABLE 7

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.000000			
0.777778	0.002296	0.001786	2.000000	21.000000			
0.888889	0.002296	0.002041	2.000000	31.000000			
1.000000	0.002296	0.002296	2.000000	41.000000			
1.111111	0.002296	0.002551	2.000000	51.000000			
1.222222	0.002296	0.002806	2.000000	61.000000			
1.333333	0.002296	0.003061	2.000000	71.000000			
1.444444	0.002296	0.003316	2.000000	81.000000			
1.555556	0.002296	0.003571	2.000000	91.000000			
1.666667	0.002296	0.003826	2.000000	101.000000			
1.777778	0.002296	0.004081	2.000000	111.000000			
1.888889	0.002296	0.004336	2.000000	121.000000			
2.000000	0.002296	0.004591	2.000000	131.000000			
2.111111	0.002296	0.004846	2.000000	141.000000			
2.222222	0.002296	0.005102	2.000000	151.000000			
2.333333	0.002296	0.005357	2.000000	161.000000			
2.444444	0.002296	0.005612	2.000000	171.000000			
2.555556	0.002296	0.005867	2.000000	181.000000			
2.666667	0.002296	0.006122	2.000000	191.000000			
2.777778	0.002296	0.006377	2.000000	201.000000			
2.888889	0.002296	0.006632	2.000000	211.000000			
3.000000	0.002296	0.006887	2.000000	221.000000			
3.111111	0.002296	0.007142	2.000000	231.000000			
3.222222	0.002296	0.007397	2.000000	241.000000			
3.333333	0.002296	0.007652	2.000000	251.000000			
3.444444	0.002296	0.007907	2.000000	261.000000			
3.555556	0.002296	0.008162	2.000000	271.000000			
3.666667	0.002296	0.008418	2.000000	281.000000			
3.777778	0.002296	0.008673	2.000000	291.000000			
3.888889	0.002296	0.008928	2.000000	301.000000			
4.000000	0.002296	0.009183	2.000000	311.000000			
4.111111	0.002296	0.009438	2.000000	321.000000			
4.222222	0.002296	0.009693	2.000000	331.000000			
4.333333	0.002296	0.009948	2.000000	341.000000			
4.444444	0.002296	0.010203	2.000000	351.000000			
4.555556	0.002296	0.010458	2.000000	361.000000			

4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
5.111111	0.002296	0.011733	2.000000	411.0000
5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 7

FTABLE 8

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.00000			
0.777778	0.002296	0.001786	2.000000	21.00000			
0.888889	0.002296	0.002041	2.000000	31.00000			
1.000000	0.002296	0.002296	2.000000	41.00000			
1.111111	0.002296	0.002551	2.000000	51.00000			
1.222222	0.002296	0.002806	2.000000	61.00000			
1.333333	0.002296	0.003061	2.000000	71.00000			
1.444444	0.002296	0.003316	2.000000	81.00000			
1.555556	0.002296	0.003571	2.000000	91.00000			
1.666667	0.002296	0.003826	2.000000	101.0000			
1.777778	0.002296	0.004081	2.000000	111.0000			

1.888889	0.002296	0.004336	2.000000	121.0000
2.000000	0.002296	0.004591	2.000000	131.0000
2.111111	0.002296	0.004846	2.000000	141.0000
2.222222	0.002296	0.005102	2.000000	151.0000
2.333333	0.002296	0.005357	2.000000	161.0000
2.444444	0.002296	0.005612	2.000000	171.0000
2.555556	0.002296	0.005867	2.000000	181.0000
2.666667	0.002296	0.006122	2.000000	191.0000
2.777778	0.002296	0.006377	2.000000	201.0000
2.888889	0.002296	0.006632	2.000000	211.0000
3.000000	0.002296	0.006887	2.000000	221.0000
3.111111	0.002296	0.007142	2.000000	231.0000
3.222222	0.002296	0.007397	2.000000	241.0000
3.333333	0.002296	0.007652	2.000000	251.0000
3.444444	0.002296	0.007907	2.000000	261.0000
3.555556	0.002296	0.008162	2.000000	271.0000
3.666667	0.002296	0.008418	2.000000	281.0000
3.777778	0.002296	0.008673	2.000000	291.0000
3.888889	0.002296	0.008928	2.000000	301.0000
4.000000	0.002296	0.009183	2.000000	311.0000
4.111111	0.002296	0.009438	2.000000	321.0000
4.222222	0.002296	0.009693	2.000000	331.0000
4.333333	0.002296	0.009948	2.000000	341.0000
4.444444	0.002296	0.010203	2.000000	351.0000
4.555556	0.002296	0.010458	2.000000	361.0000
4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
5.111111	0.002296	0.011733	2.000000	411.0000
5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000

9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 8
FTABLE 9

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.002296	0.000000	2.000000	0.000000		
0.111111	0.002296	0.000255	2.000000	0.000000		
0.222222	0.002296	0.000510	2.000000	0.000000		
0.333333	0.002296	0.000765	2.000000	0.000000		
0.444444	0.002296	0.001020	2.000000	0.000000		
0.555556	0.002296	0.001275	2.000000	0.000000		
0.666667	0.002296	0.001530	2.000000	11.00000		
0.777778	0.002296	0.001786	2.000000	21.00000		
0.888889	0.002296	0.002041	2.000000	31.00000		
1.000000	0.002296	0.002296	2.000000	41.00000		
1.111111	0.002296	0.002551	2.000000	51.00000		
1.222222	0.002296	0.002806	2.000000	61.00000		
1.333333	0.002296	0.003061	2.000000	71.00000		
1.444444	0.002296	0.003316	2.000000	81.00000		
1.555556	0.002296	0.003571	2.000000	91.00000		
1.666667	0.002296	0.003826	2.000000	101.0000		
1.777778	0.002296	0.004081	2.000000	111.0000		
1.888889	0.002296	0.004336	2.000000	121.0000		
2.000000	0.002296	0.004591	2.000000	131.0000		
2.111111	0.002296	0.004846	2.000000	141.0000		
2.222222	0.002296	0.005102	2.000000	151.0000		
2.333333	0.002296	0.005357	2.000000	161.0000		
2.444444	0.002296	0.005612	2.000000	171.0000		
2.555556	0.002296	0.005867	2.000000	181.0000		
2.666667	0.002296	0.006122	2.000000	191.0000		
2.777778	0.002296	0.006377	2.000000	201.0000		
2.888889	0.002296	0.006632	2.000000	211.0000		
3.000000	0.002296	0.006887	2.000000	221.0000		
3.111111	0.002296	0.007142	2.000000	231.0000		
3.222222	0.002296	0.007397	2.000000	241.0000		
3.333333	0.002296	0.007652	2.000000	251.0000		
3.444444	0.002296	0.007907	2.000000	261.0000		
3.555556	0.002296	0.008162	2.000000	271.0000		
3.666667	0.002296	0.008418	2.000000	281.0000		
3.777778	0.002296	0.008673	2.000000	291.0000		
3.888889	0.002296	0.008928	2.000000	301.0000		
4.000000	0.002296	0.009183	2.000000	311.0000		
4.111111	0.002296	0.009438	2.000000	321.0000		
4.222222	0.002296	0.009693	2.000000	331.0000		
4.333333	0.002296	0.009948	2.000000	341.0000		
4.444444	0.002296	0.010203	2.000000	351.0000		
4.555556	0.002296	0.010458	2.000000	361.0000		
4.666667	0.002296	0.010713	2.000000	371.0000		
4.777778	0.002296	0.010968	2.000000	381.0000		
4.888889	0.002296	0.011223	2.000000	391.0000		
5.000000	0.002296	0.011478	2.000000	401.0000		
5.111111	0.002296	0.011733	2.000000	411.0000		
5.222222	0.002296	0.011989	2.000000	421.0000		
5.333333	0.002296	0.012244	2.000000	431.0000		
5.444444	0.002296	0.012499	2.000000	441.0000		
5.555556	0.002296	0.012754	2.000000	451.0000		
5.666667	0.002296	0.013009	2.000000	461.0000		
5.777778	0.002296	0.013264	2.000000	471.0000		
5.888889	0.002296	0.013519	2.000000	481.0000		
6.000000	0.002296	0.013774	2.000000	491.0000		
6.111111	0.002296	0.014029	2.000000	501.0000		
6.222222	0.002296	0.014284	2.000000	511.0000		
6.333333	0.002296	0.014539	2.000000	521.0000		
6.444444	0.002296	0.014794	2.000000	531.0000		
6.555556	0.002296	0.015049	2.000000	541.0000		
6.666667	0.002296	0.015305	2.000000	551.0000		
6.777778	0.002296	0.015560	2.000000	561.0000		

6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 9

FTABLE 10

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.00000			
0.777778	0.002296	0.001786	2.000000	21.00000			
0.888889	0.002296	0.002041	2.000000	31.00000			
1.000000	0.002296	0.002296	2.000000	41.00000			
1.111111	0.002296	0.002551	2.000000	51.00000			
1.222222	0.002296	0.002806	2.000000	61.00000			
1.333333	0.002296	0.003061	2.000000	71.00000			
1.444444	0.002296	0.003316	2.000000	81.00000			
1.555556	0.002296	0.003571	2.000000	91.00000			
1.666667	0.002296	0.003826	2.000000	101.0000			
1.777778	0.002296	0.004081	2.000000	111.0000			
1.888889	0.002296	0.004336	2.000000	121.0000			
2.000000	0.002296	0.004591	2.000000	131.0000			
2.111111	0.002296	0.004846	2.000000	141.0000			
2.222222	0.002296	0.005102	2.000000	151.0000			
2.333333	0.002296	0.005357	2.000000	161.0000			
2.444444	0.002296	0.005612	2.000000	171.0000			
2.555556	0.002296	0.005867	2.000000	181.0000			
2.666667	0.002296	0.006122	2.000000	191.0000			
2.777778	0.002296	0.006377	2.000000	201.0000			
2.888889	0.002296	0.006632	2.000000	211.0000			
3.000000	0.002296	0.006887	2.000000	221.0000			
3.111111	0.002296	0.007142	2.000000	231.0000			
3.222222	0.002296	0.007397	2.000000	241.0000			
3.333333	0.002296	0.007652	2.000000	251.0000			
3.444444	0.002296	0.007907	2.000000	261.0000			
3.555556	0.002296	0.008162	2.000000	271.0000			
3.666667	0.002296	0.008418	2.000000	281.0000			
3.777778	0.002296	0.008673	2.000000	291.0000			
3.888889	0.002296	0.008928	2.000000	301.0000			
4.000000	0.002296	0.009183	2.000000	311.0000			

4.111111	0.002296	0.009438	2.000000	321.0000
4.222222	0.002296	0.009693	2.000000	331.0000
4.333333	0.002296	0.009948	2.000000	341.0000
4.444444	0.002296	0.010203	2.000000	351.0000
4.555556	0.002296	0.010458	2.000000	361.0000
4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
5.111111	0.002296	0.011733	2.000000	411.0000
5.222222	0.002296	0.011989	2.000000	421.0000
5.333333	0.002296	0.012244	2.000000	431.0000
5.444444	0.002296	0.012499	2.000000	441.0000
5.555556	0.002296	0.012754	2.000000	451.0000
5.666667	0.002296	0.013009	2.000000	461.0000
5.777778	0.002296	0.013264	2.000000	471.0000
5.888889	0.002296	0.013519	2.000000	481.0000
6.000000	0.002296	0.013774	2.000000	491.0000
6.111111	0.002296	0.014029	2.000000	501.0000
6.222222	0.002296	0.014284	2.000000	511.0000
6.333333	0.002296	0.014539	2.000000	521.0000
6.444444	0.002296	0.014794	2.000000	531.0000
6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
7.444444	0.002296	0.017090	2.000000	621.0000
7.555556	0.002296	0.017345	2.000000	631.0000
7.666667	0.002296	0.017600	2.000000	641.0000
7.777778	0.002296	0.017855	2.000000	651.0000
7.888889	0.002296	0.018110	2.000000	661.0000
8.000000	0.002296	0.018365	2.000000	671.0000
8.111111	0.002296	0.018621	2.000000	681.0000
8.222222	0.002296	0.018876	2.000000	691.0000
8.333333	0.002296	0.019131	2.000000	701.0000
8.444444	0.002296	0.019386	2.000000	711.0000
8.555556	0.002296	0.019641	2.000000	721.0000
8.666667	0.002296	0.019896	2.000000	731.0000
8.777778	0.002296	0.020151	2.000000	741.0000
8.888889	0.002296	0.020406	2.000000	751.0000
9.000000	0.002296	0.020661	2.000000	761.0000
9.111111	0.002296	0.020916	2.000000	771.0000
9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 10

FTABLE 11

90	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.002296	0.000000	2.000000	0.000000			
0.111111	0.002296	0.000255	2.000000	0.000000			
0.222222	0.002296	0.000510	2.000000	0.000000			
0.333333	0.002296	0.000765	2.000000	0.000000			
0.444444	0.002296	0.001020	2.000000	0.000000			
0.555556	0.002296	0.001275	2.000000	0.000000			
0.666667	0.002296	0.001530	2.000000	11.000000			
0.777778	0.002296	0.001786	2.000000	21.000000			
0.888889	0.002296	0.002041	2.000000	31.000000			
1.000000	0.002296	0.002296	2.000000	41.000000			
1.111111	0.002296	0.002551	2.000000	51.000000			
1.222222	0.002296	0.002806	2.000000	61.000000			

1.333333	0.002296	0.003061	2.000000	71.00000
1.444444	0.002296	0.003316	2.000000	81.00000
1.555556	0.002296	0.003571	2.000000	91.00000
1.666667	0.002296	0.003826	2.000000	101.0000
1.777778	0.002296	0.004081	2.000000	111.0000
1.888889	0.002296	0.004336	2.000000	121.0000
2.000000	0.002296	0.004591	2.000000	131.0000
2.111111	0.002296	0.004846	2.000000	141.0000
2.222222	0.002296	0.005102	2.000000	151.0000
2.333333	0.002296	0.005357	2.000000	161.0000
2.444444	0.002296	0.005612	2.000000	171.0000
2.555556	0.002296	0.005867	2.000000	181.0000
2.666667	0.002296	0.006122	2.000000	191.0000
2.777778	0.002296	0.006377	2.000000	201.0000
2.888889	0.002296	0.006632	2.000000	211.0000
3.000000	0.002296	0.006887	2.000000	221.0000
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3.555556	0.002296	0.008162	2.000000	271.0000
3.666667	0.002296	0.008418	2.000000	281.0000
3.777778	0.002296	0.008673	2.000000	291.0000
3.888889	0.002296	0.008928	2.000000	301.0000
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4.222222	0.002296	0.009693	2.000000	331.0000
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4.666667	0.002296	0.010713	2.000000	371.0000
4.777778	0.002296	0.010968	2.000000	381.0000
4.888889	0.002296	0.011223	2.000000	391.0000
5.000000	0.002296	0.011478	2.000000	401.0000
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5.777778	0.002296	0.013264	2.000000	471.0000
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6.000000	0.002296	0.013774	2.000000	491.0000
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6.555556	0.002296	0.015049	2.000000	541.0000
6.666667	0.002296	0.015305	2.000000	551.0000
6.777778	0.002296	0.015560	2.000000	561.0000
6.888889	0.002296	0.015815	2.000000	571.0000
7.000000	0.002296	0.016070	2.000000	581.0000
7.111111	0.002296	0.016325	2.000000	591.0000
7.222222	0.002296	0.016580	2.000000	601.0000
7.333333	0.002296	0.016835	2.000000	611.0000
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9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
9.888889	0.002296	0.022702	2.000000	841.0000

END FTABLE 11

FTABLE 12

90 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.002296	0.000000	2.000000	0.000000		
0.111111	0.002296	0.000255	2.000000	0.000000		
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0.333333	0.002296	0.000765	2.000000	0.000000		
0.444444	0.002296	0.001020	2.000000	0.000000		
0.555556	0.002296	0.001275	2.000000	0.000000		
0.666667	0.002296	0.001530	2.000000	11.00000		
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1.222222	0.002296	0.002806	2.000000	61.00000		
1.333333	0.002296	0.003061	2.000000	71.00000		
1.444444	0.002296	0.003316	2.000000	81.00000		
1.555556	0.002296	0.003571	2.000000	91.00000		
1.666667	0.002296	0.003826	2.000000	101.0000		
1.777778	0.002296	0.004081	2.000000	111.0000		
1.888889	0.002296	0.004336	2.000000	121.0000		
2.000000	0.002296	0.004591	2.000000	131.0000		
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2.777778	0.002296	0.006377	2.000000	201.0000		
2.888889	0.002296	0.006632	2.000000	211.0000		
3.000000	0.002296	0.006887	2.000000	221.0000		
3.111111	0.002296	0.007142	2.000000	231.0000		
3.222222	0.002296	0.007397	2.000000	241.0000		
3.333333	0.002296	0.007652	2.000000	251.0000		
3.444444	0.002296	0.007907	2.000000	261.0000		
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3.777778	0.002296	0.008673	2.000000	291.0000		
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5.111111	0.002296	0.011733	2.000000	411.0000		
5.222222	0.002296	0.011989	2.000000	421.0000		
5.333333	0.002296	0.012244	2.000000	431.0000		
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5.777778	0.002296	0.013264	2.000000	471.0000		
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8.888889	0.002296	0.020406	2.000000	751.0000
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9.222222	0.002296	0.021171	2.000000	781.0000
9.333333	0.002296	0.021426	2.000000	791.0000
9.444444	0.002296	0.021681	2.000000	801.0000
9.555556	0.002296	0.021937	2.000000	811.0000
9.666667	0.002296	0.022192	2.000000	821.0000
9.777778	0.002296	0.022447	2.000000	831.0000
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END FTABLE 12

END FTABLES

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WDM	2	PREC		ENGL	1.429		IMPLND	1	999	EXTNL	PREC		
WDM	1	EVAP		ENGL	0.76		PERLND	1	999	EXTNL	PETINP		
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END EXT SOURCES

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RCHRES	1	HYDR	0	2	1	1	WDM	1002	FLOW	ENGL	REPL
RCHRES	1	HYDR	STAGE	1	1	1	WDM	1003	STAG	ENGL	REPL
COPY	1	OUTPUT	MEAN	1	1	48.4	WDM	701	FLOW	ENGL	REPL
COPY	501	OUTPUT	MEAN	1	1	48.4	WDM	801	FLOW	ENGL	REPL
RCHRES	2	HYDR	RO	1	1	1	WDM	1004	FLOW	ENGL	REPL
RCHRES	2	HYDR	0	1	1	1	WDM	1005	FLOW	ENGL	REPL
RCHRES	2	HYDR	0	2	1	1	WDM	1006	FLOW	ENGL	REPL
RCHRES	2	HYDR	STAGE	1	1	1	WDM	1007	STAG	ENGL	REPL
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RCHRES	10	HYDR	0	2	1	1	WDM	1038	FLOW	ENGL	REPL
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RCHRES	11	HYDR	0	2	1	1	WDM	1042	FLOW	ENGL	REPL
RCHRES	11	HYDR	STAGE	1	1	1	WDM	1043	STAG	ENGL	REPL
RCHRES	12	HYDR	RO	1	1	1	WDM	1044	FLOW	ENGL	REPL
RCHRES	12	HYDR	0	1	1	1	WDM	1045	FLOW	ENGL	REPL
RCHRES	12	HYDR	0	2	1	1	WDM	1046	FLOW	ENGL	REPL
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END EXT TARGETS

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END MASS-LINK		2			
MASS-LINK		3			
PERLND	PWATER	IFWO	0.083333	RCHRES	INFLOW IVOL
END MASS-LINK		3			
MASS-LINK		5			
IMPLND	IWATER	SURO	0.083333	RCHRES	INFLOW IVOL
END MASS-LINK		5			
MASS-LINK		12			
PERLND	PWATER	SURO	0.083333	COPY	INPUT MEAN
END MASS-LINK		12			
MASS-LINK		13			
PERLND	PWATER	IFWO	0.083333	COPY	INPUT MEAN
END MASS-LINK		13			
MASS-LINK		15			
IMPLND	IWATER	SURO	0.083333	COPY	INPUT MEAN
END MASS-LINK		15			
MASS-LINK		17			
RCHRES	OFLOW	OVOL	1	COPY	INPUT MEAN
END MASS-LINK		17			
MASS-LINK		18			
RCHRES	OFLOW	OVOL	2	COPY	INPUT MEAN
END MASS-LINK		18			

END MASS-LINK

END RUN

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Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

Appendix C Geotechnical Report

Columbia West Geotechnical Report

Follow Up Explorations

Geotechnical Site Investigation

Landing on the Cowlitz

Castle Rock, Washington

March 30, 2023

Geotechnical ■ Environmental ■ Special Inspections

Columbia West
Engineering, Inc



11917 NE 95th Street
Vancouver, Washington
98682
Phone: 360-823-2900



GEOTECHNICAL SITE INVESTIGATION LANDING ON THE COWLITZ CASTLE ROCK, WASHINGTON

Prepared For:

**CT6, LLC
Attn: Janette Pipkin
PO Box 1419
Battle Ground, Washington 98604**

Site Location:

**2542 SW Larson Lane
Parcel Nos. 3092824, 3040258, 3040259,
3040322, 3014867, & 3045031
Castle Rock, Washington**

Prepared By:

**Columbia West Engineering, Inc.
11917 NE 95th Street
Vancouver, Washington 98682
Phone: 360-823-2900**

Date Prepared:

March 30, 2023

EXECUTIVE SUMMARY

This executive summary presents the primary geotechnical considerations associated with the proposed Landing on the Cowlitz project located in Castle Rock, Washington. Our conclusions and recommendations are based upon the subsurface information presented in this report and proposed development information provided by the design team. Detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- Based on subsurface exploration and testing, liquefiable soil is present at the site. Maximum total liquefaction settlement is estimated to range from approximately 4 to 7 inches. Differential settlement is estimated to be approximately one-half of the total over a 50-foot span. Detailed discussion of site liquefaction potential is presented in Section 6.1, *Liquefaction*.
- Review of *Table 12.13-3* of ASCE 7-16 indicates that anticipated seismic differential settlement will be near the upper bound, tolerable limit for typical structures that may be proposed on the site. Provided that proposed structures can tolerate the estimated seismic settlement, the buildings can be supported on conventional spread footings bearing on firm native soil or engineered structural fill. Shallow foundations, if proposed, will require foundations ties if differential settlement exceeds one-quarter of the thresholds presented in *Table 12.13-3*. Ground improvement or deep foundations may be necessary if buildings cannot tolerate the estimated seismic settlement or if project stakeholders desire to minimize risk of building damage following a seismic event.
- Groundwater was observed in site explorations at depths ranging from 9 to 35 feet below ground surface (bgs). The shallow depth to groundwater may impact site cuts for foundations, utilities, pump stations, and stormwater detention ponds. Dewatering should be assumed where proposed excavations extend more than a few feet below existing grade. Significant excavation depths for the proposed pump station and potential for rapid groundwater flow through permeable sand and gravel deposits will dictate the need for a robust dewatering plan designed by a licensed professional engineer.
- Based on groundwater conditions and expected site grading, cut off drains may be required to intercept water in areas of significant cut. Our experience indicates that installation of cut-off drains prior to site grading activity will assist in dewatering during site construction, particularly during the wet-weather season.
- Perimeter building foundation drains can reduce the potential for water intrusion below structures. Perimeter footing drains are recommended for shallow foundations constructed 5 or more feet below existing site grades. Foundations constructed less than 5 feet below existing grades do not require drains, however,

it may be prudent to install foundations drains to collect incidental or perched water. The final decision for foundations drains should be made by the owner and architect.

- Moisture conditioning will be required to use onsite soil as structural fill. If moisture conditioning is not feasible due to weather conditions or other factors, soils may require cement-amendment to be used as structural fill.
- Near-surface native soils will be sensitive to disturbance and softening when at a moisture content that is above optimum. Haul roads and staging areas will be necessary to minimize damage to exposed subgrade soils during construction. Subgrade protection is discussed in Section 8.2, *Construction Traffic and Staging*.
- Design and construction of proposed stormwater management facilities should account for shallow groundwater conditions observed at the site.
- This report has been prepared to provide general recommendations for overall site development. We recommend additional explorations and geotechnical reports be completed for specific developments/structures prior to design and construction.

TABLE OF CONTENTS

LIST OF FIGURES	ii
LIST OF APPENDICES	iii
1.0 INTRODUCTION	1
1.1 General Site Information	1
1.2 Project Understanding	1
1.3 Site Background Information	1
2.0 SCOPE OF SERVICES	2
3.0 REGIONAL GEOLOGY AND SOIL CONDITIONS	3
4.0 REGIONAL SEISMOLOGY	4
5.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION	5
5.1 Surface Investigation and Site Description	5
5.2 Subsurface Conditions	6
6.0 SEISMIC HAZARDS	8
6.1 Liquefaction	8
6.2 Lateral Spreading	9
7.0 DESIGN RECOMMENDATIONS	10
7.1 Shallow Foundation Support	10
7.2 Seismic Design Considerations	12
7.3 Retaining Structures	13
7.4 Pavement Design	14
7.5 Drainage	16
8.0 CONSTRUCTION RECOMMENDATIONS	18
8.1 Site Preparation and Grading	18
8.2 Construction Traffic and Staging	18
8.3 Cut and Fill Slopes	19
8.4 Excavation	20
8.5 Dewatering	20
8.6 Materials	21
8.7 Erosion Control Measures	26
9.0 CONCLUSION AND LIMITATIONS	27
REFERENCES	
FIGURES	
APPENDICES	

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
1	Site Location Map
2	Exploration Location Map
3	Preliminary Master Development Plan
4	Phase I Rough Grading Plan
5	Surcharge-Induced Lateral Earth Pressures
6	Typical Perimeter Footing Drain Detail
7	Typical Perforated Drainpipe Trench Detail
8	Typical Drainage Mat Detail
9	Typical Cut and Fill Slope Cross-Section
10	Minimum Foundation Slope Setback Detail

LIST OF APPENDICES

<u>Number</u>	<u>Title</u>
A	Subsurface Exploration Logs
B	Soil Classification Information
C	Pertinent Subsurface Information Collected by Others
D	Report Limitations and Important Information

GEOTECHNICAL SITE INVESTIGATION

LANDING ON THE COWLITZ

CASTLE ROCK, WASHINGTON

1.0 INTRODUCTION

Columbia West Engineering, Inc. (Columbia West) was retained by CT6, LLC to conduct a geotechnical site investigation for the proposed Landing on the Cowlitz master development project located in Castle Rock, Washington. The purpose of the investigation was to provide geotechnical engineering recommendations for use during design and construction of the proposed development. This report summarizes the investigation and provides field assessment documentation. This report is subject to the limitations expressed in Section 9.0, *Conclusion and Limitations*, and Appendix D, *Report Limitations and Important Information*.

1.1 General Site Information

As indicated on Figures 1 and 2, the subject site is located at 2542 Larson Lane in Castle Rock, Washington. The site is comprised of tax parcels 3092824, 3040258, 3040259, 3040322, 3014867, and 3045031 totaling approximately 118.2 acres. The approximate latitude and longitude are N 45° 15' 25" and W 122° 53' 30", and the legal description includes portions of the SE ¼ of Section 14, the NE ¼ of Section 23, and the NW ¼ of Section 24, T9N, R2W, Willamette Meridian. The regulatory jurisdictional agency is the City of Castle Rock.

1.2 Project Understanding

Based on client correspondence and review of the preliminary master development plan shown on Figure 3, Columbia West understands that proposed development consists of a mixed-use district with approximately 7.8 acres of residential zoning, 9.5 acres of commercial zoning, 18.3 acres of recreational zoning, and 55.9 acres of light industrial and office space zoning. Proposed development also includes public roadway construction, installation of underground utilities, and stormwater management facilities. A sanitary sewer pump station is also proposed approximately 35 feet below ground surface. The *Phase 1 Rough Grading Plan*, presented on Figure 4, includes cuts and fills up to 10 feet.

Lot- and zoning-specific building plans were not available at the time this report was prepared. In general, buildings on the site are expected to be lightly-loaded and less than three stories in height. We anticipate that commercial, recreational, and light industrial areas will include concrete tilt-up or metal-framed buildings. Residential structures will likely be of wood-framed construction. We should be contacted to revise our recommendations if the assumptions stated above are incorrect.

1.3 Site Background Information

Columbia West was retained by CT6, LLC in October, 2022 to provide on-call geotechnical construction monitoring and material testing services during Phase I rough grading as shown

on Figure 4. On-call geotechnical services conducted between October, 2022 and January, 2023 included organic stripping observations, moisture-density testing of structural fill, proof-roll observations, bearing probe analysis, and laboratory testing. Field reports documenting Phase I grading activity were submitted to project team members under separate cover. Columbia West also prepared preliminary grading recommendations for the Phase I rough grading plan which is presented in a technical memorandum dated November 8, 2022 (Columbia West, 2022). At the time this report was prepared, Phase I rough grading was in progress with expected completion in summer of 2023.

To characterize site groundwater conditions and facilitate stormwater management design by others, Columbia West oversaw five borings at the site with piezometer installations (BP-1 through BP-5) on January 31, February 1, and February 2, 2023. Piezometers extended up to 35 feet below existing grade, were backfilled with silica sand, sealed with bentonite, and completed with flush mount monuments. Monitoring of the piezometers commenced in February, 2023 and continues on a bi-weekly basis at the direction of the design team. Piezometer monitoring results are discussed in greater detail in Section 5.2.2, *Groundwater*.

Prior to Phase I rough grading, a geotechnical due-diligence study of the site was conducted by others in 2020. Field exploration and testing conducted as part of the due-diligence study included six test pits (TP-1 through TP-6), two borings (B-1 and B-2), and five cone penetration tests (CPT-1 through CPT-5) extending to a maximum depth of 81.5 feet bgs. Exploration locations are shown on Figure 2. Exploration logs and CPT soundings are presented in Appendix C, *Pertinent Subsurface Information Collected by Others*. Subsurface conditions observed by others during the due-diligence study are discussed in Section 5.2.1, *Soil Type Description*.

2.0 SCOPE OF SERVICES

Columbia West's scope of services was outlined in a proposal dated November 8, 2022. In accordance with our proposal, we performed the following geotechnical services:

- Reviewed information available in our files from previous geological and geotechnical studies conducted at and in the vicinity of the site. Our review included the following site explorations conducted by others and presented in Appendix C, *Pertinent Subsurface Information Collected by Others*:
 - Five CPT soundings explored to a maximum depth of 35.43 feet bgs.
 - Two borings explored to a maximum depth of 81.5 feet bgs.
 - Six test pits explored to a maximum depth of 13 feet bgs.
- Reviewed the preliminary master development plan, the Phase I rough grading plan, and a conceptual stormwater management plan provided by the design team.
- Conducted subsurface exploration at the site, to include:
 - Drilled five borings to a maximum depth of 45 feet bgs and installed piezometers in each borehole.
- Classified and logged observed soil and groundwater conditions.

- Prepared this geotechnical site investigation report for the proposed development, which includes:
 - Summary of soil index properties, regional geology, soil conditions, and observed groundwater conditions
 - Summary of geologic and seismic literature research used to evaluate relevant seismic risks, including locations of faults, earthquake magnitudes, and seismic factors from the 2018 IBC and ASCE 7-16
 - Liquefaction analysis, predicted seismic settlement, and mitigation discussion
 - Foundation settlement potential
 - Geotechnical design and construction recommendations for:
 - Shallow foundations
 - Slab subgrade preparation
 - Retaining walls, including drainage, backfill, and lateral earth pressures
 - Site preparation and grading, organic stripping, fill placement and compaction, over-excavation, wet/dry weather earthwork, and construction monitoring and testing
 - Structural fill materials, onsite soil suitability, and import aggregate specifications
 - Utility trench excavation and backfill
 - Drainage and management of groundwater conditions
 - Asphaltic concrete pavement construction for private access roads and parking lots, including section thicknesses for base aggregate and asphalt layers
 - Portland cement concrete pavement construction for loading docks, including section thicknesses for base aggregate and PCC layers
 - Code-based seismic design parameters in accordance with ASCE 7-16

3.0 REGIONAL GEOLOGY AND SOIL CONDITIONS

The subject site lies within the Cowlitz River drainage basin, a physiographic river valley flanked to the east and west by mountainous foothills of the western Cascade Range. The site is located along the east bank of the Cowlitz River, approximately 11 miles north of the confluence with the Columbia River in Longview, Washington.

According to the *Geologic Map of the Mount St. Helens Quadrangle, Washington and Oregon* (Phillips, USGS Open File Report 87-4, 1987), near-surface soils are expected to consist of Quaternary-aged alluvium of silt, sand, and gravel deposited by the Cowlitz River. The Cowlitz Formation is mapped below the alluvium and consists of Eocene-aged sandstone, siltstone, and shale with interbeds of basalt and conglomerate.

In areas proposed for development, the *Web Soil Survey* (USDA, NRCS, 2023 Website) identifies various loamy sands, fine sandy loams, and gravelly sands of the Newberg, Carrolls, Pilchuck, Panamaker, and Cowlitz soil series. The mapped soils generally consist of silts, sands, and gravels with moderately rapid to rapid permeability, low to moderate

water capacity, and low shrink-swell potential. These soils exhibit a slight to severe erosion hazard based primarily on slope grade. As discussed in Section 1.3, *Site Background Information*, surface soils at the site have been disturbed, moved, or manipulated as part of Phase I rough grading activity and may no longer be representative of the NRCS soil survey mapping.

4.0 REGIONAL SEISMOLOGY

Recent research and subsurface mapping investigations within the Pacific Northwest appear to suggest the historic potential risk for a large earthquake event with strong localized ground movement may be underestimated. Past earthquakes in the Pacific Northwest appear to have caused landslides and ground subsidence, in addition to severe flooding near coastal areas. Earthquakes may also induce soil liquefaction, which occurs when elevated horizontal ground acceleration and velocity cause soil particles to interact as a fluid as opposed to a solid. Liquefaction of soil can result in lateral spreading and temporary loss of bearing capacity and shear strength. Liquefaction is discussed later in Section 5.9, *Liquefaction*.

Three scenario earthquakes are possible with the local seismic setting. Two of the possible earthquake sources are associated with the CSZ, and the third event is a shallow, local crustal earthquake that could occur in the North American Plate. The three earthquake scenarios are discussed below.

Cascadia Subduction Zone

The Cascadia Subduction Zone is a potential source of strong earthquake activity in the Portland/Vancouver Basin. This phenomenon is the result of the earth's large tectonic plate movement. Geologic evidence indicates that volcanic ocean floor activity along the Juan de Fuca ridge in the Pacific Ocean causes the Juan de Fuca Plate to perpetually move east and subduct under the North American Continental Plate. The subduction zone results in historic volcanic and potential earthquake activity in proximity to the plate interface, believed to lie approximately 20 to 50 miles west of the general location of the Oregon and Washington coast (Geomatrix Consultants, 1995).

Evidence suggests that this subduction zone has generated eight great earthquakes in the last 4,000 years, with the most recent event occurring approximately 300 years ago (Weaver and Shedlock, 1991).

Two types of subduction zone earthquakes are possible and considered in this report:

1. An interface event earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ. This source is capable of generating earthquakes with a moment magnitude of 9.0.
2. A deep intraplate earthquake on the seismogenic part of the subducting Juan de Fuca Plate. These events typically occur at depths of between 30 and 60 km. This source is capable of generating an event with a moment magnitude of up to 8.0.

Crustal Events

An earthquake could also occur on a local fault within the North American Plate. The nearest mapped crustal faults are more than 40 miles from the site, and based on deaggregation at the anticipated fundamental period of planned structures, contribute less than one percent of the overall seismic hazard at the site. Therefore, significant ground shaking as a result of crustal faults is anticipated to be minimal.

5.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION

This geotechnical site investigation is based upon five borings drilled by Columbia West (BP-1 through BP-5), visual site reconnaissance, construction monitoring observations as previously described, and review of pertinent subsurface information collected by others. Borings BP-1 through BP-5 were explored with a track-mounted drill rig on January 31, February 1, and February 2, 2023. Subsurface soil profiles were logged in accordance with Unified Soil Classification System (USCS) specifications. Disturbed soil samples were collected at representative depth intervals. Exploration locations are shown on Figure 2. Subsurface exploration logs are presented in Appendix A, *Subsurface Exploration Logs*. Soil descriptions and classification information are provided in Appendix B, *Soil Classification Information*.

Subsurface information collected by others and reviewed as part of this investigation included six test pit logs (TP-1 through TP-6), two boring logs (B-1 and B-2), and results from five cone penetrations tests (CPT-1 through CPT-5). As reported on the logs provided in Appendix C, *Pertinent Subsurface Information Collected by Others*, test pits TP-1 through TP-6 were explored with a mini-excavator on January 14, 2020. Borings B-1 and B-2 were explored with a truck-mounted, mud-rotary drill rig on February 13 and 14, 2020. CPT-1 through CPT-5 were explored on January 13 and 14, 2020 with a cone penetrometer rig.

5.1 Surface Investigation and Site Description

The approximate 108.2-acre subject site consists of six tax parcels located at 2542 Larson Lane in Castle Rock, Washington. The site is generally flat to gently rolling and situated on an alluvial plain between the Cowlitz River and Interstate 5. As discussed in Section 1.3, *Site Background Information*, the site is currently under construction and being actively graded per the Phase I rough grading plan shown on Figure 4.

Surface conditions in large portions of the site consist of exposed sand and gravel associated with recent cuts and fills throughout the property. Other areas of the site remain unstripped and covered with grass. Observed trees on the site were generally limited to the site perimeter or wetland area. In the central portion of the site, a single-family residential structure and several agricultural outbuildings were observed. Stockpiles of soil, organic material, and demolition debris were observed in the vicinity of the existing structures.

As indicated on Figures 3 and 4, the proposed stormwater conveyance channel along the southern and eastern portion of the site is currently under construction. Surface water flow was observed in the channel during drilling of BP-1 through BP-5. Surface water flow appeared to trend east and north towards a temporary sediment pond located adjacent to

the wetland. Standing water was observed within the pond cells at the time of drilling. Stockpiles of organic material and disturbed soil were also observed near the temporary ponds.

5.2 Subsurface Conditions

Borings were advanced to a maximum depth of 81.5 feet bgs. CPTs were advanced to a maximum depth of 35.43 feet bgs. Test pits were advanced to a maximum depth of 13 feet bgs. Exploration locations are shown on Figure 2. Field logs and observed stratigraphy for encountered materials are presented in Appendix A, *Subsurface Exploration Logs* and Appendix C, *Pertinent Subsurface Information Collected by Others*.

5.2.1 Soil Type Description

As previously described, large portions of the site have been stripped of vegetation as part of Phase I rough grading activity. Boring BP-1 was explored through fill material consisting of sand with gravel. Borings BP-2, BP-3, and BP-5 were explored through apparent native soil consisting of sand with gravel. Boring BP-4 was explored through grass and a three-inch-thick root zone underlain by approximately 12 inches of topsoil. Below surface soil, fill material, and the topsoil layer, alluvial silt, sand, and gravel was observed to an approximate depth 45 feet. Review of boring logs B-1 and B-2 indicates that the alluvium extends up to 81.5 feet bgs. Subsurface lithology may generally be described by the soil units identified in the following text.

Topsoil

Topsoil below the vegetation root zone generally consists of silty sand with a low organic content. Review of test pits logs TP-1 through TP-6 indicates that organic topsoil may extend up to 36 inches below existing grade in unstripped portions of the site.

Structural Fill

Structural fill associated with Phase I rough grading is present on the site and generally consists of dense sand with gravel. The depth of fill is variable and actively changing during site improvements construction. Upon completion of Phase I rough grading, fill thickness, site topography, and finished grade elevations may be represented by the contours shown on Figure 4. As the on-call construction monitoring and material testing firm for the project, Columbia West has conducted moisture-density testing, proof-roll observations, and third-party oversight during Phase I rough grading. Observed and tested fill materials meet typical specifications for engineering structural fill and were placed in general conformance with the recommendations outlined in Columbia West's preliminary grading memorandum (Columbia West, 2022).

Upper Sand

Underlying surface soils, topsoil layers, and structural fill, loose to medium dense sand was encountered and extended to approximate depths of 17 to 35 feet bgs. The sand is moist to wet and contains interbedded layers and lenses of silt and clay. The silt and clay interbeds range from very soft to medium stiff in consistency.

Upper Gravel

The upper sand layer is underlain by medium dense to very dense gravel with varying proportions of sand, silt, and clay. The gravel is wet and rounded to sub-rounded. Review of boring logs B-1 and B-2 indicate that the gravel layer is approximately 20 to 25 feet thick and extends to depths of 38 to 40 feet bgs in the drilled locations. Cone penetration tests CPT-1 through CPT-5 encountered practical refusal on the upper gravel unit.

Lower Sand and Gravel

The upper gravel layer is underlain by medium dense to dense sand with gravel and trace silt. The sand is fine-textured and wet and extends to depths of 66 and 55.5 feet bgs respectively in borings B-1 and B-2. The sand is underlain by dense to very dense gravel with sand and trace silt. The gravel extends to the maximum explored depth of 81.5 feet bgs in B-1 and to a depth of 63.5 feet bgs in B-2.

Silt

Underlying the lower gravel layer in B-2, medium stiff to very stiff silt was encountered and extended to the maximum explored depth of 81.5 feet bgs. The silt is wet with trace clay and organic debris.

5.2.2 Groundwater

Groundwater was encountered in borings BP-1 through BP-5 at depths ranging from 15 to 35 feet bgs. Groundwater was reported at depths between 9 and 15 feet bgs on the exploration logs prepared by others and presented in Appendix C, *Pertinent Subsurface Information Collected by Others*. As discussed in Section 1.3, *Site Background Information*, Columbia West installed open standpipe piezometers in BP-1 through BP-5 to further characterize site groundwater conditions. Monitoring of the piezometers commenced in February, 2023 and continues on a bi-weekly basis at the direction of the design team. Groundwater monitoring results collected to date are presented in Table 1. Groundwater elevations are based upon piezometer rim survey data provided by Mackay Sposito. Upon completion of groundwater monitoring, the piezometers should be decommissioned by a licensed contractor in accordance with Washington Department of Ecology regulations.

Table 1. Piezometer Monitoring Data

Location	Measurement Date			
	2-13-23	2-20-23	3-2-23	3-20-23
BP-1	18.8 ft bgs Elev. 27.6 ft	18.1 ft bgs Elev. 28.3 ft	18.0 ft bgs Elev. 28.4 ft	18.0 ft bgs Elev. 28.4 ft
BP-2	36.5 ft bgs Elev. 28.1 ft	36.6 ft bgs Elev. 28.0 ft	36.6 ft bgs Elev. 28.0 ft	37.7 ft bgs Elev. 26.9 ft
BP-3	12.3 ft bgs Elev. 28.4 ft	12.4 ft bgs Elev. 28.3 ft	12.3 ft bgs Elev. 28.4 ft	12.2 ft bgs Elev. 28.5 ft

BP-4	12.1 ft bgs Elev. 29.3 ft	12.3 ft bgs Elev. 29.1 ft	12.5 ft bgs Elev. 28.9 ft	12.5 ft bgs Elev. 28.9 ft
BP-5	18.8 ft bgs Elev. 27.4 ft	17.3 ft bgs Elev. 28.9 ft	16.3 ft bgs Elev. 29.9 ft	17.3 ft bgs Elev. 28.9 ft

Note that groundwater levels are subject to seasonal variance and may rise during extended periods of increased precipitation. Groundwater elevations may also be influenced by fluctuations of the adjacent Cowlitz River. Perched groundwater may also be present in localized areas. Seeps and springs may become evident during site grading, primarily along slopes or in areas cut below existing grade. Structures, pavements, and drainage design should be planned accordingly.

6.0 SEISMIC HAZARDS

6.1 Liquefaction

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressures can dissipate. In general, loose, saturated sand with low silt and clay content is most susceptible to liquefaction. Silty soil with low plasticity is moderately susceptible to liquefaction under relatively higher levels of ground shaking.

Liquefaction analysis at the site was performed by evaluating CPT data in the upper sand layer and standard penetration test (SPT) data in the lower sand layer. Results were combined to estimate the total anticipated seismic settlement. Analysis was conducted using methods developed by Boulanger and Idriss (2014) and Robertson (2009) with application of the depth weighting method published by Cetin (2009). A static groundwater level of 9 feet bgs was used in the liquefaction analysis.

Liquefaction analysis indicates that the upper sand layer and portions of the lower sand layer are susceptible to liquefaction under design levels of ground shaking. Total estimated seismic settlement at ground surface in the locations of CPT-1 through CPT-3 and CPT-5 is 4 to 5 inches. Total estimated seismic settlement at the location of CPT-4 is 7 inches. Differential settlement is estimated to be approximately one-half of the total settlement over a 50-foot span. Most of the seismic settlement is in the upper sand layer with the lower sand layer contributing approximately 0.5 to 1.0 inch to the total estimate. Note that the increased magnitude of settlement at CPT-4 reflects that the upper sand layer was observed to be approximately 10 to 15 feet thicker than elsewhere on the site.

Total seismic settlement estimates are likely near the upper bound tolerable limit for typical buildings that may be proposed on the site. Differential settlement thresholds for various building types and risk categories are provided in *Table 12.13-3* of *ASCE 7-16*. The thresholds presented in *Table 12.13-3* are code-specified minimum requirements and buildings may remain susceptible to damage if designed near the upper limits. Structural engineers on the project should calculate the allowable settlement tolerance and expected

performance based upon the specific building types proposed. Provided a building can tolerate the seismic settlement presented above, the structure may be supported by conventional spread footings bearing on firm native soil or engineered structural fill. Shallow foundations, if proposed, will require foundation ties if differential seismic settlement exceeds one-quarter of the thresholds presented in *Table 12.13-3*.

6.1.1 Liquefaction Mitigation

If proposed buildings cannot tolerate the estimated seismic settlement or project stakeholders desire to minimize risk of building damage, the upper sand layer may be improved to reduce the total seismic settlement. Rammed aggregate piers (RAPs) that extend to, and bear on the upper gravel layer are a viable option for ground improvement. RAPs are proprietary technology that are designed and constructed by design-build specialty contractors. The RAPs would need to be at least 17 to 35 feet long to penetrate through the upper sand layer and bear on the upper gravel unit. Additionally, the design-build contractor should provide analysis that shows rammed aggregate piers will support the structures when surrounding soil strength is reduced as a result of liquefaction. A design-build contractor should be contacted to provide the actual RAP configurations based on building serviceability and performance requirements. We anticipate that a RAP foundation system can be installed to meet the settlement criteria for site buildings. Installation of driven grout piles or standard steel or concrete piles may also be considered to mitigate seismic settlement at the site.

Soil improvements may reduce potential seismic settlement to an acceptable level of risk. If ground improvement utilizing RAPs is selected, additional in-situ testing and liquefaction analysis should be conducted following installation to determine the level of improvement achieved. Improved seismic settlement in the upper sand layer should be combined with results from the unimproved lower sand layer to determine the total seismic settlement following mitigation.

Selection of an appropriate mitigation plan may depend upon site planning, architectural, and structural engineering factors in addition to geotechnical concerns. All parties involved should work closely together to develop a suitable improvement plan with a clear understanding of the risks.

6.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard that occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement.

Due to the presence of liquefiable soils at the site, lateral spreading is possible near the Cowlitz River. The magnitude of lateral spreading will be based on the depth of the river channel and distance between proposed structural improvements and the river. Tolerable lateral spread limits for shallow foundations in specific risk categories are presented in *ASCE 7-16, Table 12.13-2*. Lateral spreading is not anticipated to be a design consideration within approximately 300 feet of the riverbank because structures are not proposed in this

area. If structures are planned within 300 feet of the riverbank, Columbia West should be contacted to conduct additional analysis.

7.0 DESIGN RECOMMENDATIONS

The geotechnical site investigation suggests the proposed development is generally compatible with surface and subsurface soils, provided the recommendations presented in this report are incorporated in design and implemented during construction. The primary geotechnical considerations for the project were summarized previously in the *Executive Summary*. Specific design and construction recommendations are presented in the following sections.

7.1 Shallow Foundation Support

As discussed in Section 1.2, *Project Understanding*, lot- and zoning-specific building plans were not available at the time this report was prepared. We anticipate that future buildings will be lightly-loaded, less than three stories in height, and will consist of metal-framed, wood-framed, or concrete tilt-up construction. Provided that proposed buildings can tolerate the seismic settlement estimates presented in Section 6.1, *Liquefaction*, structures may be supported by shallow foundations bearing on firm native soil or engineered structural fill.

We anticipate maximum column and wall loads for future buildings will be less than 200 kips and 5 kips per foot, respectively. Floor slab loading is expected to be less than 200 psf. If actual loading exceeds anticipated loading, additional analysis should be conducted for the specific load conditions and proposed footing dimensions.

Foundations should not be supported by topsoil, agricultural till zones, or undocumented fill material. If encountered, these materials should be improved or removed and replaced with structural fill. If footings are constructed during wet-weather conditions or when footing subgrade soils are above their optimum moisture content, we recommend that a minimum of 6 inches of compacted aggregate be placed over exposed subgrade soils. The aggregate pad should extend 6 inches beyond the edge of the foundations and consist of imported granular material as described in Section 8.1.1, *Structural Fill*. Columbia West should observe exposed subgrade conditions prior to placement of crushed aggregate to verify adequate subgrade support.

Perimeter foundation drains are recommended for shallow foundations constructed five or more feet below existing site grades. Foundation drainage is discussed later in Section 7.5, *Drainage*.

7.1.1 Footing Dimensions and Bearing Capacity

Continuous perimeter wall and isolated spread footings should have minimum width dimensions of 18 and 24 inches, respectively. The base of exterior footings should bear at least 18 inches below the lowest adjacent exterior grade. The base of interior footings should bear at least 12 inches below the base of the floor slab.

Footings bearing on subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 2,500 psf. As the allowable bearing pressure is a net bearing pressure, the weight of the footing and associated backfill may be ignored when

calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be increased by 50 percent for transient lateral forces such as seismic or wind.

7.1.2 Shallow Foundation Settlement

Foundation settlement is a significant structural design consideration. Provided subgrade soils are prepared as described in Section 8.1, *Site Preparation and Grading*, we anticipate that total post-construction static foundation settlement will be less than approximately 1 inch. Differential settlement between comparably-loaded footing elements is not expected to exceed approximately 0.5 inch over a span of 50 feet.

Estimated post-construction settlement assumes that settlement will occur after site grading and slab construction and before establishing structural connections between the building roof and foundation elements. In areas of large column spacing (greater than 50 feet) or where building footprints span significant differences in cut and fill, the potential for differential settlement exceeding the predicted settlement should be understood.

As discussed in Section 6.1, *Liquefaction*, site soils are also susceptible to settlement during a seismic event. Total seismic settlement at the analyzed locations is expected to range from 4 to 7 inches. Differential settlement is estimated to be approximately one-half the total settlement over a 50-foot span. If shallow foundations are proposed and meet the differential settlement thresholds of ASCE 7-16, project stakeholders and the structural engineer should discuss risk associated with seismic settlement and be willing to accept the potential for building damage during a seismic event. If the risk of damage cannot be accepted, liquefaction mitigation through soil improvements or deep foundations will be required.

7.1.3 Resistance to Sliding

Lateral foundation loads can be resisted by passive earth pressure on the sides of the footing and by friction at the base of the footings. Recommended passive earth pressure for footings confined by native soil or engineered structural fill is 350 pcf. The upper 12 inches of soil should be neglected when calculating passive pressure resistance. Adjacent floor slabs and pavement, if present, should also be neglected from the analysis. The recommended passive pressure resistance assumes that a minimum horizontal clearance of 10 feet is maintained between the footing face and adjacent downgradient slopes.

The estimated coefficient of friction between in situ native soil or engineered structural fill and in-place poured concrete is 0.35. The estimated coefficient of friction between compacted crushed aggregate and in-place poured concrete is 0.4.

7.1.4 Subgrade Observation

Footing and floor slab subgrade soils should be evaluated by Columbia West prior to placing forms or reinforcing bar to verify subgrade support conditions are as anticipated in this report. Subgrade observation should confirm that all disturbed material, organic debris, unsuitable fill, remnant topsoil zones, and softened subgrades (if present) have been removed. Over-excavation of footing subgrade soils may be required to remove deleterious material, particularly if footings are constructed during wet-weather conditions.

7.1.5 Floor Slabs

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Disturbed soils and unsuitable fills in proposed slab locations, if encountered, should be removed and replaced with structural fill.

To reduce slab shifting and moisture transmission, slabs should be underlain by at least 6 inches of compacted crushed aggregate. Geotextile may be used below the crushed aggregate layer to increase subgrade support. Recommendations for floor slab base aggregate and subgrade geotextile are discussed in Section 8.6, *Materials*.

Elevated soil moisture was observed within near-surface soil at the time of exploration. In areas where moisture-sensitive flooring will be installed, slab waterproofing or a vapor barrier should be installed according to the flooring manufacturers' recommendations. In our experience, 10- to 15-mil vapor barriers are often required by flooring manufacturers to maintain product warranties. Selection and design of an appropriate vapor barrier should be determined by architectural and structural design team members.

Slab thickness and reinforcement should be designed by an experienced structural engineer in accordance with anticipated loads. Load-bearing concrete slabs with maximum loading of 200 psf may be designed assuming a modulus of subgrade reaction, k , of 150 pci. If slab subgrade soil is cement-amended to a minimum depth of 12 inches, the modulus of subgrade reaction can be increased to 200 pci.

7.2 Seismic Design Considerations

Seismic design for proposed structures is prescribed by *ASCE 7-16*. Based upon site-specific test results, site soils meet the criteria for Site Class E. Seismic design parameters for Site Class E are presented in Table 2.

Table 2. ASCE 7-16 Seismic Design Parameters¹

	Short Period ($T_s = 0.2$ s)	1 Second Period ($T_1 = 1.0$ s)
MCE Spectral Acceleration	0.84	0.40
Site Class	E ²	
Site Coefficient	$F_a = 1.3$	$F_v = 2.4$
Adjusted Spectral Response Acceleration	$S_{MS} = 1.1$	$S_{M1} = 0.96$
Design Spectral Response Acceleration	$S_{DS} = 0.73$	$S_{D1} = 0.64$

1. The structural engineer should evaluate *ASCE 7-16* code requirements and exceptions to determine if these parameters are valid for design.
2. Seismic site class, site coefficients, and spectral acceleration parameters assume that the fundamental period for proposed structures will be less than 0.5 second.

For Site Class E sites with mapped maximum considered earthquake spectral response acceleration parameter S_s greater than or equal to 1.0 or S_1 greater than or equal to 0.2, a ground motion hazard analysis may be required according to *ASCE 7-16, Section 11.4.8* unless exemption criteria are met. According to *ASCE 7-16, Section 11.4.8 Exception 3*, a ground

motion hazard analysis is not required for Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_s , where T is the fundamental period of the structure and T_s is equal to the design spectral response acceleration parameter at a one second period (SD_1) divided by the design spectral response acceleration parameter at short periods (SD_s).

Columbia West recommends that structural engineers on the project evaluate code requirements and exceptions to determine if a site-specific ground motion hazard evaluation will be required for proposed structures.

Due to the presence of liquefiable soils at the site and potential for bearing capacity loss at ground surface, Site Class F criteria may be met if the fundamental period of vibration for proposed structures is greater than 0.5 second. If Site Class F criteria is met, a site-specific ground motion response analysis is required in accordance with *Section 21.1 of ASCE 7-16*. If structures have a fundamental period of less than 0.5 second, seismic design parameters may be determined using the pre-liquefaction seismic site class. In our experience, conventional structures less than three-stories in height will likely have a fundamental period less than 0.5 second, and seismic design parameters may be based on the pre-liquefaction site class designation as provided in Table 2.

7.3 Retaining Structures

Lateral earth pressures should be considered during design of retaining walls and below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Wall foundation construction and bearing capacity should adhere to specifications provided previously in Section 7.1, *Shallow Foundation Support*.

Permanent retaining walls that are not restrained from rotation should be designed for active earth pressures using an equivalent fluid pressure of 35 pcf. Walls that are restrained from rotation should be designed for an at-rest, equivalent fluid pressure of 55 pcf. The recommended earth pressures assume a maximum wall height of 10 feet with well-drained, level backfill. These values also assume that adequate drainage is provided behind retaining walls to prevent hydrostatic pressures from developing. Lateral earth pressures induced by surcharge loads may be estimated using the criteria presented on Figure 5.

Seismic forces may be calculated by superimposing a uniform lateral force of $7H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The force should be applied as a distributed load with the resultant located at $0.6H$ from the base of the wall.

7.3.1 Wall Drainage and Backfill

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base of retaining walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of finished grade. The drain rock and geotextile drainage fabric should meet the specifications provided in Section 8.6, *Materials*. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into stormwater drainage systems, unless measures are taken to prevent backflow into the drainage system of the wall.

Backfill material placed behind the walls and extending a horizontal distance of $\frac{1}{2} H$, where H is the height of the retaining wall, should consist of select granular material placed and compacted as described in Section 8.6.1, *Structural Fill*.

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend that construction of flatwork adjacent to retaining walls be delayed at least four weeks after placement of wall backfill, unless survey data indicates that settlement is complete prior to that time.

7.4 Pavement Design

7.4.1 Design Parameters and Traffic

Private asphalt concrete access drives and parking areas may be proposed on individual lots within the master development. Columbia West recommends adherence to City of Castle Rock roadway standards for street improvements in the public right-of-way. Pavement should be installed on firm, competent native subgrade soil or engineered structural fill prepared as described in this report. Our recommendations for private pavement are based on the following design parameters and assumptions:

- 12 inches of subgrade soil directly below the pavement sections are compacted to at least 95 percent of maximum dry density, as determined by *ASTM D1557*.
- Resilient moduli for subgrade soil and aggregate base materials were assumed to be 4,500 psi and 20,000 psi, respectively.
- Pavement design life of 20 years with no expected traffic growth.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability of 85 percent and standard deviation of 0.4.
- Pavement may be exposed to a fire apparatus load of 75,000 pounds on an infrequent basis.

The specific type and frequency of traffic was not available at the time we prepared this report. Based on experience, we assume that heavy truck traffic will consist of approximately 40 percent FHWA Class Group 7 type trucks (4-axle, single unit) and 60 percent FHWA Class Group 8 type trucks (tractor/trailer 2- to 3-axle). Lightly-loaded drive aisles and parking stalls are expected to service typical passenger vehicle traffic.

7.4.2 Asphaltic Concrete (AC) Pavement Design Sections

Design recommendations for private pavement across a range of traffic conditions and loading scenarios are presented in Table 3. Material properties and compaction recommendations for asphalt surfacing and crushed aggregate base layers are presented in Section 8.6, *Materials*.

Table 3. Recommended AC Pavement Sections Constructed over Native Soil or Engineered Fill

Traffic	Trucks Per Day	Equivalent Single-Axle Loads (ESALs)	AC Thickness (in)	Base Aggregate Thickness (in)
Passenger Vehicle Parking	0	10,000	2.5	8
Passenger Vehicle Drive Aisles	0	20,000	3	9
Heavy Truck Areas	10	92,000	4	10.5
	25	229,000	4.5	12.5
	50	458,000	5	14
	100	916,000	5.5	16.5

Pavement sections may be reduced in areas where subgrade soils are cement-amended to a minimum depth of 12 inches with a minimum of 6 percent cement by weight. Provided the cement-amended subgrade soil achieves a seven-day unconfined compressive strength of 100 psi, AC pavement sections may be constructed as presented in Table 4.

Table 4. Recommended AC Pavement Sections Constructed over Cement-Amended Subgrade Soil

Traffic	Trucks Per Day	Equivalent Single-Axle Loads (ESALs)	AC Thickness (in)	Base Aggregate Thickness (in)	Cement-Amendment Thickness (in)
Passenger Vehicle Parking	0	10,000	2.5	4	12
Passenger Vehicle Drive Aisles	0	20,000	3	4	
Heavy Truck Areas	10	92,000	4	4	
	25	229,000	4.5	4	
	50	458,000	5	4.5	
	100	916,000	5.5	6.5	

7.4.3 Portland Cement Concrete (PCC) Pavement Design Sections

Portland cement concrete pavements may be proposed in future loading dock areas. Loading docks are expected to primarily service heavy truck traffic. Material properties and recommendations for PCC, base aggregate, and cement-amended subgrade layers are presented in Section 8.6, *Materials*. Pavement design recommendations for PCC loading docks constructed over firm native soil or engineered structural fill are presented in Table 5.

Table 5. Recommended PCC Pavement Sections Constructed over Native Soil or Engineered Fill

Traffic	Trucks Per Day	PCC Thickness (in)	Base Aggregate Thickness (in)
Loading Dock Areas	Up to 25	6.5	7
	Up to 50	7	8
	Up to 100	7.5	8

Recommended PCC pavement sections constructed over cement-amended soil meeting the treatment depth, cement content, and strength requirements outlined above are presented in Table 6.

Table 6. Recommended PCC Pavement Sections Constructed over Cement-Amended Subgrade Soil

Traffic	Trucks Per Day	PCC Thickness (in)	Base Aggregate Thickness (in)	Cement-Amendment Thickness (in)
Loading Dock Areas	Up to 25	6.5	4	12
	Up to 50	7	4	
	Up to 100	7.5	4	

7.4.4 General Pavement Recommendations

Recommended pavement section thicknesses are intended to be minimum acceptable values and do not include construction traffic loading. The recommendations assume that pavement construction will be completed during an extended period of warm, dry weather. Wet weather construction may require an increased thickness of base aggregate as discussed later in Section 8.2, *Construction Traffic and Staging*.

Cement-amended soil should be allowed to cure for at least four days prior to aggregate base placement or exposure to construction traffic. Prior to construction traffic access, the cement-amended subgrade should be protected by a minimum 4-inch-thick layer of compacted crushed aggregate. Construction traffic should be limited to dedicated haul roads or non-structural, unpaved portions of the site. Construction traffic should not be permitted on new pavement, unless accounted for in the pavement design section. Base aggregate and cement-amended soils supporting pavement are also not intended for construction traffic. Haul roads and staging areas supporting construction traffic are discussed later in Section 8.2, *Construction Traffic and Staging*.

Asphalt paving is generally not recommended during cold weather conditions where ambient air temperatures are less than 40 degrees Fahrenheit. Compacting asphalt in low-temperature conditions can result in low relative density of the asphalt layer and premature pavement distress.

Asphalt mix designs have a recommended compaction temperature range that is specific to the AC binder used. In low-temperature conditions, maintaining the temperature of the AC mix is difficult as heat can be lost during transport, placement, and compaction. The ambient air temperature during paving should be at least 40 degrees Fahrenheit for a lift thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for a lift thickness between 2 and 2.5 inches. If AC paving must take place during cold-weather construction as defined in this section, the contractor and design team should discuss options for minimizing risk to pavement serviceability.

7.5 Drainage

At a minimum, site drainage should include surface water collection and conveyance to properly designed stormwater management structures and facilities. Drainage design in

general should conform to City of Castle Rock regulations. Finished site grading should be conducted with positive drainage away from structures at a minimum 2 percent slope for a distance of at least 10 feet. Depressions or shallow areas that may retain ponding water should be avoided.

Recommendations for foundation drains, subdrains, and drainage mats are presented in the following sections. Drain rock and geotextile drainage fabric should meet the requirements presented in Section 8.6, *Materials*. Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seeps become evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

7.5.1 Foundation Drains

Roof drains are recommended for all structures. Perimeter building foundation drains can reduce the potential for water intrusion below structures. Perimeter footing drains are recommended for shallow foundations constructed 5 or more feet below existing site grades. Foundations constructed less than 5 feet below existing grades do not require drains, however, it may be prudent to install foundations drains to collect incidental or perched water. The final decision for foundations drains should be made by the owner and architect.

Foundation and roof drains, where installed, should consist of separate systems that gravity flow away from foundations to an approved discharge location. Perimeter foundation drains, where installed, should consist of 4-inch perforated PVC pipe surrounded by a minimum 2-foot-wide zone of clean, washed drain rock wrapped with geotextile drainage fabric. The wrapped drain rock zone should extend up the sides of embedded walls to within 12 inches of proposed finished grade. Foundation drains should be constructed with a minimum slope of ½ percent. The drainpipe's invert elevation should be at least 18 inches below the elevation of the floor slab. Figure 6 presents a typical foundation drain detail.

7.5.2 Subdrains

Subdrains should be considered if portions of the site are cut below surrounding grades. Shallow groundwater, springs, or seeps should be conveyed via drainage channel or perforated pipe into an approved discharge. Recommendations for design and installation of perforated drainage pipe may be performed on a case-by-case basis by Columbia West during construction. Failure to provide adequate surface and sub-surface drainage may result in soil slumping or unanticipated settlement of structures exceeding tolerable limits. A typical perforated drainpipe trench detail is presented in Figure 7.

7.5.3 Drainage Mat

Site improvements construction in some areas may occur at or near the shallow groundwater table, particularly if work is conducted during wet-weather conditions. Dewatering may be necessary, and a drainage mat may be required to achieve sufficient elevation for fill placement. A typical drainage mat is shown on Figure 8. Columbia West should determine drainage mat location, extent, and thickness when subsurface conditions are exposed.

Drainage mats may need to be constructed in conjunction with subdrains to convey captured water to an approved discharge location.

8.0 CONSTRUCTION RECOMMENDATIONS

8.1 Site Preparation and Grading

Vegetation, organic material, unsuitable fill, and deleterious material that may be encountered should be cleared from areas identified for structures and site grading. Vegetation, root zones, organic material, and debris should be removed from the site. Stripped topsoil should also be removed, or used only as landscape fill in nonstructural areas with slopes less than 25 percent. The stripping depth for sod and highly organic topsoil is anticipated to be approximately 4 inches. Following removal of surface vegetation and topsoil, underlying low-organic till zone soils, if present, may be acceptable for stockpiling and reuse as structural fill. Actual stripping depths and suitability of till zone soil for reuse should be determined based upon visual observations made during construction when soil conditions are exposed. The post-construction maximum depth of landscape fill placed or spread at any location onsite should not exceed one foot.

Previously disturbed soil, debris, or undocumented fill encountered during grading or construction activities should be removed completely and thoroughly from structural areas. This includes old remnant foundations, basement walls, utilities, associated soft soils, and debris. Excavation areas should be backfilled with engineered structural fill.

Trees, stumps, and associated roots should also be removed from structural areas, individually and carefully. Resulting cavities and excavation areas should be backfilled with engineered structural fill.

Site grading activities should be performed in accordance with requirements specified in the *2018 International Building Code (IBC)*, Chapter 18 and Appendix J, with exceptions noted in the text herein. Site preparation, soil stripping, and grading activities should be observed and documented by Columbia West.

8.1.1 Subgrade Evaluation

Upon completion of stripping and prior to the placement of structural fill or pavement improvements, exposed subgrade soil should be evaluated by proof rolling with a fully-loaded dump truck or similar heavy, rubber tire construction equipment. When the subgrade is too wet for proof rolling, a foundation probe may be used to identify areas of soft, loose, or unsuitable soil. Subgrade evaluation should be performed by Columbia West. If soft or yielding subgrade areas are identified during evaluation, we recommend the subgrade be over-excavated and backfilled with compacted imported granular fill.

8.2 Construction Traffic and Staging

Near-surface silty soil will be easily disturbed during construction. If not carefully executed, site preparation, excavation, and grading can create extensive soft areas resulting in significant repair costs. Earthwork planning should include considerations for minimizing subgrade disturbance, particularly during wet-weather conditions.

If construction occurs during wet-weather conditions, or if the moisture content of the surficial soil is more than a few percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Under these conditions, granular haul roads and staging areas will also be necessary provide a firm support base and sustain construction equipment.

The recommended base aggregate thickness for pavement sections is intended to support post-construction design traffic loads and will not provide adequate support for construction traffic. Staging areas and haul roads will require an increased base thickness during wet weather conditions. The configuration of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's means and methods. Therefore, design and construction of staging areas and haul roads should be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul road areas. In areas of heavy construction traffic, geotextile separation fabric may be placed between the subgrade soil and imported granular material to increase subgrade support and minimize silt migration into the base aggregate layer.

As an alternative to thickened aggregate sections, haul roads and staging areas may be constructed using a combination of cement-amended subgrade and crushed aggregate surfacing. If cement-amendment is used, the base aggregate thickness for staging areas and haul roads can typically be reduced to between 6 and 9 inches, respectively. This recommendation is based on a minimum seven-day unconfined compressive strength of 100 psi for the cement-amended soil with a treatment depth of 12 to 16 inches. Based on experience, 6 to 7 percent cement by weight is typically required to achieve the indicated compressive strength.

Project stakeholders should understand that wet weather construction is risky and costly. Proper construction methods and techniques are critical to overall project integrity and should be observed and documented by Columbia West.

8.3 Cut and Fill Slopes

Fill slopes should consist of structural fill material as discussed in Section 8.1.1, *Structural Fill*. Fill placed on existing grades steeper than 5H:1V should be horizontally benched at least 10 feet into the slope. Fill slopes greater than six feet in height should be vertically keyed into existing subsurface soil. A typical fill slope cross-section is shown in Figure 9. Drainage implementations, including subdrains or perforated drainpipe trenches, may also be necessary in proximity to cut and fill slopes if seeps or springs are encountered. Drainage design may be performed on a case-by-case basis. Extent, depth, and location of drainage may be determined in the field by Columbia West during construction when soil conditions are exposed. Failure to provide adequate drainage may result in soil sloughing, settlement, or erosion.

Final cut or fill slopes at the site should not exceed 2H:1V or 20 feet in height without individual slope stability analysis. The values above assume a minimum horizontal setback for loads of 10 feet from top of cut or fill slope face or overall slope height divided by three

(H/3), whichever is greater. A minimum slope setback detail for structures is presented in Figure 10.

Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required. Fill slopes should be overbuilt, compacted, and trimmed at least two feet horizontally to provide adequate compaction of the outer slope face. Proper cut and fill slope construction is critical to overall project stability and should be observed and documented by Columbia West.

8.4 Excavation

The site was explored by Columbia West and others to a maximum depth of 81.5 feet with a drill rig. Conventional earthmoving equipment in proper working condition should be capable of making necessary site excavations.

Groundwater was encountered at depths ranging from 9 and 35 feet bgs in site explorations. Perched groundwater at shallower depths may also be present. Recommendations as described in Section 8.5, *Dewatering*, should be considered where subsurface construction activities intersect the shallow groundwater table.

Excavations in near-surface sandy soil will likely slough and cave, even at shallow depths. Open-cut excavation techniques may be used to excavate trenches between 4 and 8 feet deep, provided the walls of the excavation are cut at a maximum slope of 1H:1V and groundwater seepage is not present. Excavation slopes should be reduced to 1.5H:1V or 2H:1V if excessive sloughing or raveling occurs.

Shoring may be required if open-cut excavations are infeasible or if excavations are proposed adjacent to existing infrastructure. Typical methods for stabilizing excavations consist of soldier piles and timber lagging, sheet pile walls, tiebacks and shotcrete, or pre-fabricated hydraulic shoring. As a wide variety of shoring and dewatering systems are available, we recommend that the contractor be responsible for selecting the appropriate shoring and dewatering systems.

The contractor should be held responsible for site safety, sloping, and shoring. All excavation activity should be conducted in accordance with applicable OSHA requirements. Columbia West is not responsible for contractor activities and in no case should excavation be conducted in excess of applicable local, state, and federal laws.

8.5 Dewatering

Based on site observations and piezometer monitoring data, groundwater will likely be encountered in utility trenches, pump station excavations, and in areas of significant cut. Generalized recommendations for temporary construction dewatering are presented in the following section.

8.5.1 Construction Dewatering

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater. Dewatering should be performed to the extent necessary to prevent standing water and/or erosion of exposed site soils. During rough and finished grading of

building pad areas, the contractor should keep all footing excavations and slab subgrade soils free of standing water.

The contractor's proposed dewatering plan should be capable of maintaining groundwater levels at least two feet below the base of proposed excavations. Without adequate excavation dewatering, running soil, caving, and sloughing will increase backfill volumes and may result in damage to adjacent structures or utilities. Significant pumping and dewatering may be required to temporarily reduce the groundwater elevation to the recommended depth. Dewatering via a sump within excavation zones may be insufficient to control groundwater and provide excavation side slope stability. Dewatering may be more feasibly conducted by installing a system of temporary well points and pumps around proposed excavation areas or utility trenches.

As indicated previously, a sanitary sewer pump station is proposed up to 35 feet below existing grade. Due to the significant depth of excavation and potential for rapid groundwater flow through permeable sand and gravel deposits, the contractor should be required to prepare and present a detailed dewatering plan. The contractor should consult with a licensed professional engineer to provide an adequate dewatering plan for site conditions. If additional subsurface information not provided in this geotechnical report is necessary to complete the dewatering plan, the contractor shall be responsible for securing all the required information necessary for the design of the system.

If groundwater is present at the base of excavations, we recommend placing 18 to 24 inches of stabilization material at the base of the excavation. Subgrade geotextile placed directly over trench subgrade soils may reduce the required thickness of the stabilization material. The actual thickness of stabilization material should be determined at the time of construction based on observed field conditions. The stabilization material should be placed in one lift and compacted until well keyed. Stabilization material and geotextile fabric should meet the requirements presented in Section 8.6, *Materials*.

8.6 Materials

8.6.1 Structural Fill

Areas proposed for fill placement should be appropriately prepared as described in Section 8.1, *Site Preparation and Grading*. Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with *ASTM D6938*. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and meet specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by Columbia West prior to placement.

8.6.1.1 Onsite Soil

Most onsite native soil (silt, sand, and gravel) will be suitable for use as structural fill if adequately dried or moisture-conditioned to achieve recommended compaction

specifications. Moisture conditioning will likely be necessary to achieve the optimum moisture content required for compaction. In addition, near-surface silty soil will be moisture sensitive and difficult to compact during wet weather conditions. Therefore, structural fill placement using onsite soil should be performed during dry summer months if possible. Onsite soil may also require addition of moisture during extended periods of dry weather.

Onsite soil used as structural fill should be placed in loose lifts not exceeding 8 inches in depth and compacted using standard conventional compaction equipment. The soil moisture content should be within a few percentage points of optimum conditions. The soil should be compacted to at least 95 percent of maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*). Compacted onsite fill soils should be covered shortly after placement.

Onsite soil will likely expand during excavation and transport and consolidate during compaction. Development of site-specific expansion and consolidation factors is beyond the scope of this investigation. We can provide site-specific factors upon request.

8.6.1.2 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand meeting *WSDOT 9-03.14(1)* specifications for *Gravel Borrow*. Imported granular material should be placed in loose lifts not exceeding 12 inches in depth and compacted to at least 95 percent of maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*). During wet-weather conditions or where wet subgrade conditions are present, the initial loose lift of granular fill should be approximately 18 inches thick and should be compacted with a smooth-drum roller operating in static mode.

8.6.1.3 Stabilization Material

Stabilization material should consist of durable, 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is free of organics and other deleterious material. The material should have a maximum particle size of 6 inches with less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve. The material should have at least two mechanically-fractured faces.

Stabilization material should be placed in loose lifts between 12 and 24 inches thick and be compacted to a firm, unyielding condition. Equipment with vibratory action should not be used when compacting stabilization material over wet, fine-textured soils. If stabilization material is used to stabilize soft subgrade below pavement or construction haul roads, a subgrade geotextile should be placed as a separation barrier between the soil subgrade and the stabilization material.

8.6.1.4 Trench Backfill

Trench backfill placed below, adjacent to, and up to at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material meeting *WSDOT 9-03.12(3)* specifications for *Gravel Backfill for Pipe Zone Bedding*. Pipe zone backfill should be compacted to at least 90 percent of maximum dry density, as determined by the modified

Proctor moisture-density relationship test (*ASTM D1557*), or as required by the local jurisdictional agency or pipe manufacturer.

Within structural areas (below pavement and building pads), trench backfill above the pipe zone should consist of *WSDOT 9-03.19 Bank Run Gravel for Trench Backfill* or *WSDOT 9-03.14(2) Select Borrow* with a maximum particle size of 2 ½-inches. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). Remaining trench backfill should be compacted to at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*), or as required by the local jurisdictional agency or pipe manufacturer.

Outside of structural areas, trench backfill placed above the pipe zone should be compacted to at least 90 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*), or as required by the local jurisdictional agency or pipe manufacturer.

8.6.1.5 Floor Slab Base Aggregate

Base aggregate for building floor slabs should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Slab base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*).

8.6.1.6 Pavement Base Aggregate

Base aggregate for pavement should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Pavement base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test (*ASTM D1557*).

8.6.1.7 Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½ H, where H is the height of the retaining wall, should consist of free-draining granular material meeting *WSDOT 9-03.12(2)* specifications for *Gravel Backfill for Walls*. The wall backfill should be separated from structural fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

Wall backfill located within a horizontal distance of 3 feet from the face of a retaining wall should be compacted to 90 percent of the maximum dry density, as determined by *ASTM D1557*. Backfill placed within 3 feet of the wall should be compacted in loose lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). Remaining wall backfill should be compacted to at least 95 percent of the maximum dry density, as determined by *ASTM D1557*.

8.6.1.8 Retaining Wall Leveling Pad

Crushed aggregate used as a leveling pad for retaining wall footings should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. The leveling pad material should be compacted to at least 95 percent of the

maximum dry density as determined by the modified Proctor moisture-density relationship test (ASTM D1557).

8.6.1.9 Drain Rock

Drain rock should consist of open-graded, angular aggregate meeting WSDOT 9-03.12(4), *Gravel Backfill for Drains*. Drain rock should be free of roots, organic debris, and other unsuitable material and should have at least two mechanically-fractured faces. Drain rock should be compacted to a firm, unyielding condition. Drain rock should be completely wrapped in a geotextile drainage fabric meeting the requirements presented below.

8.6.2 Geotextile Fabric

8.6.2.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications provided in WSDOT 9-33.2(1), *Table 3, Geotextile for Separation or Soil Stabilization*. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

8.6.2.2 Drainage Geotextile

Subgrade geotextile should meet the specifications provided in WSDOT 9-33.2(1), *Table 2, Geotextile for Underground Drainage Filtration Properties*. The AOS should be between the No. 70 and No. 100 sieve. The water permittivity should be greater than 1.5/sec. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles.

8.6.3 Soil Amendment with Cement

The on-site soil can be amended with Portland cement to obtain suitable properties for use as wet-weather structural fill or subbase for pavement. The effectiveness of soil amendment is highly dependent on proper mixing techniques, soil moisture conditioning, and the quantity of cement. The quantity of cement applied during amendment should be based on an assumed dry unit weight of 100 pcf for site soil.

8.6.3.1 Subbase Stabilization

Specific recommendations for soil amendment should be based on exposed site conditions at the time of construction. For preliminary design purposes, we recommend cement-amended subgrade for building pads and pavement subbase (below the base aggregate layer) achieve a target strength of 100 psi. The quantity of cement required to achieve the target strength will vary with moisture content and soil type. Laboratory testing of cement-amended soil should be used to confirm design expectations.

Based on our experience, near-surface silt and sand will require approximately 6 to 7 percent cement by weight to achieve the target strength of 100 psi. This cement percentage assumes that the soil moisture content does not exceed 20 percent at the time of amendment. If the soil moisture content is in the range of 25 to 35 percent, 7 to 8 percent cement by weight may be required to achieve the target strength. The amount of cement

added to the soil at the time of construction should be based on observed field conditions and subgrade performance. During extended periods of dry weather, water may need to be applied during the amendment and tilling process to achieve the optimum moisture content required for compaction.

Cement-amendment equipment should have balloon tires to minimize softening, rutting, and disturbance of fine-grained site soil. A sheepfoot or segmented pad roller with a minimum static weight of 40,000 pounds should be used for initial compaction. Rollers with vibratory action should not be used to compact fine-grained, cement-amended soil. Final compaction should be conducted with a smooth-drum roller with a minimum applied linear force of 700 pounds per inch. The amended soil should be compacted to at least 95 percent of the maximum dry density as determined by *ASTM D558*.

Following cement amendment, a minimum curing time of four days is required prior to exposure to construction traffic. Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect cement-amended areas from damage, the finished surface should be covered with 4 to 6 inches of imported granular material. The protective layer of crushed rock often becomes contaminated with soil during construction, particularly in staging and haul road areas. Contaminated aggregate, where present, should be removed and replaced with clean crushed aggregate prior to construction of pavement or other permanent site improvements supported by base aggregate.

Cement amendment should not be attempted during moderate to heavy precipitation or when the ambient air temperature is below 40 degrees Fahrenheit. Cement should not be placed in areas of standing water or where saturated subgrade conditions exist.

8.6.3.2 Cement-Amended Structural Fill

If adequate compaction is not achievable with onsite soil due to moisture or weather conditions, the soil may be cement-amended and placed as general structural fill. Prior to placement of cement-amended fill, subgrade soils should be prepared as described in Section 8.1, *Site Preparation and Grading*. Where multiple lifts of cement-amended fill are necessary to meet finished grade, consecutive lifts may be placed immediately following amendment and compaction of the underlying lift. However, where the final lift of cement-amended fill will serve as building pad or pavement subbase material, the four-day cure period as discussed above is recommended.

8.6.3.3 QA/QC Testing and Inspection

Cement-amendment of site soils should be observed and tested by Columbia West to document conformance with design recommendations. Cement spread rate should be verified with a pan sample test conducted at one random location per lift per 20,000 square-feet of cement-amended fill. Treatment depth should be verified through excavation of a small test pit and measurement at one random location per lift of cement-amended fill. Adequate compaction and moisture content should be verified by conducting nuclear gauge density testing at a frequency of approximately one test per 5,000 square feet of cement-amended fill in accordance with *ASTM D6938*. At least one representative sample should be collected per day of cement-amendment, cured for 7 days, and tested for

unconfined compressive strength in accordance with ASTM D1633. The tested samples should have a minimum 7-day, unconfined compressive strength of 100 psi.

8.6.3.4 Drainage Considerations

Cement-amended soil will be poorly-drained and will not be suitable for planting areas. The material may also be difficult to excavate with light-duty landscaping equipment. Proposed landscape areas should not be cement-amended unless accommodations are made for drainage and planting.

Cement-amendment within building pad areas should consider the potential for trapped water below the floor slab. Columbia West should be consulted to provide appropriate recommendations if cement-amendment is proposed within building pad areas.

8.6.4 Pavement

8.6.4.1 Asphaltic Concrete

Asphaltic concrete should consist of HMA Class ½" adhering to *WSDOT 9-03.8(6), HMA Proportions of Materials*. The asphalt binder should consist of PG 58-22 meeting *WSDOT 9-02.1(4), Performance Graded (PG) Asphalt Binder*. Asphalt should be compacted to 91 percent of the theoretical maximum density as determined by *ASTM D2041*. Minimum and maximum asphalt lift thicknesses should be 2 and 3 inches, respectively. Nuclear gauge density testing should be conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with WSDOT and City of Castle Rock specifications.

8.6.4.2 Portland Cement Concrete

Portland cement concrete should meet *WSDOT 5-05, Cement Concrete Pavement* with a minimum 28-day compressive strength of 4,000 psi and an air content between 3 and 7 percent. PCC should be placed in general accordance with *WSDOT 5-05.3(7), Placing, Spreading, and Compacting Concrete*. Dowel bars and placement should adhere to *WSDOT 5-05.3(10), Tie Bars and Corrosion Resistant Dowel Bars*. Joints should be constructed in general accordance with *WSDOT 5-05.3(8), Joints* with a maximum transverse joint spacing of 15 feet. The length-to-width ratio for any PCC panel should be between 0.80 and 1.25.

Concrete should be tested during installation in accordance with ASTM C171, C138, C231, C143, C1064, and C31. This includes casting of cylinder specimen at a frequency of four cylinders per 100 cubic yards of poured concrete. Recommended field concrete testing includes slump, air entrainment, temperature, and unit weight.

8.7 Erosion Control Measures

Soil at this site is susceptible to erosion by wind and water; therefore, erosion control measures should be carefully planned and installed. Surface water runoff should be collected and directed away from sloped areas to prevent water from running down the slope face. 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. All erosion control methods should be in accordance with local jurisdiction standards.

9.0 CONCLUSION AND LIMITATIONS

This geotechnical site investigation report was prepared in accordance with accepted standard conventional principles and practices of geotechnical engineering. This investigation pertains only to material tested and observed as of the date of this report and is based upon proposed site development as described in the text herein. This report is a professional opinion containing recommendations established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. Soil conditions may differ between tested locations or over time. Slight variations may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent QA/QC construction observation and testing to verify soil conditions are as anticipated in this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Columbia West cannot accept responsibility for deviations from recommendations described in this report. Future performance of structural facilities is often related to the degree of construction observation by qualified personnel. These services should be performed to the full extent recommended.

This report is not an environmental assessment and should not be construed as a representative warranty of site subsurface conditions. The discovery of adverse environmental conditions, or subsurface soils that deviate from those described in this report, should immediately prompt further investigation. The above statements are in lieu of all other statements expressed or implied.

This report was prepared solely for the client and is not to be reproduced without prior authorization from Columbia West. Final engineering plans and specifications for the project should be reviewed and approved by Columbia West as they relate to geotechnical and grading issues prior to final design approval. Columbia West is not responsible for independent conclusions or recommendations made by other parties based upon information presented in this report. Unless a particular service was expressly included in the scope, it was not performed and there should be no assumptions based upon services not provided. Additional report limitations and important information about this document are presented in Appendix D, *Report Limitations and Important Information*. This information should be carefully read and understood by the client and other parties reviewing this document.

Sincerely,

COLUMBIA WEST ENGINEERING, Inc.

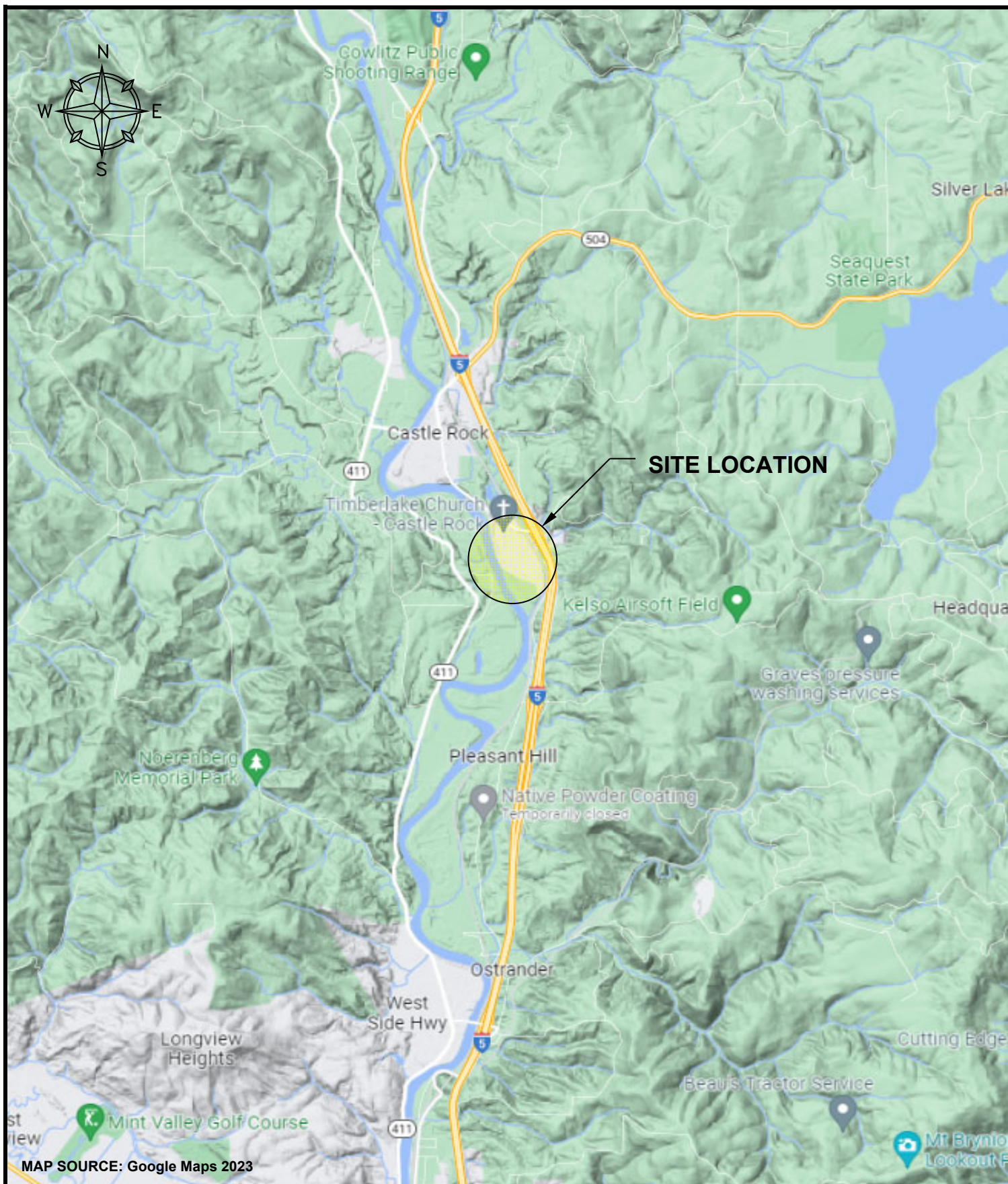
Lance V. Lehto, PE, GE
President

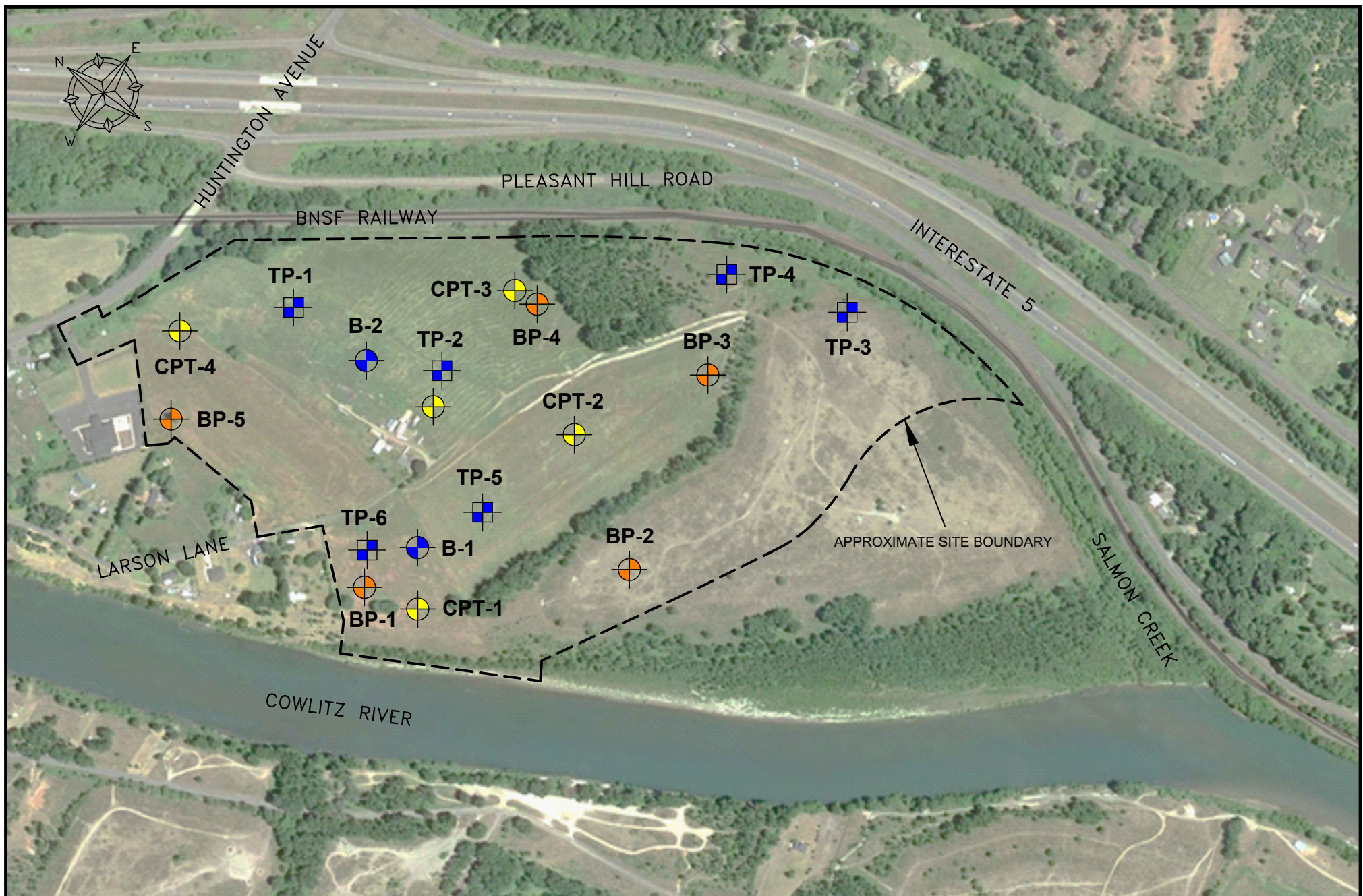


REFERENCES

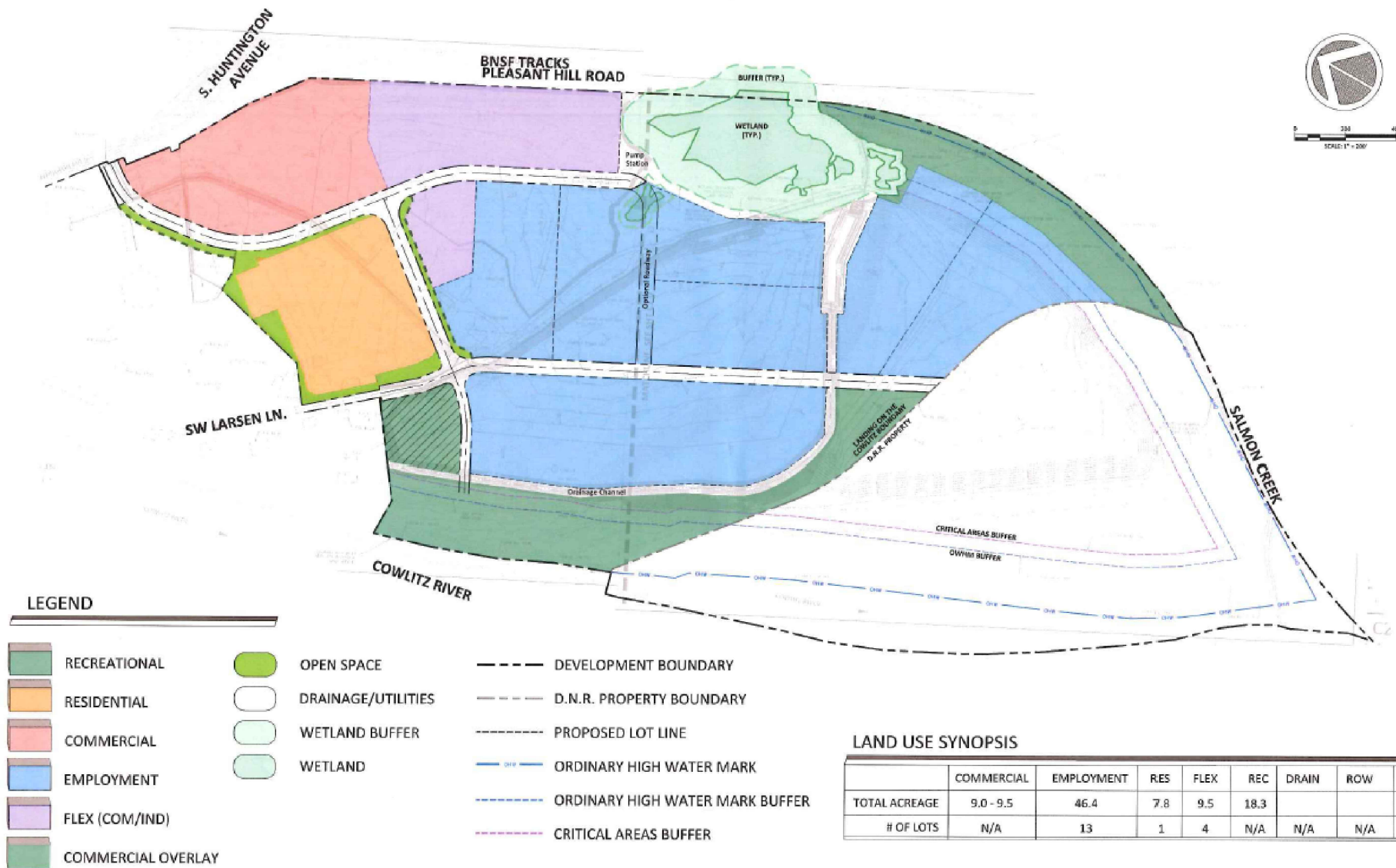
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FIGURES





 BORING AND PIEZOMETER (COLUMBIA WEST, 2023)
  BORING (BY OTHERS, 2020)
  CONE PENETRATION TEST (BY OTHERS, 2020)
  TEST PIT (BY OTHERS, 2020)



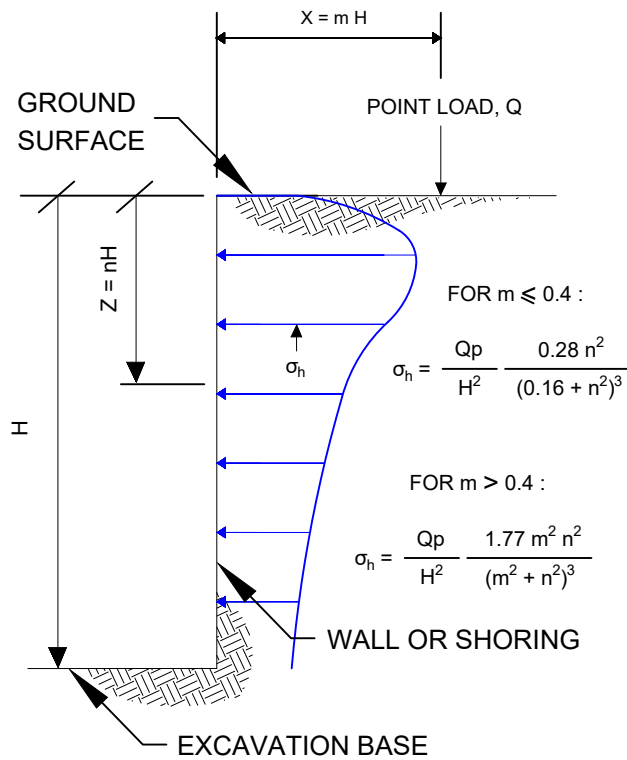
LANDING ON THE COWLITZ - DYNAMIC MASTER PLAN

OCTOBER 2022

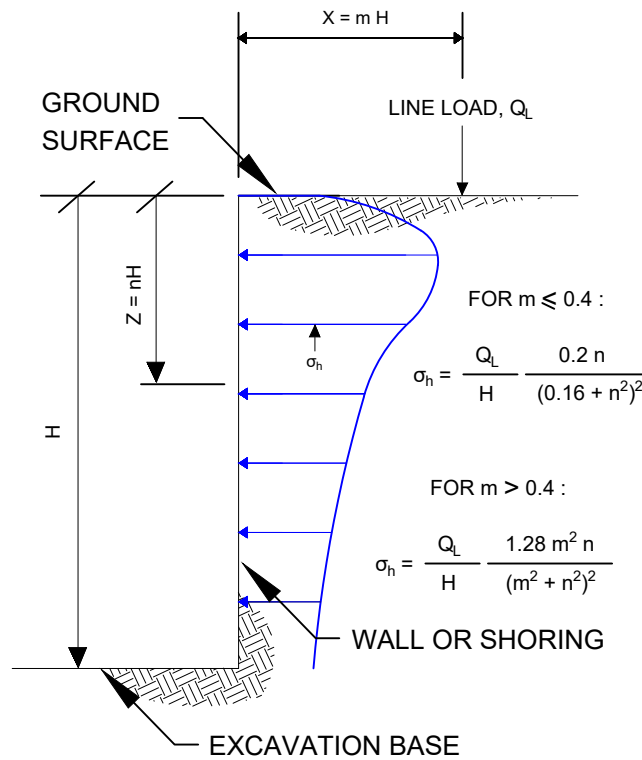
MacKay Sposito

ENERGY PUBLIC WORKS LAND DEVELOPMENT
www.mackaysposito.com

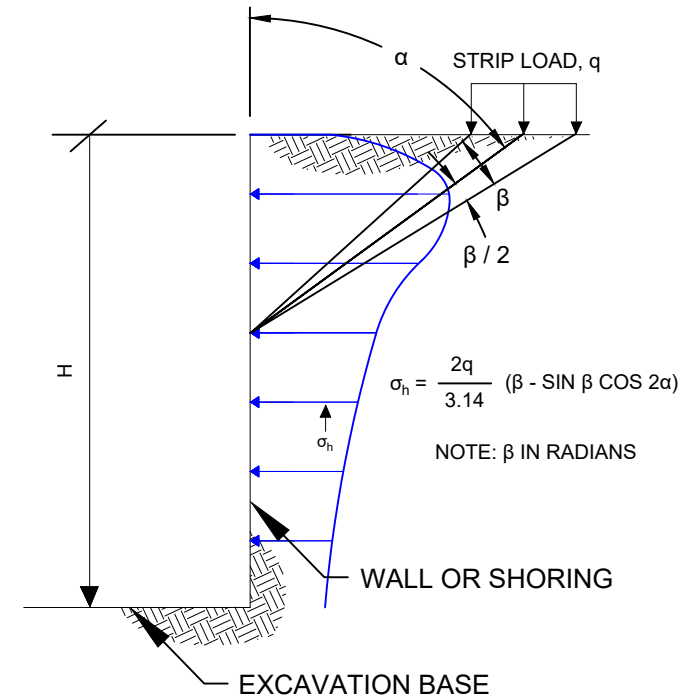
VERTICAL POINT LOAD



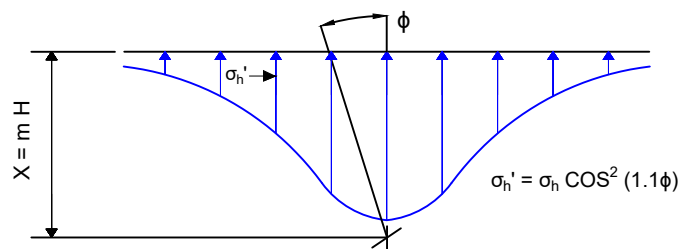
LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL

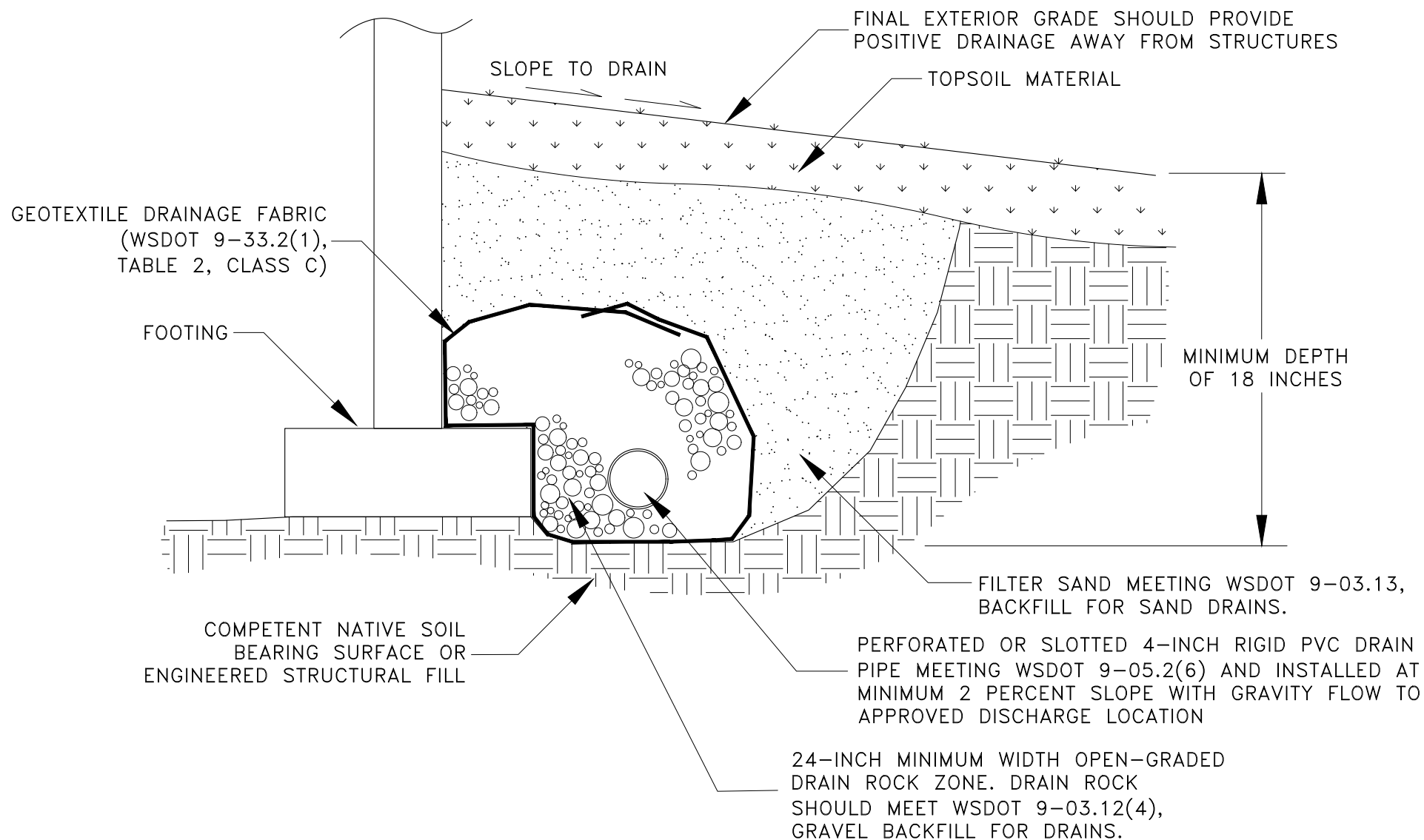


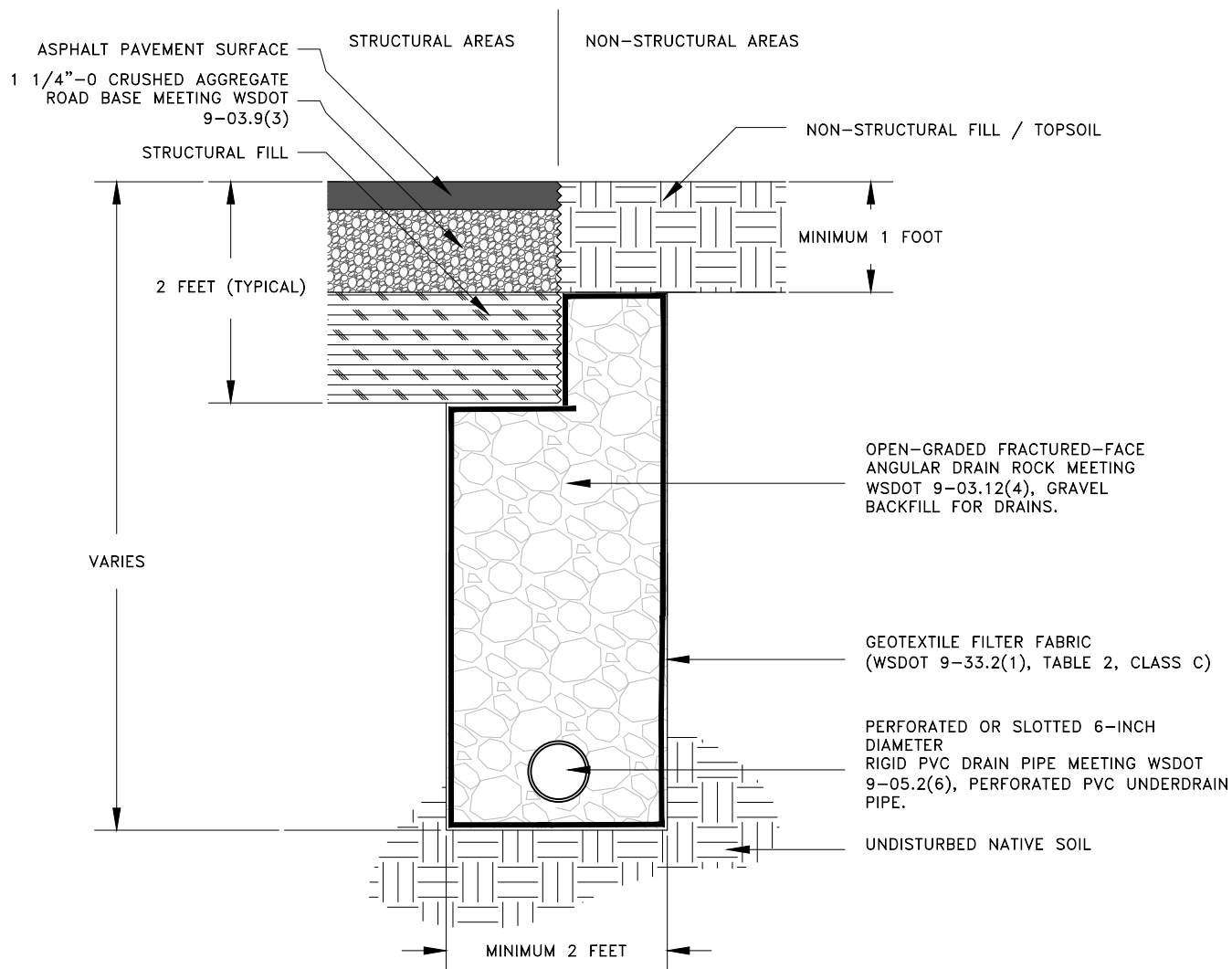
VERTICAL POINT LOAD HORIZONTAL PRESSURE DISTRIBUTION



NOTES:

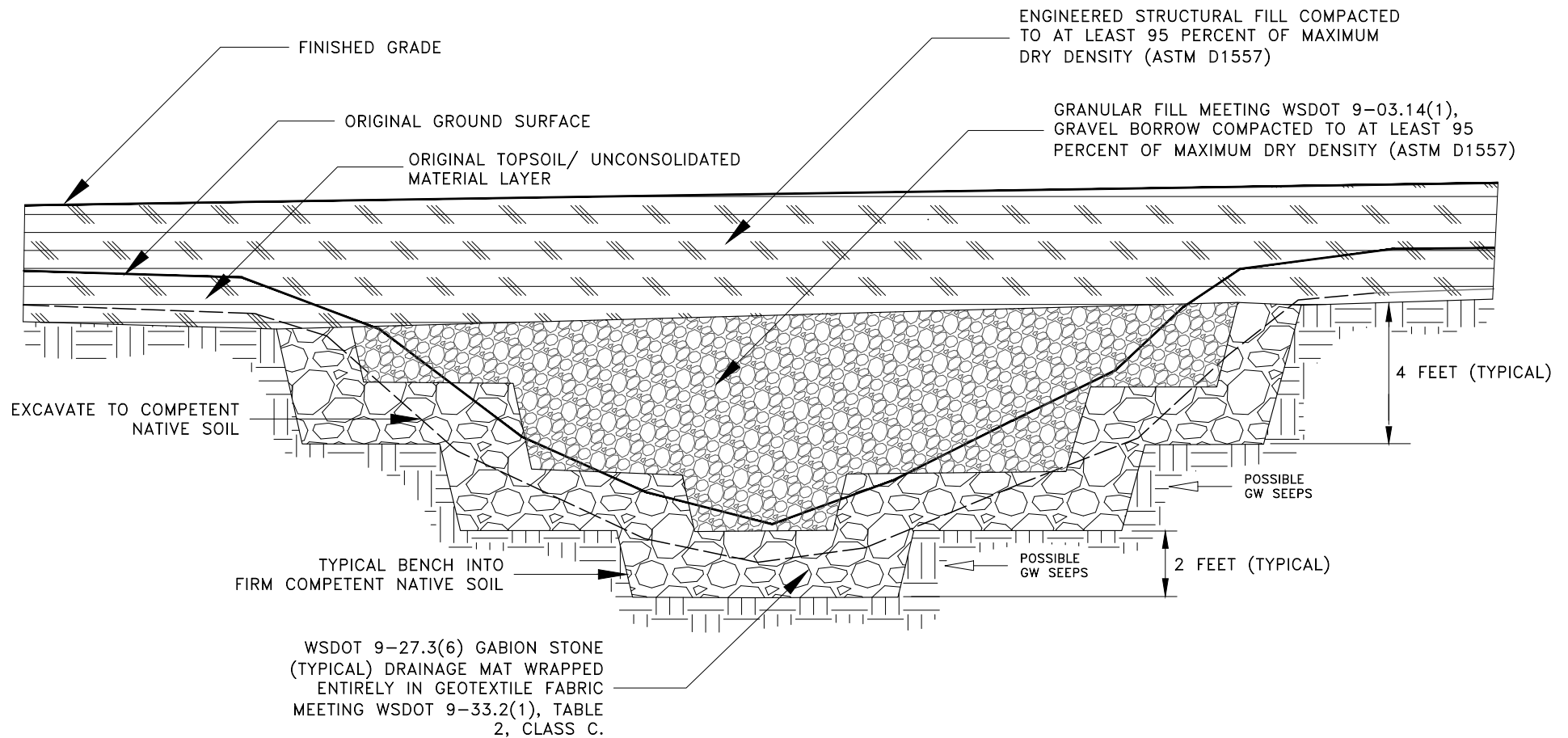
1. FIGURE SHOULD BE USED JOINTLY WITH RECOMMENDATIONS PRESENTED IN THE REPORT TEXT.
2. LATERAL EARTH PRESSURES ASSUME RIGID WALLS WITH BACKFILL MATERIALS HAVING A POISSON'S RATIO OF 0.5.
3. TOTAL LATERAL EARTH PRESSURES RESULTING FROM COMBINED LOADS MAY BE CALCULATED USING SUPERPOSITION.
4. DRAWING IS NOT TO SCALE.

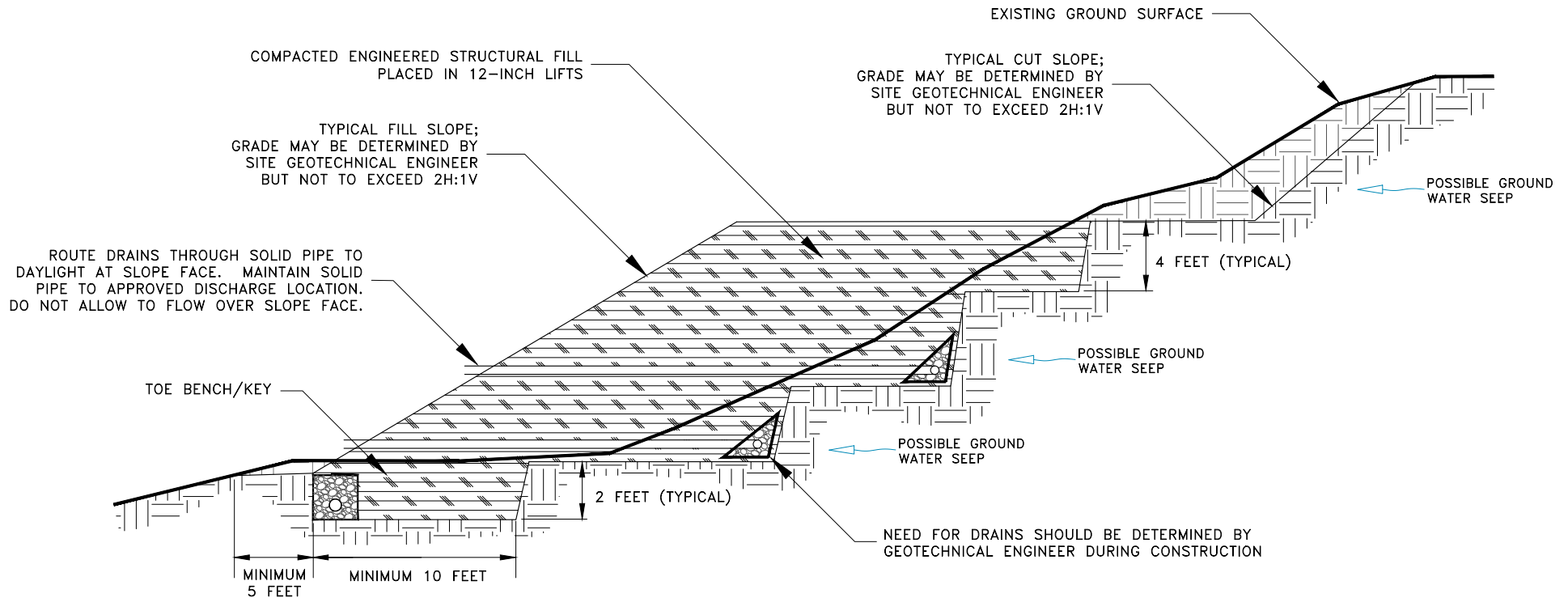




NOTE: LOCATION, INVERT ELEVATION, DEPTH OF TRENCH, AND EXTENT OF PERFORATED PIPE REQUIRED MAY BE MODIFIED BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION BASED UPON FIELD OBSERVATION AND SITE-SPECIFIC SOIL CONDITIONS.

TYPICAL DRAINAGE MAT CROSS-SECTION





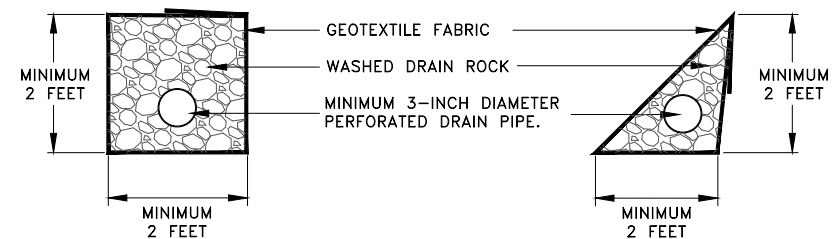
DRAIN SPECIFICATIONS

GEOTEXTILE FABRIC SHALL MEET WSDOT 9-33.2(1), TABLE 2, CLASS C.

WASHED DRAIN ROCK SHALL BE OPEN-GRADED ANGULAR DRAIN ROCK MEETING WSDOT 9-03.12(4), GRAVEL BACKFILL FOR DRAINS.

DRAIN PIPE SHOULD MEET WSDOT 9-05.2(6), PERFORATED PVC UNDERDRAIN PIPE.

TYPICAL DRAIN SECTION DETAIL



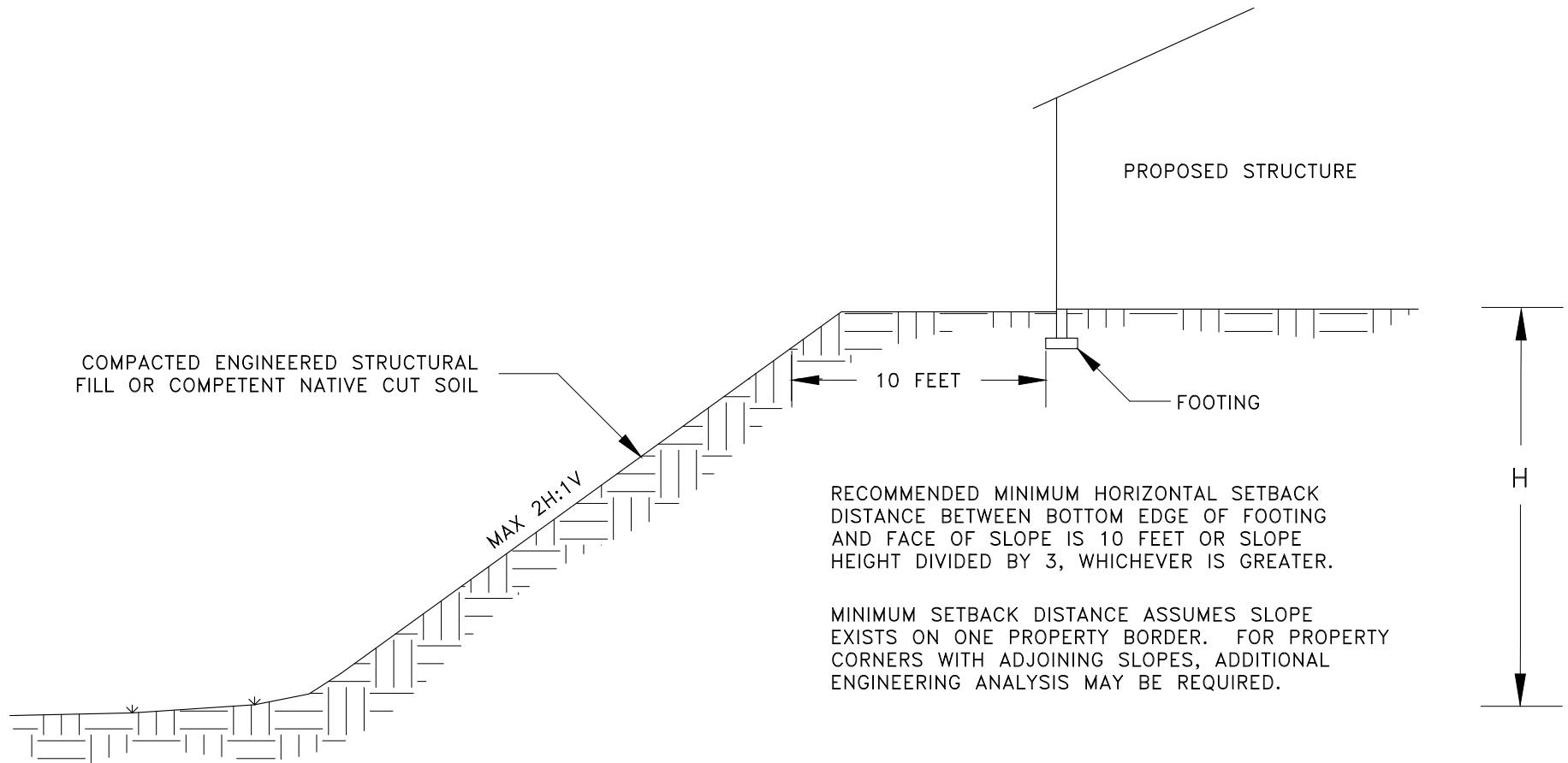
TYPICAL CUT AND FILL SLOPE CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL CUT AND FILL SLOPE CROSS SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE

9

Page 271 of 515



APPENDIX A

SUBSURFACE EXPLORATION LOGS

BORING LOG

PROJECT NAME Landing on the Cowlitz	CLIENT CT6, LLC	PROJECT NO. 22310	BORING NO. BP-1
PROJECT LOCATION Castle Rock, Washington	DRILLING CONTRACTOR Western States	DRILL RIG CME Track	TECHNICIAN MAC
BORING LOCATION See Figure 2	DRILLING METHOD HSA	SAMPLING METHOD SPT	START DATE 1/31/23
REMARKS None	APPROX. SURFACE ELEVATION Not surveyed	GROUNDWATER DEPTH 20 feet bgs on 1/31/23	START TIME 0900
		FINISH DATE 1/31/23	FINISH TIME 1030

Depth (ft)	Field ID + Sample Type	SPT N-value (uncorrected) 0 20 40 60 80	USCS Soil Type	AASHTO Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Wet Density (PCF)	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index
0			SP-SM			Fill. Gray poorly-graded SAND with silt and trace gravel, moist, fine-textured.					
2											
4											
6	SPT BP1.1	5	SP-SM			Brown poorly-graded SAND with silt, loose, moist, fine-textured.					
8											
10	SPT BP1.2	4				Becomes very loose.					
12											
14											
16	SPT BP1.3	9				Becomes loose.					
18											
20	SPT BP1.4	16				Becomes medium dense, wet.					
22											
24											
26											
28											
30											
32						Bottom of boring at 30 feet bgs. Groundwater encountered at 20 feet bgs on 1/31/23. Piezometer installed at 30 feet and completed with flush mount monument on 1/31/23.					
34											
36											

BORING LOG

PROJECT NAME Landing on the Cowlitz	CLIENT CT6, LLC	PROJECT NO. 22310	BORING NO. BP-2
PROJECT LOCATION Castle Rock, Washington	DRILLING CONTRACTOR Western States	DRILL RIG CME Track	TECHNICIAN MAC
BORING LOCATION See Figure 2	DRILLING METHOD HSA	SAMPLING METHOD SPT	PAGE NO. 1 of 1
REMARKS None	APPROX. SURFACE ELEVATION Not surveyed	GROUNDWATER DEPTH 35 feet bgs on 1/31/23	START DATE 1/31/23
		FINISH DATE 1/31/23	START TIME 1200
			FINISH TIME 1600

Depth (ft)	Field ID + Sample Type	SPT N-value (uncorrected) 0 20 40 60 80	USCS Soil Type	AASHTO Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Wet Density (PCF)	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index
0			SP-SM			Brown poorly-graded SAND with silt, moist, fine-textured.					
2											
4											
6											
8											
10											
12											
14											
16											
18											
20						Becomes very dense with reduced silt content and trace to some gravel.					
22	SPT BP2.1	57									
24											
26	SPT BP2.2	11				Becomes medium dense, very moist.					
28											
30	SPT BP2.3	10									
32											
34											
36	SPT BP2.4	30	GP-GM			Gray to reddish gray poorly-graded GRAVEL with silt and sand, medium dense, wet.					
38											
40	SPT BP2.5	REFUSAL 50(3")				Becomes very dense.					
42											
44											
46						Bottom of soil boring at 45 feet bgs. Groundwater encountered at 35 feet bgs on 1/31/23. Piezometer installed at 45 feet and completed with flush mount monument on 1/31/23.					
48											
50											
52											

BORING LOG

PROJECT NAME Landing on the Cowlitz	CLIENT CT6, LLC	PROJECT NO. 22310	BORING NO. BP-3
PROJECT LOCATION Castle Rock, Washington	DRILLING CONTRACTOR Western States	DRILL RIG CME Track	TECHNICIAN MAC
BORING LOCATION See Figure 2	DRILLING METHOD HSA	SAMPLING METHOD SPT	START DATE 2/1/23
REMARKS None	APPROX. SURFACE ELEVATION Not surveyed	GROUNDWATER DEPTH 15 feet bgs on 2/1/23	FINISH DATE 2/1/23
			START TIME 0900
			FINISH TIME 1245

Depth (ft)	Field ID + Sample Type	SPT N-value (uncorrected) 0 20 40 60 80	USCS Soil Type	AASHTO Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Wet Density (PCF)	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index
0			SP-SM			Brown poorly-graded SAND with silt, loose, moist, fine-textured.					
2											
4											
6	SPT BP3.1	6									
8											
10	SPT BP3.2	0				Becomes very loose.					
12											
14											
16	SPT BP3.3	1	ML			Dark gray SILT with sand, very soft, wet, low plasticity.					
18											
20	SPT BP3.4	37	SP			Gray poorly-graded SAND, medium dense, wet.					
22											
24											
26						Bottom of soil boring at 25 feet bgs. Groundwater encountered at 15 feet bgs on 2/1/23. Piezometer installed at 25 feet and completed with flush mount monument on 2/1/23.					
28											
30											

BORING LOG

PROJECT NAME Landing on the Cowlitz	CLIENT CT6, LLC	PROJECT NO. 22310	BORING NO. BP-4
PROJECT LOCATION Castle Rock, Washington	DRILLING CONTRACTOR Western States	DRILL RIG CME Track	TECHNICIAN MAC
BORING LOCATION See Figure 2	DRILLING METHOD HSA	SAMPLING METHOD SPT	START DATE 2/1/23
REMARKS None	APPROX. SURFACE ELEVATION Not surveyed	GROUNDWATER DEPTH 17 feet bgs on 2/2/23	FINISH DATE 2/2/23
			START TIME 1300
			FINISH TIME 1045

Depth (ft)	Field ID + Sample Type	SPT N-value (uncorrected) 0 20 40 60 80	USCS Soil Type	AASHTO Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Wet Density (PCF)	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index
0						Grass and three-inch-thick root zone underlain by 12 inches of topsoil.					
2			SP-SM			Brown silty SAND to poorly-graded SAND with silt, very loose, moist, fine-textured.					
4											
6	SPT BP4.1	4									
8											
10	SPT BP4.2	1									
12											
14											
16	SPT BP4.3	1									
18						Becomes wet.					
20											
22											
24											
26											
28											
30											
32											
34											
36						Bottom of soil boring at 35 feet bgs. Groundwater encountered at 17 feet bgs on 2/2/23. Piezometer installed at 35 feet and completed with flush mount monument on 2/2/23.					
38											
40											

BORING LOG

PROJECT NAME Landing on the Cowlitz	CLIENT CT6, LLC	PROJECT NO. 22310	BORING NO. BP-5
PROJECT LOCATION Castle Rock, Washington	DRILLING CONTRACTOR Western States	DRILL RIG CME Track	TECHNICIAN MAC
BORING LOCATION See Figure 2	DRILLING METHOD HSA	SAMPLING METHOD SPT	START DATE 2/2/23
REMARKS None	APPROX. SURFACE ELEVATION Not surveyed	GROUNDWATER DEPTH 17.5 feet bgs on 2/2/23	FINISH DATE 2/2/23
			FINISH TIME 1600

Depth (ft)	Field ID + Sample Type	SPT N-value (uncorrected) 0 20 40 60 80	USCS Soil Type	AASHTO Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Wet Density (PCF)	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index
0			SP-SM			Brown poorly-graded SAND with silt, loose, moist, fine-textured.					
2											
4											
6	SPT BP5.1	7									
8											
10	SPT BP5.2	10				Becomes medium dense.					
12											
14											
16	SPT BP5.3	5				Becomes loose.					
18						Becomes wet.					
20	SPT BP5.4	REFUSAL 50(3")	GP-GM			Gray to reddish gray poorly-graded GRAVEL with silt and sand, very dense, wet.					
22											
24											
26	SPT BP5.5	REFUSAL 50(5")									
28											
30	SPT BP5.6	16				Becomes medium dense.					
32						Bottom of soil boring at 31.5 feet bgs. Groundwater encountered at 17.5 feet bgs on 2/2/23. Piezometer installed at 30 feet and completed with flush mount monument on 2/2/23.					
34											
36											

APPENDIX B

SOIL CLASSIFICATION INFORMATION

SOIL DESCRIPTION AND CLASSIFICATION GUIDELINES

Particle-Size Classification

COMPONENT	ASTM/USCS		AASHTO	
	size range	sieve size range	size range	sieve size range
Cobbles	> 75 mm	greater than 3 inches	> 75 mm	greater than 3 inches
Gravel	75 mm – 4.75 mm	3 inches to No. 4 sieve	75 mm – 2.00 mm	3 inches to No. 10 sieve
Coarse	75 mm – 19.0 mm	3 inches to 3/4-inch sieve	-	-
Fine	19.0 mm – 4.75 mm	3/4-inch to No. 4 sieve	-	-
Sand	4.75 mm – 0.075 mm	No. 4 to No. 200 sieve	2.00 mm – 0.075 mm	No. 10 to No. 200 sieve
Coarse	4.75 mm – 2.00 mm	No. 4 to No. 10 sieve	2.00 mm – 0.425 mm	No. 10 to No. 40 sieve
Medium	2.00 mm – 0.425 mm	No. 10 to No. 40 sieve	-	-
Fine	0.425 mm – 0.075 mm	No. 40 to No. 200 sieve	0.425 mm – 0.075 mm	No. 40 to No. 200 sieve
Fines (Silt and Clay)	< 0.075 mm	Passing No. 200 sieve	< 0.075 mm	Passing No. 200 sieve

Consistency for Cohesive Soil

CONSISTENCY	SPT N-VALUE (BLOWS PER FOOT)	D&M N-VALUE (BLOWS PER FOOT)	POCKET PENETROMETER (UNCONFINED COMPRESSIVE STRENGTH, tsf)
Very Soft	Less than 2	Less than 3	less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.50
Medium Stiff	4 to 8	6 to 12	0.50 to 1.0
Stiff	8 to 15	12 to 25	1.0 to 2.0
Very Stiff	15 to 30	25 to 65	2.0 to 4.0
Hard	30 to 60	65 to 145	greater than 4.0
Very Hard	greater than 60	greater than 145	-

RELATIVE DENSITY	SPT N-VALUE (BLOWS PER FOOT)	D&M N-VALUE (BLOWS PER FOOT)
Very Loose	0 to 4	0 to 11
Loose	4 to 10	11 to 26
Medium Dense	10 to 30	26 to 74
Dense	30 to 50	74 to 120
Very Dense	more than 50	More than 120

Relative Density for Granular Soil

Moisture Designations

TERM	FIELD IDENTIFICATION
Dry	No moisture. Dusty or dry.
Damp	Some moisture. Cohesive soils are usually below plastic limit and are moldable.
Moist	Grains appear darkened, but no visible water is present. Cohesive soils will clump. Sand will bulk. Soils are often at or near plastic limit.
Wet	Visible water on larger grains. Sand and silt exhibit dilatancy. Cohesive soil can be readily remolded. Soil leaves wetness on the hand when squeezed. Soil is much wetter than optimum moisture content and is above plastic limit.

Additional Constituents

Silt and Clay In:		Sand and Gravel In:	
Percent	Fine-Grained Soil	Percent	Coarse-Grained Soil
< 5	trace	< 5	trace
5 – 12	minor	5 – 15	minor
> 12	some	15 – 30	with
		> 30	sandy/gravelly
			Indicate approx. percentage

AASHTO SOIL CLASSIFICATION SYSTEM

TABLE 1. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing .075 mm)				Silt-Clay Materials (More than 35 Percent Passing 0.075)		
Group Classification	A-1	A-3	A-2	A-4	A-5	A-6	A-7
Sieve analysis, percent passing:							
2.00 mm (No. 10)	-	-	-	-	-	-	-
0.425 mm (No. 40)	50 max	51 min	-	-	-	-	-
0.075 mm (No. 200)	25 max	10 max	35 max	36 min	36 min	36 min	36 min
Characteristics of fraction passing 0.425 mm (No. 40)							
Liquid limit				40 max	41 min	40 max	41 min
Plasticity index	6 max	N.P.		10 max	10 max	11 min	11 min
General rating as subgrade	Excellent to good				Fair to poor		

Note: The placing of A-3 before A-2 is necessary in the "left to right elimination process" and does not indicate superiority of A-3 over A-2.

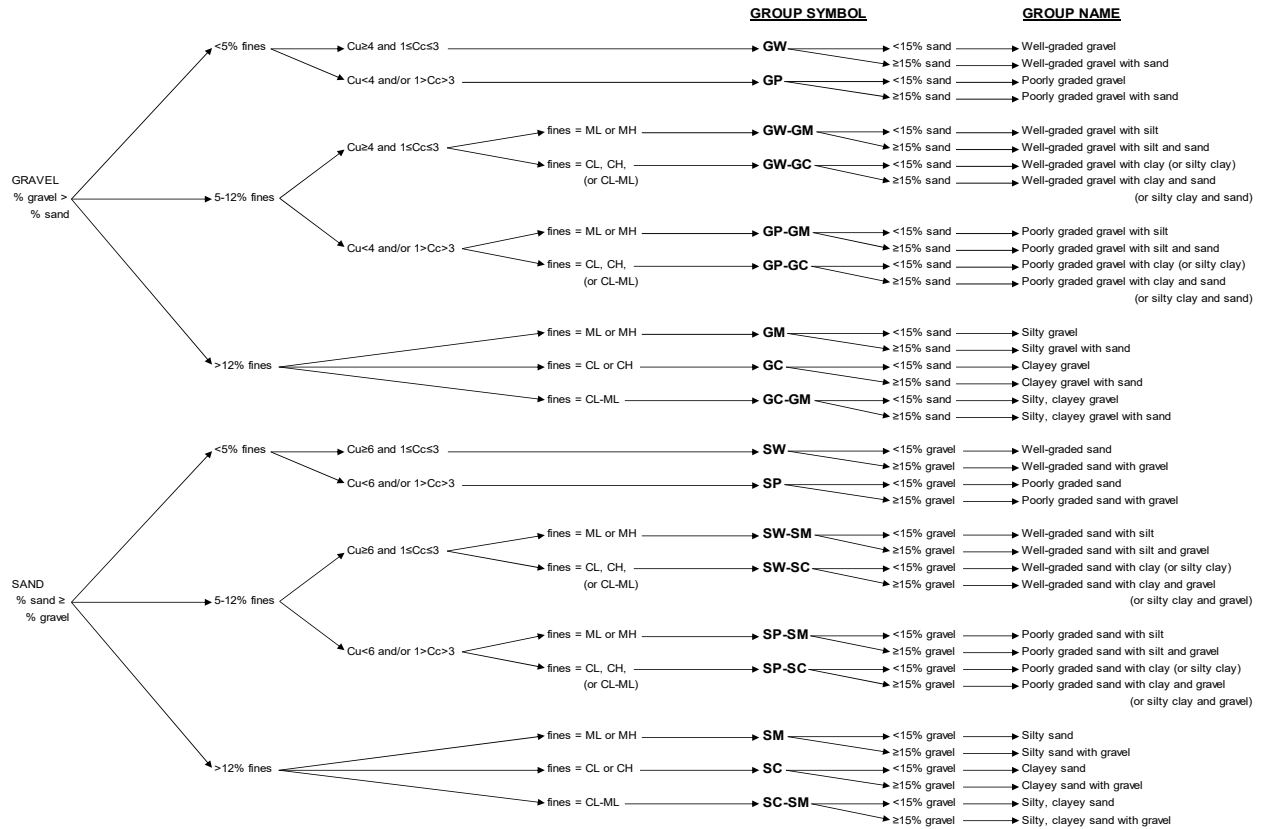
TABLE 2. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing 0.075 mm)							Silt-Clay Materials (More than 35 Percent Passing 0.075 mm)				
	A-1			A-2				A-7				
								A-7-5, A-7-6				
Group Classification	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7-6	
<u>Sieve analysis, percent passing:</u>												
2.00 mm (No. 10)	50 max	-	-	-	-	-	-	-	-	-	-	
0.425 mm (No. 40)	30 max	50 max	51 min	-	-	-	-	-	-	-	-	
0.075 mm (No. 200)	15 max	25 max	10 max	35 max	35 max	35 max	35 max	36 min	36 min	36 min	36 min	
<u>Characteristics of fraction passing 0.425 mm (No. 40)</u>												
Liquid limit				40 max	41 min	40 max	41 min	40 max	41 min	40 max	41 min	
Plasticity index	6 max		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11 min	
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils		
General ratings as subgrade	Excellent to Good							Fair to poor				

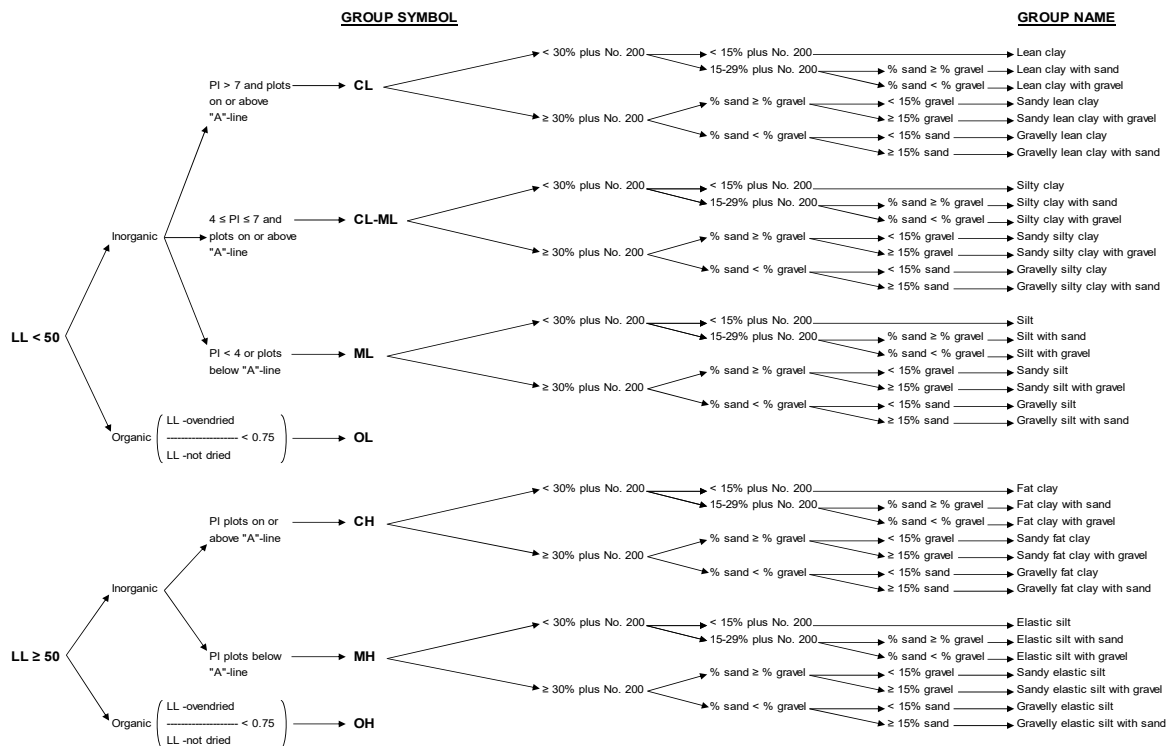
Note: Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30 (see Figure 2).

AASHTO = American Association of State Highway and Transportation Officials

USCS SOIL CLASSIFICATION SYSTEM



Flow Chart for Classifying Coarse-Grained Soils (More Than 50% Retained on No. 200 Sieve)

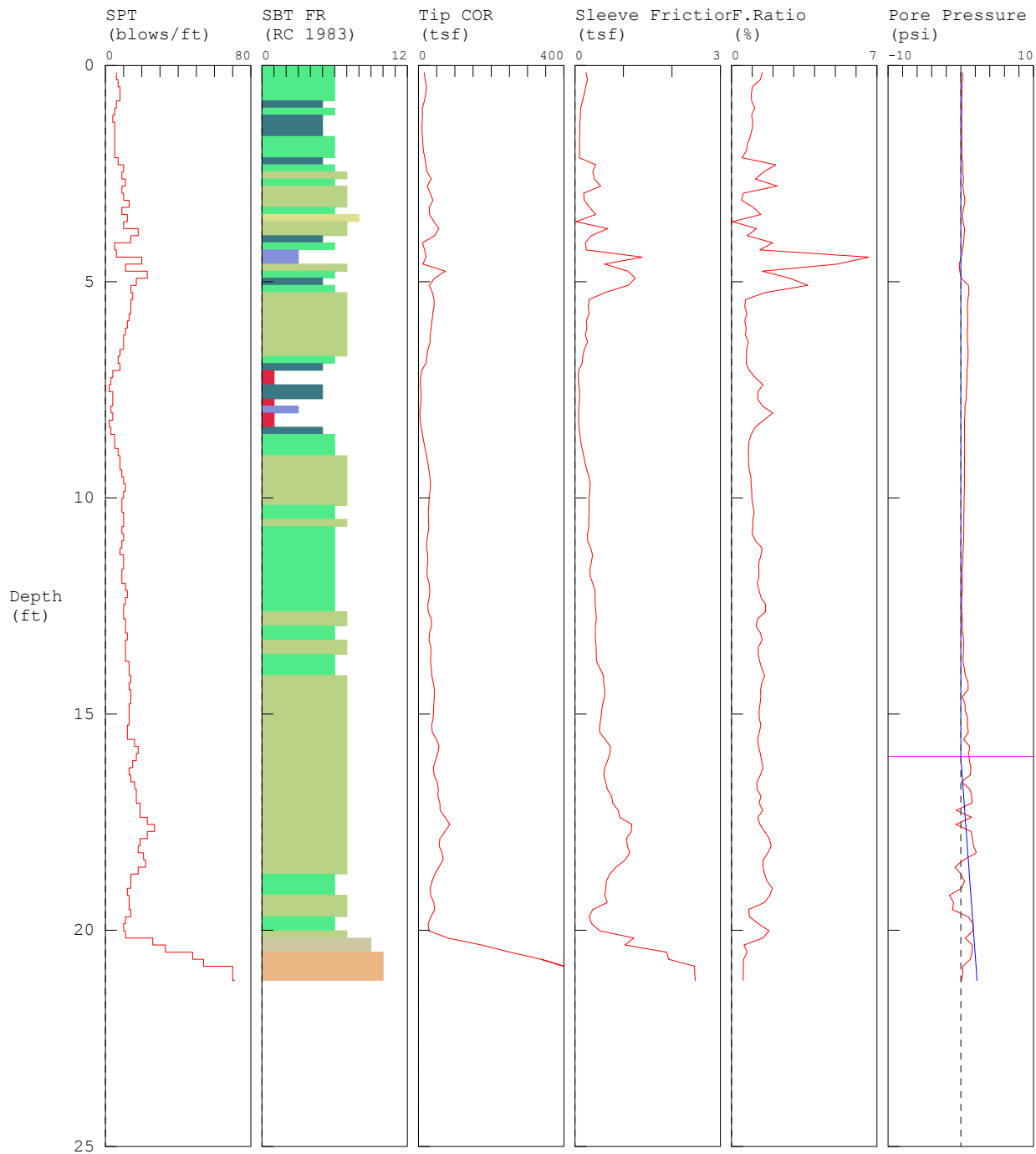


Flow Chart for Classifying Fine-Grained Soil (50% or More Passes No. 200 Sieve)

APPENDIX C
PERTINENT SUBSURFACE INFORMATION
COLLECTED BY OTHERS

GeoDesign / CPT-1 / SW Larson Lane Castle Rock

OPERATOR: OGE BAK
 CONE ID: DDG1296
 HOLE NUMBER: CPT-1
 TEST DATE: 1/13/2020 10:33:34 AM
 TOTAL DEPTH: 21.161 ft

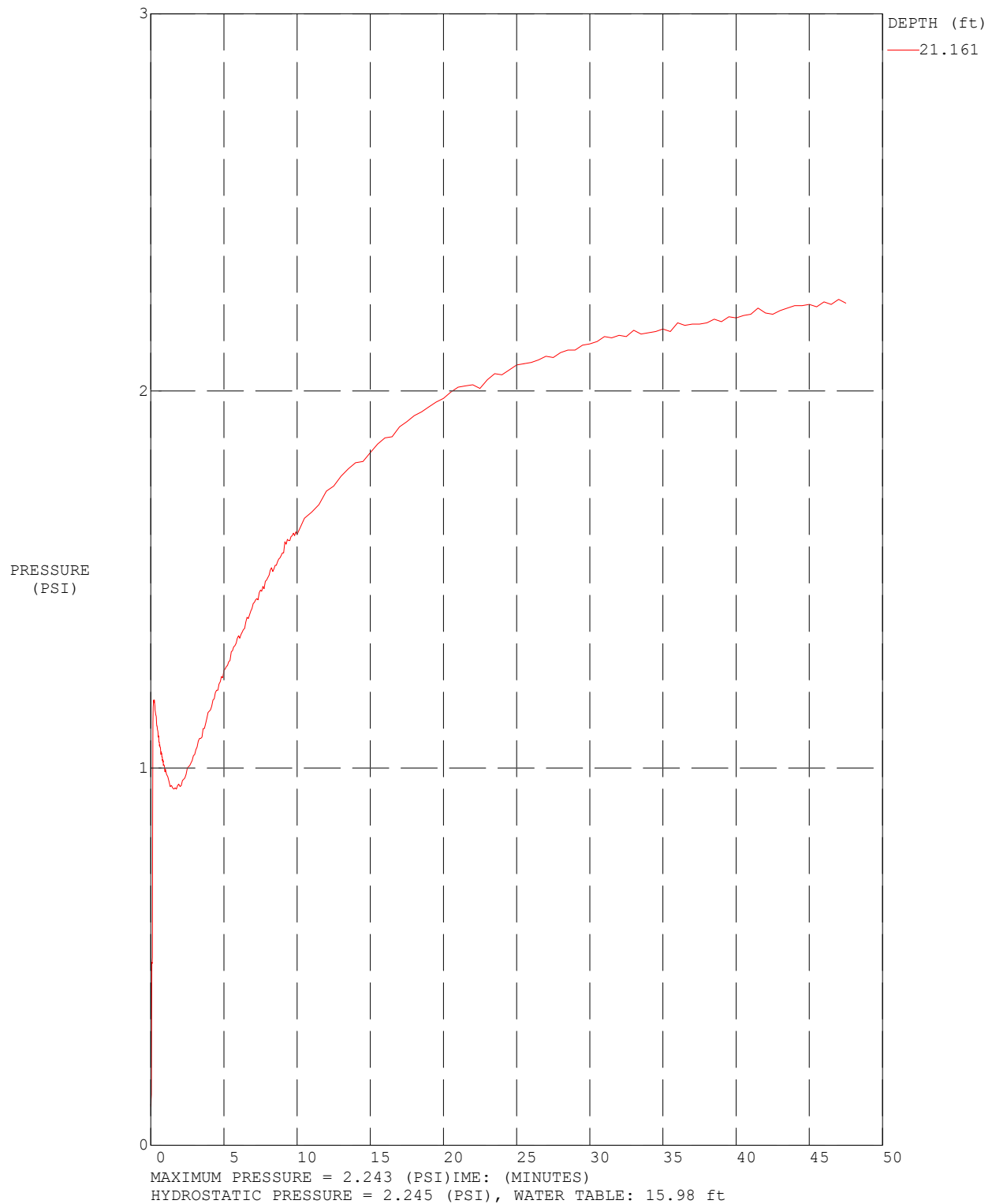


1 sensitive fine grained clay	4 silty clay to clay	7 silty sand to sandy sand	10 gravelly sand to sand
2 organic material	5 clayey silt to silt	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clay	9 sand	12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

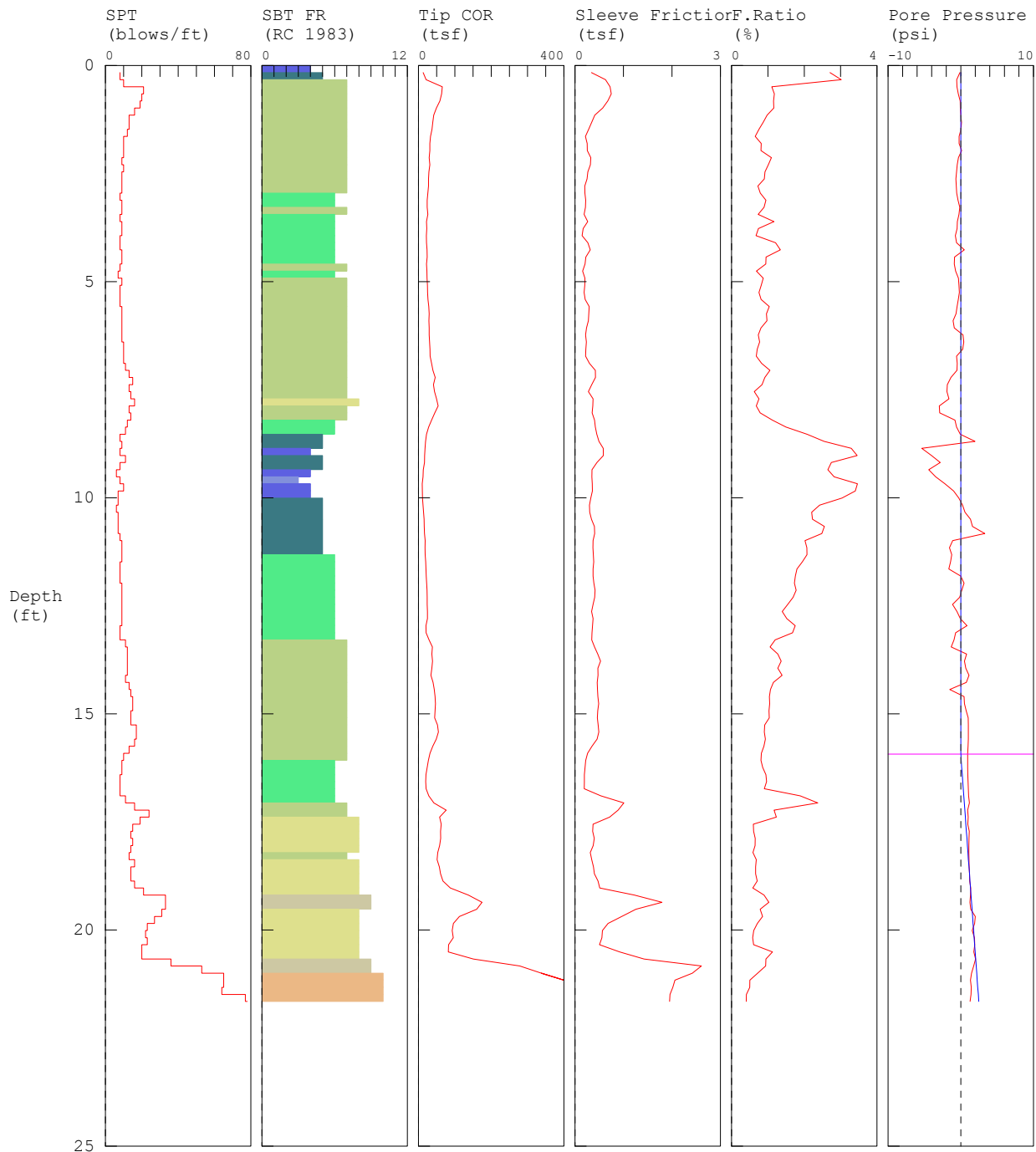
COMMENT: GeoDesign / CPT-1 / SW Larson Lane Castle Rock

TEST DATE: 1/13/2020 10:33:34 AM



GeoDesign / CPT-2 / SW Larson Lane Castle Rock

OPERATOR: OGE BAK
 CONE ID: DDG1296
 HOLE NUMBER: CPT-2
 TEST DATE: 1/13/2020 12:14:29 PM
 TOTAL DEPTH: 21.654 ft

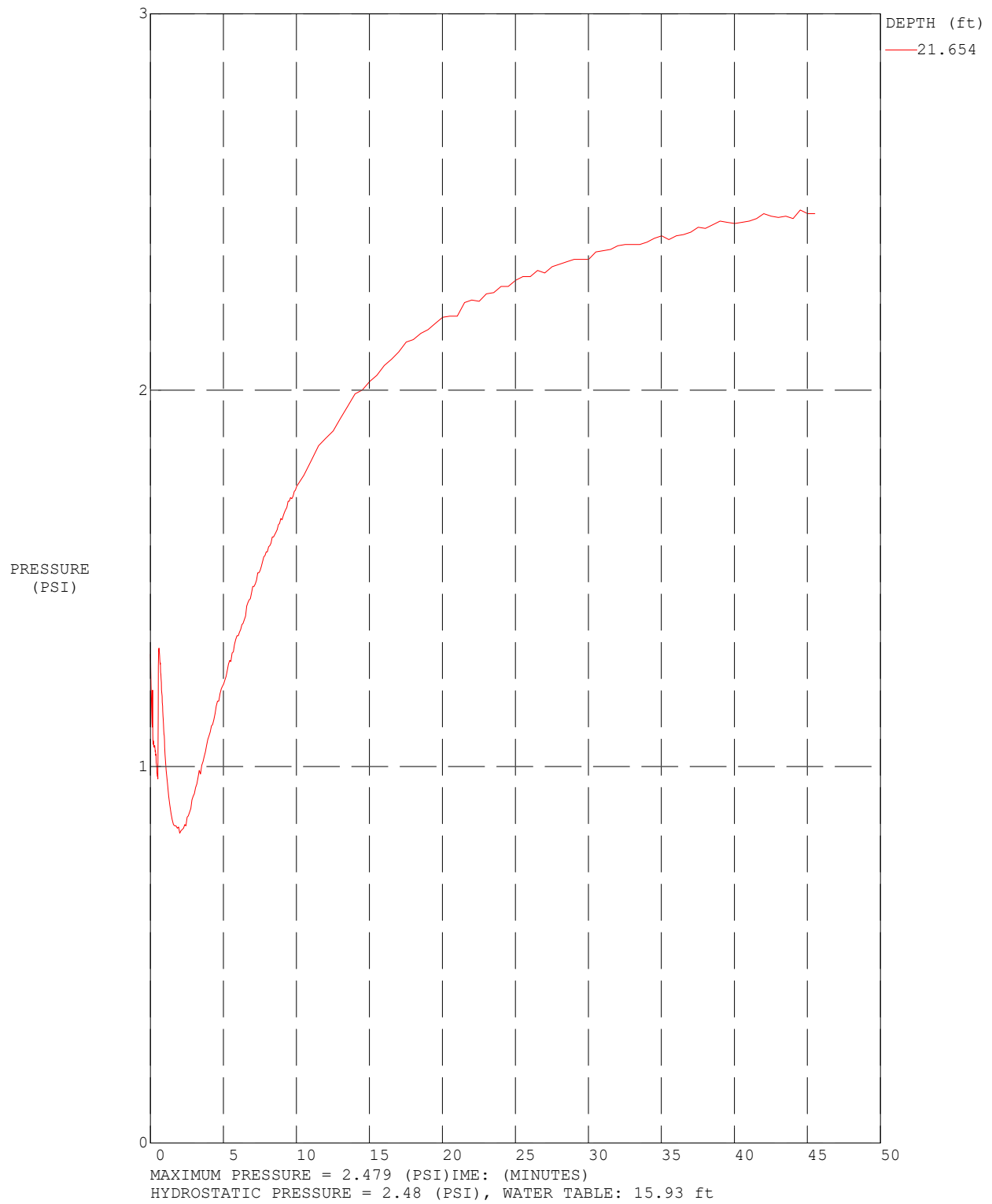


1 sensitive fine grained clay	4 silty clay to clay	7 silty sand to sandy clay	10 gravelly sand to sand
2 organic material	5 clayey silt to silt	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clay	9 sand	12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

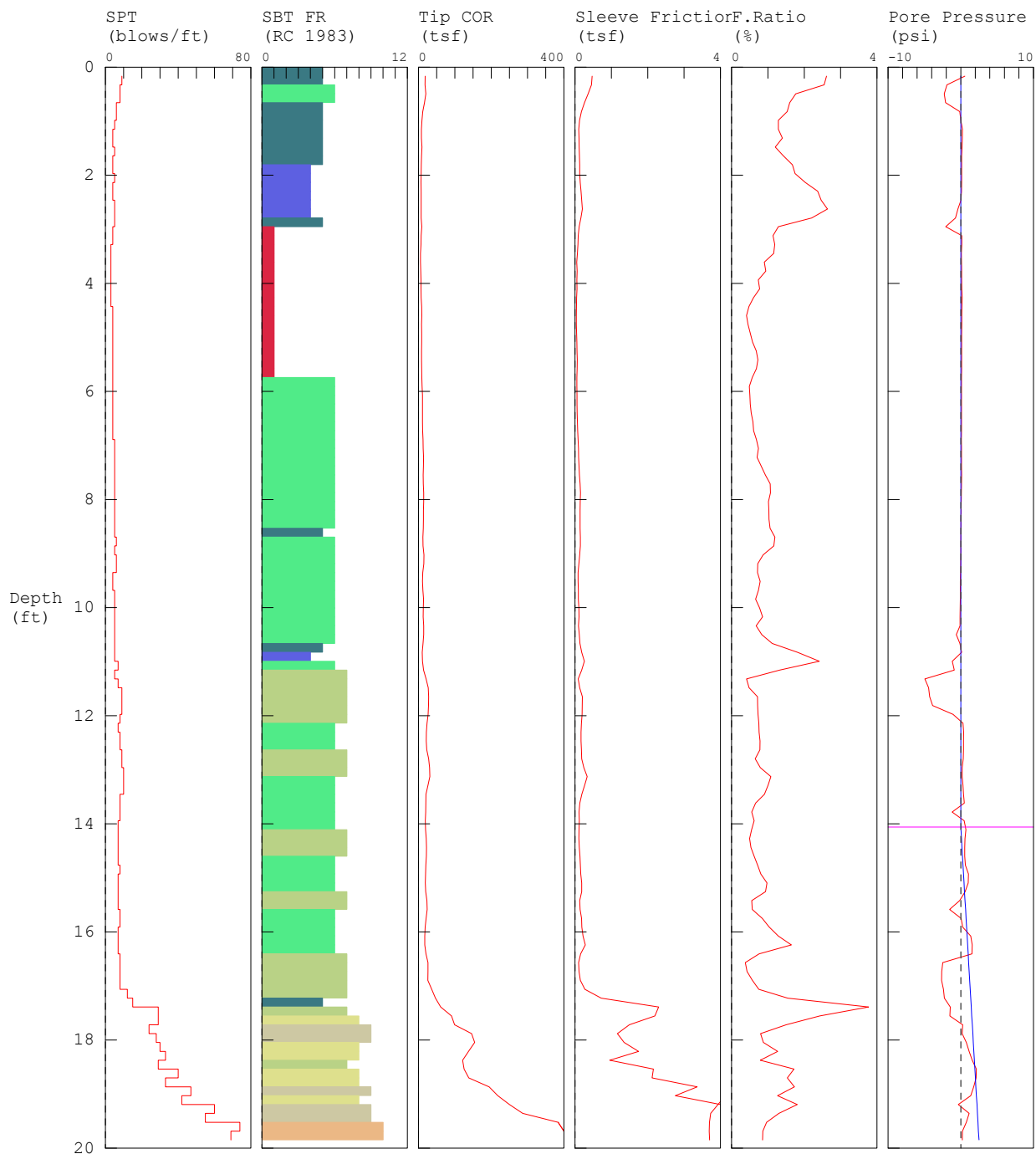
COMMENT: GeoDesign / CPT-2 / SW Larson Lane Castle Rock

TEST DATE: 1/13/2020 12:14:29 PM



GeoDesign / CPT-3 / SW Larson Lane Castle Rock

OPERATOR: OGE BAK
 CONE ID: DDG1296
 HOLE NUMBER: CPT-3
 TEST DATE: 1/13/2020 1:40:18 PM
 TOTAL DEPTH: 19.849 ft

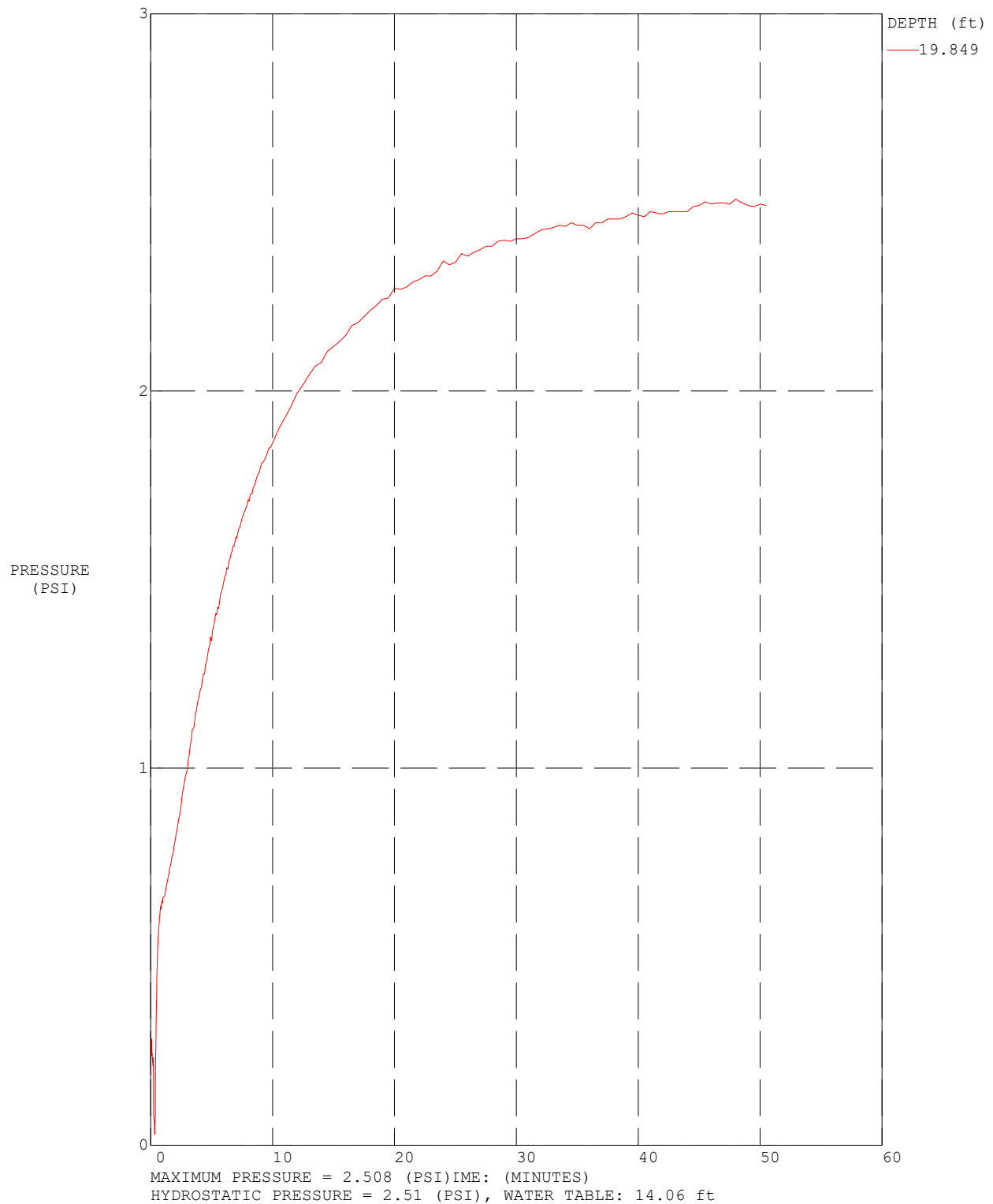


1	sensitive fine gr	4	silty clay to cl	7	silty sand to sandy	10	gravelly sand to sand
2	organic materia	5	clayey silt to silt	8	sand to silty sa	11	very stiff fine grained (*)
3	clay	6	sandy silt to claye	9	sand	12	sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

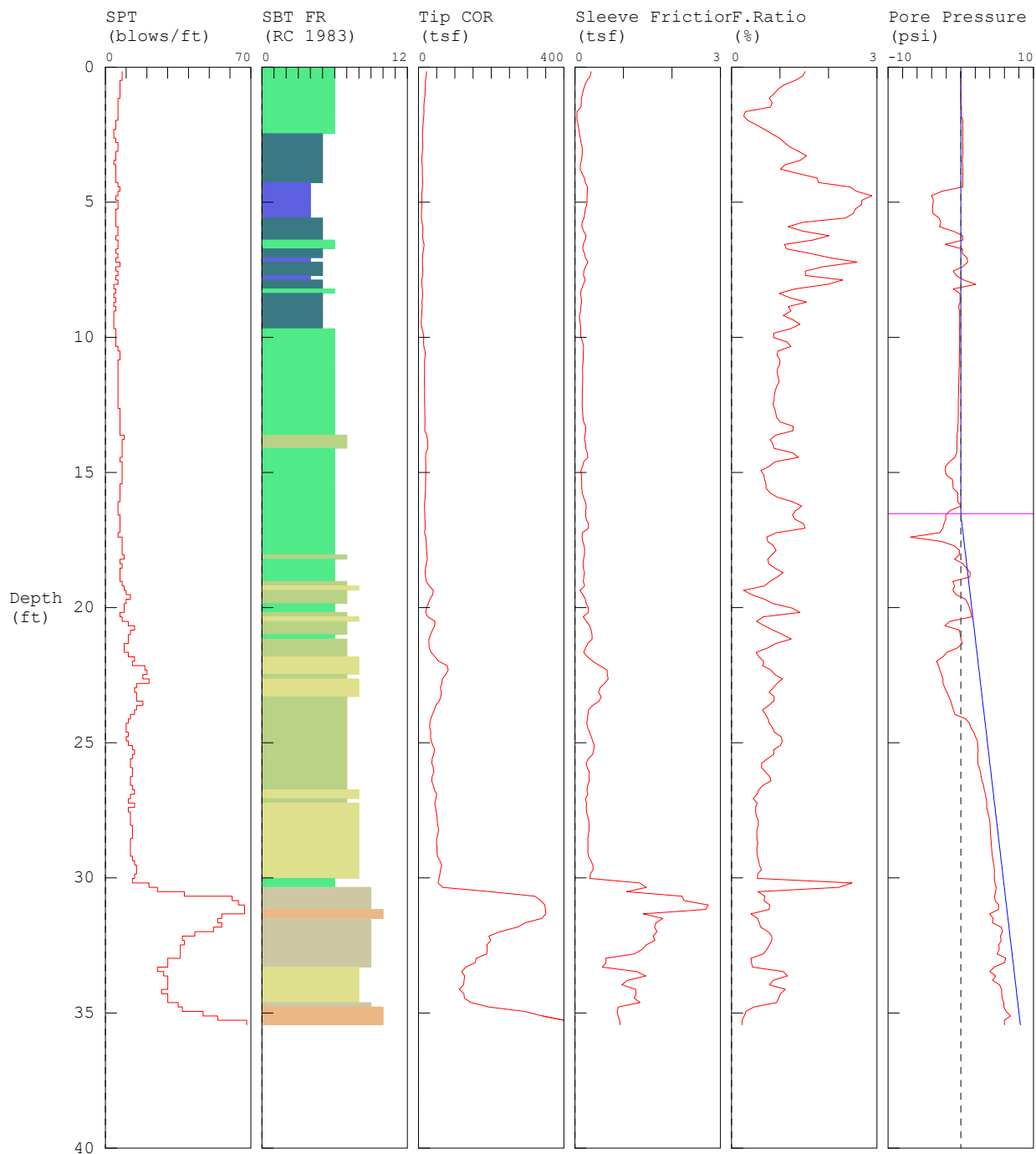
COMMENT: GeoDesign / CPT-3 / SW Larson Lane Castle Rock

TEST DATE: 1/13/2020 10:33:34 AM



GeoDesign / CPT-4 / SW Larson Lane Castle Rock

OPERATOR: OGE BAK
 CONE ID: DDG1296
 HOLE NUMBER: CPT-4
 TEST DATE: 1/13/2020 3:11:15 PM
 TOTAL DEPTH: 35.433 ft

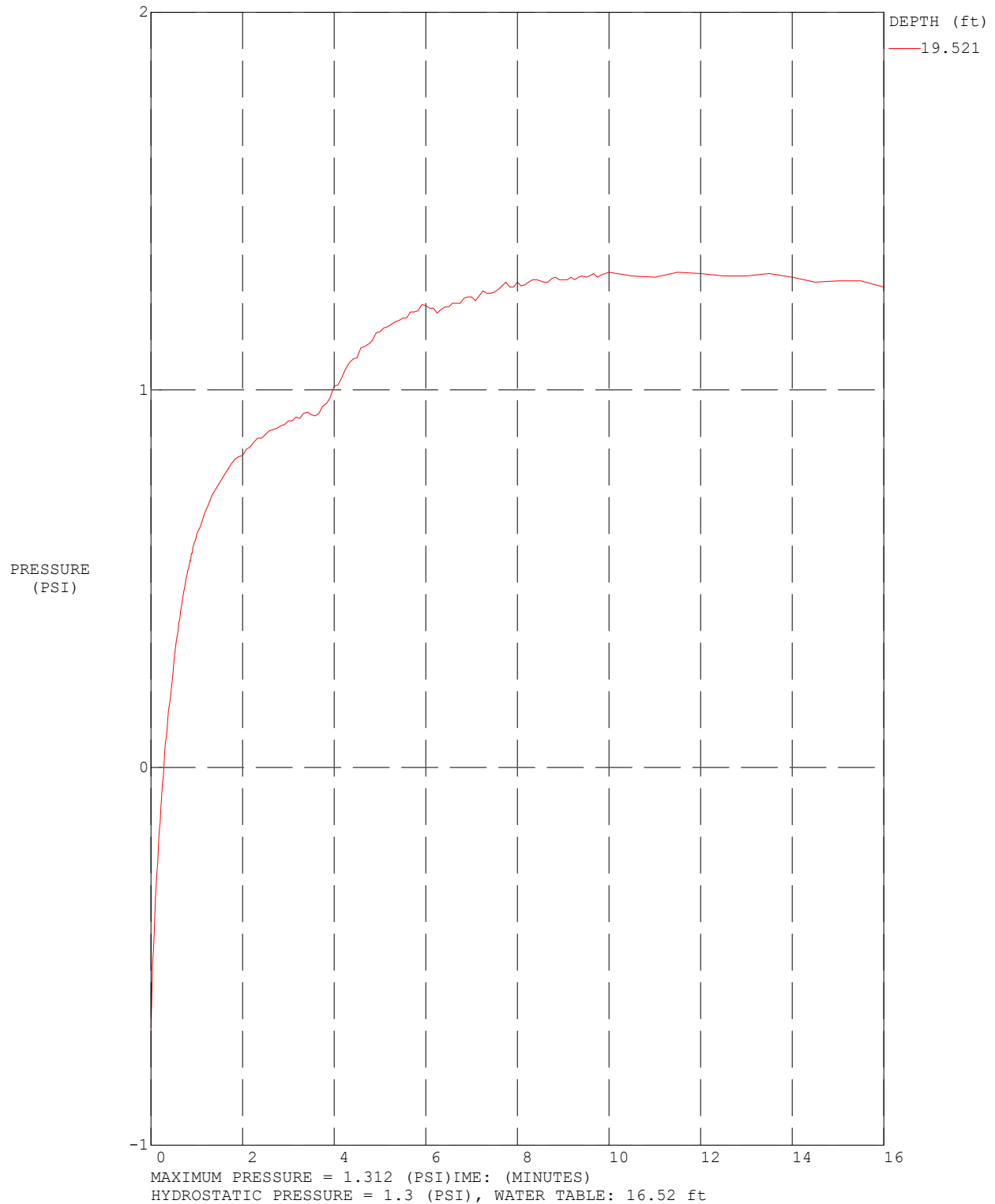


1 sensitive fine grained clay	4 silty clay to clay	7 silty sand to sandy sand	10 gravelly sand to sand
2 organic material	5 clayey silt to silt	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey sand	9 sand	12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

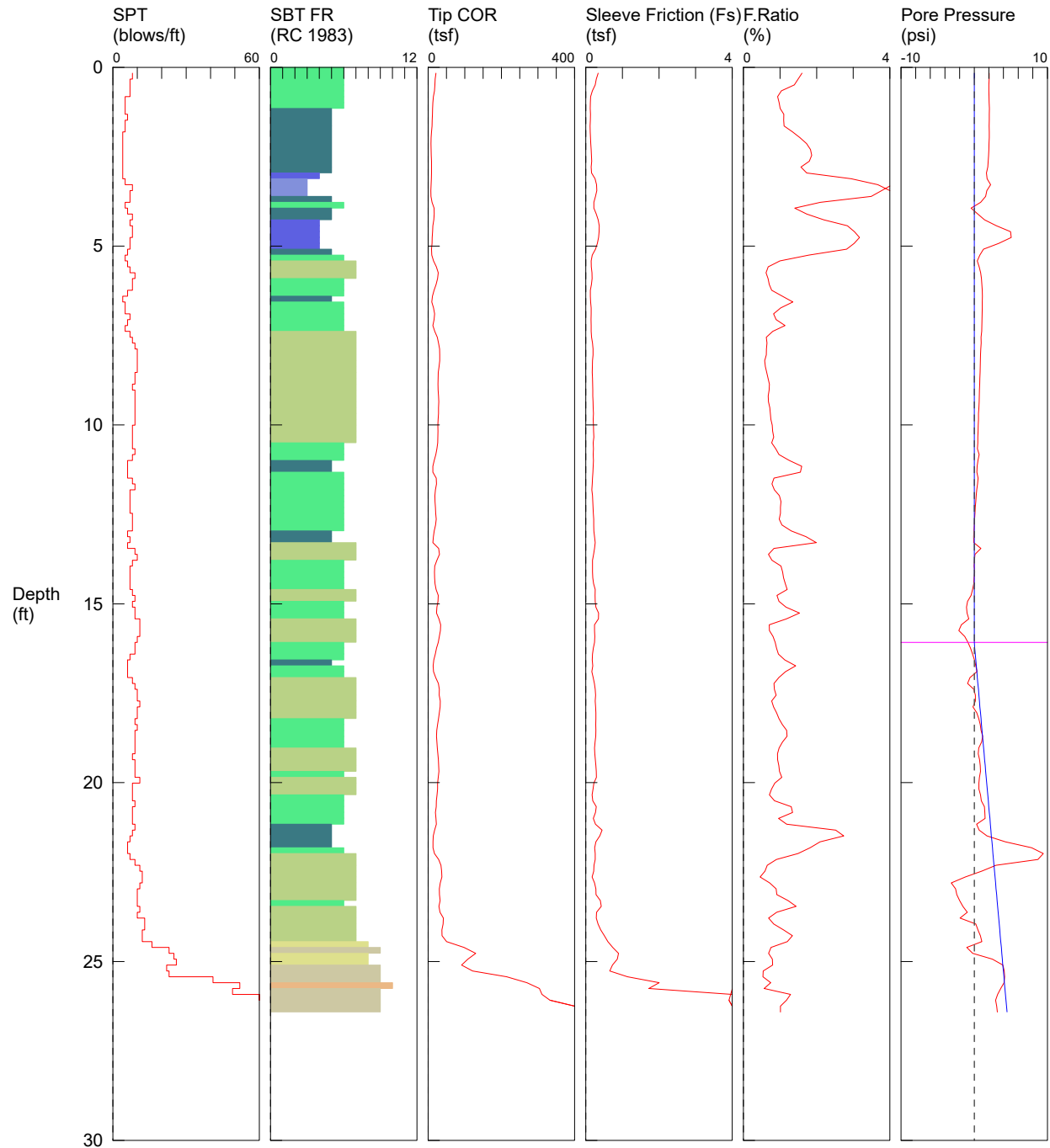
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TEST DATE: 1/13/2020 3:11:15 PM



GeoDesign / CPT-5 / SW Larson Lane Castle Rock

OPERATOR: OGE BAK
 CONE ID: DDG1296
 HOLE NUMBER: CPT-5
 TEST DATE: 1/14/2020 8:44:26 AM
 TOTAL DEPTH: 26.411 ft

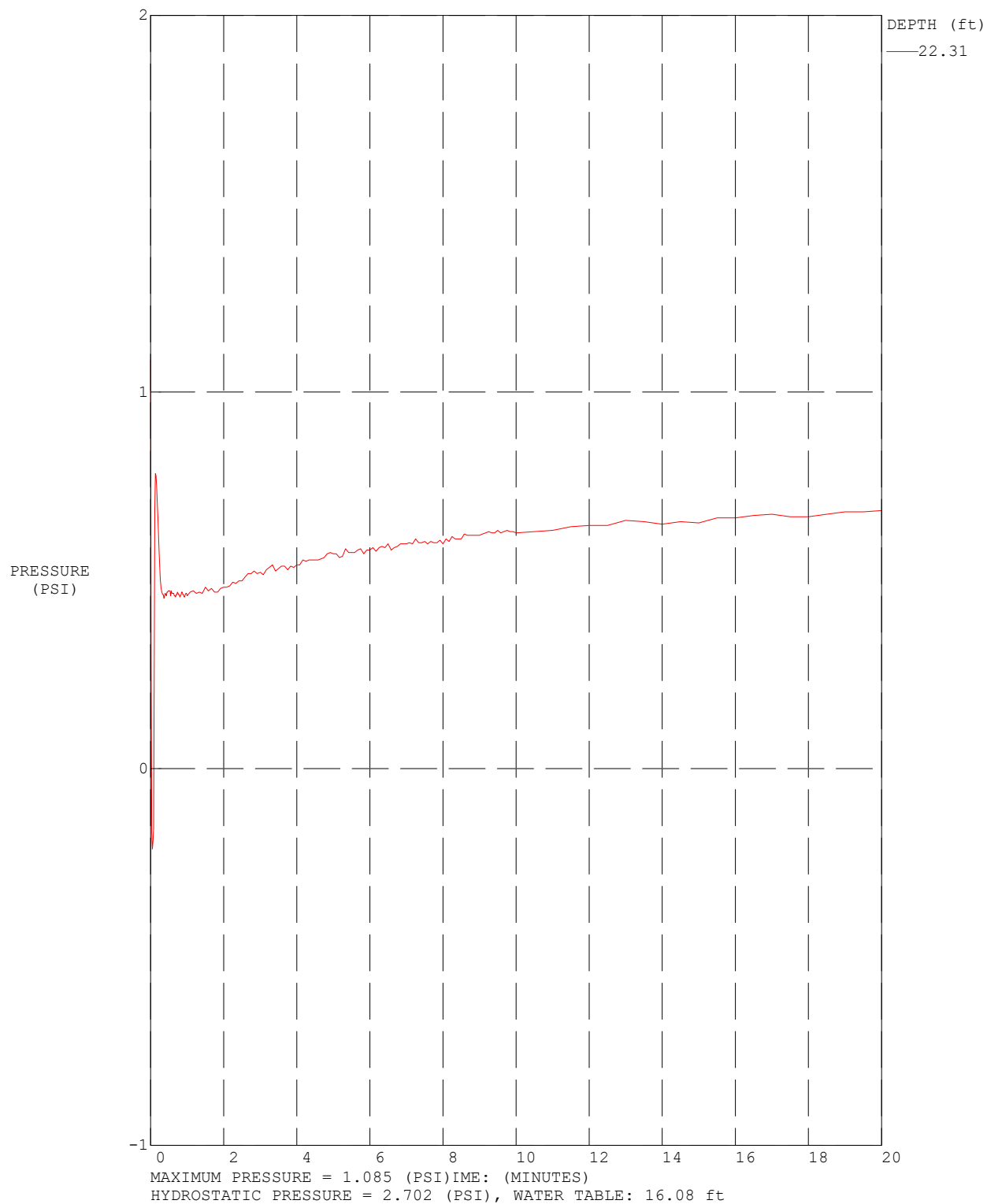


- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |

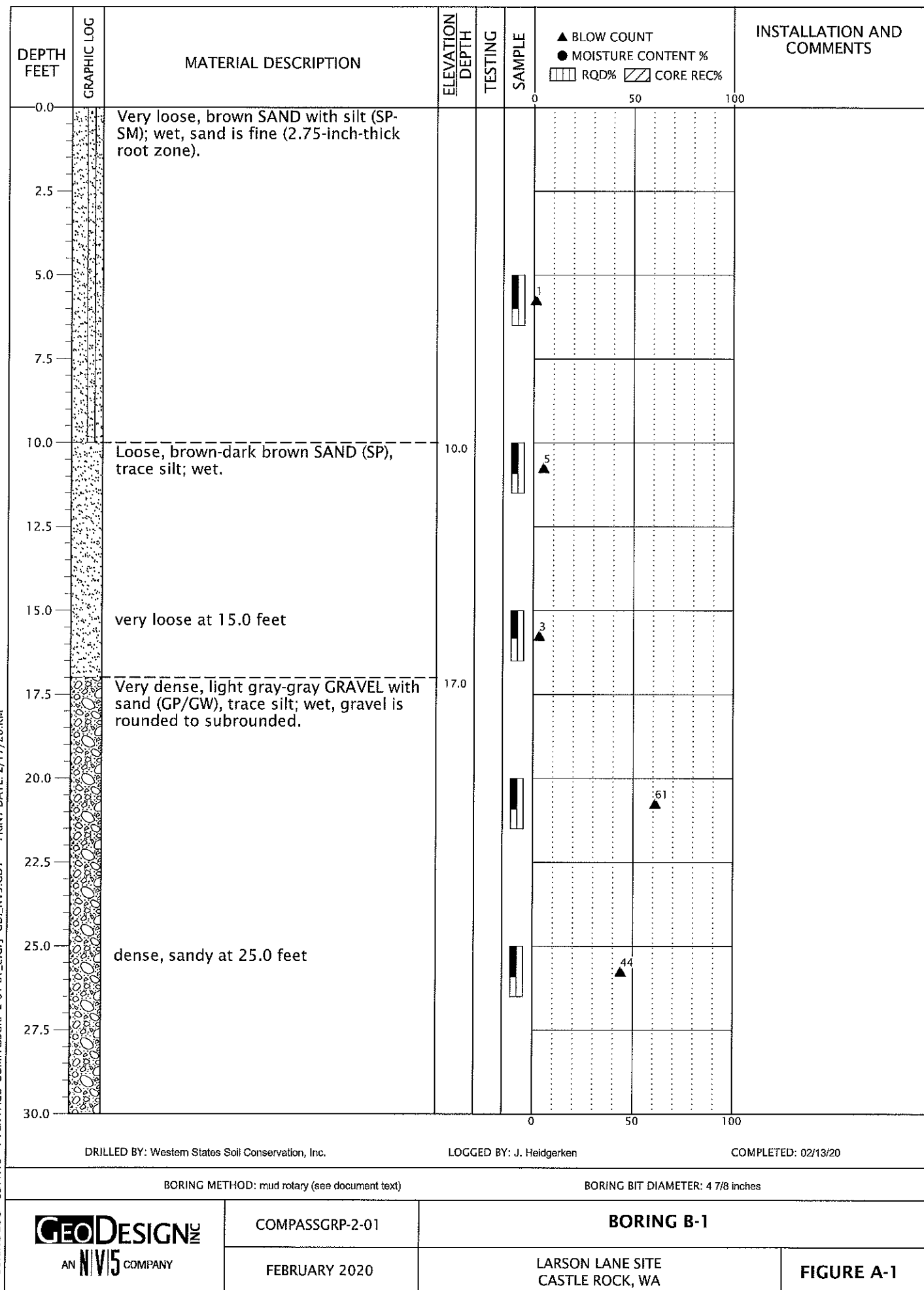
*SBT/SPT CORRELATION: UBC-1983

COMMENT: GeoDesign / CPT-5 / SW Larson Lane Castle Rock

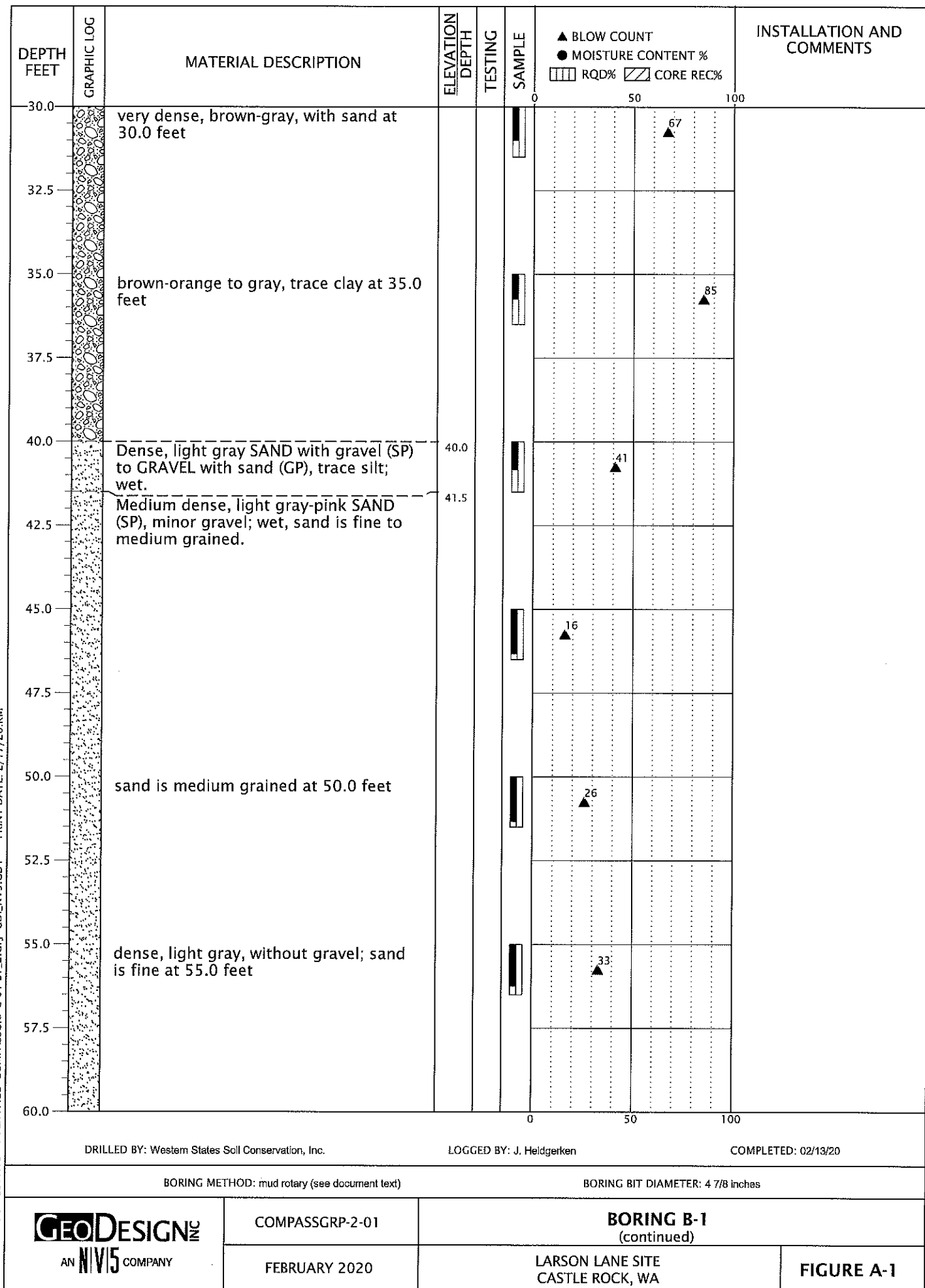
TEST DATE: 1/14/2020 8:44:26 AM



BORING LOG - GDI-NV5 - 1 PER PAGE COMPASSGRP-2-01-B1-2.GPJ GDI-NV5.CDT PRINT DATE: 2/17/20:KM



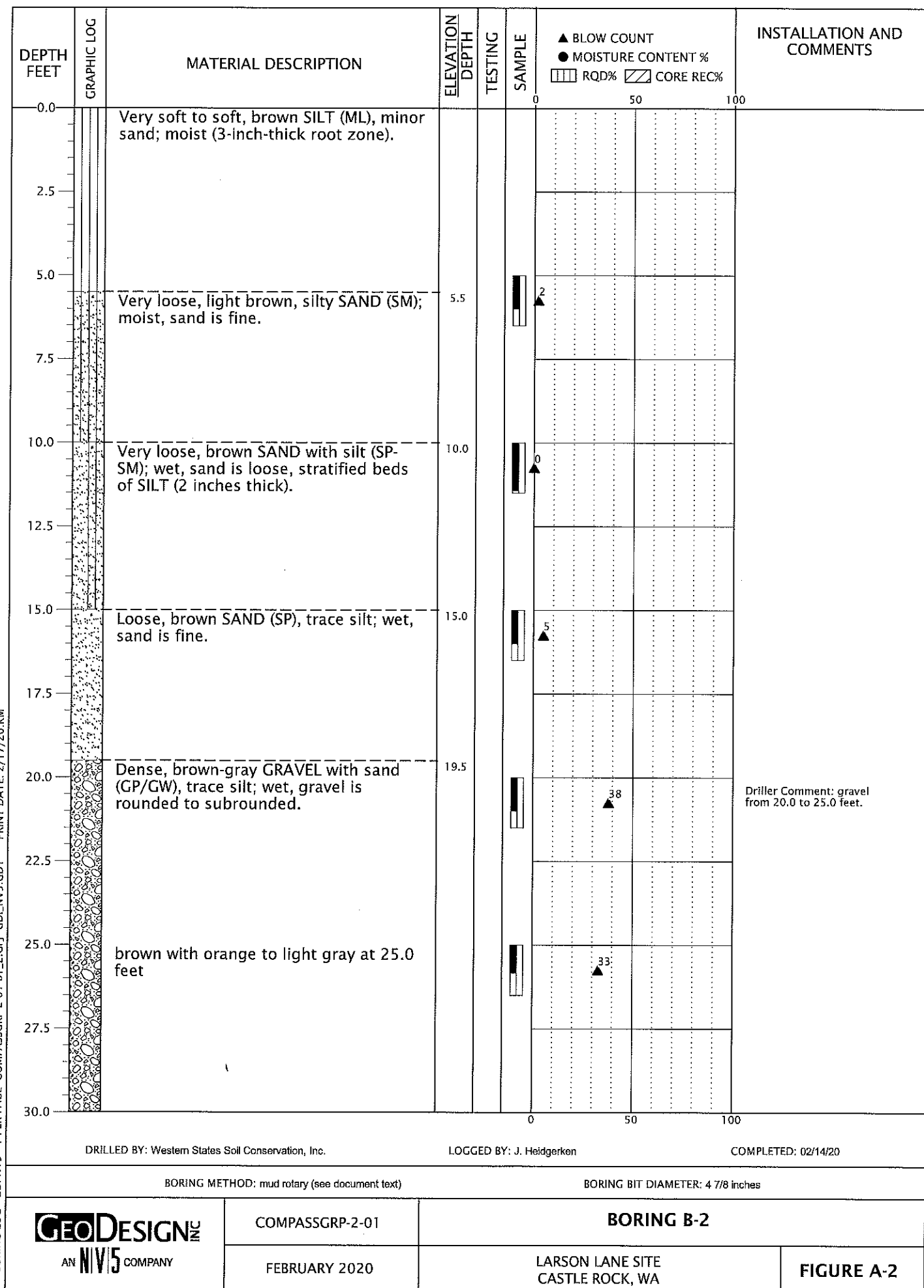
BORING LOG - CDI-NV5 - 1 PER PAGE COMPASSGRP-2-01-B1_2.GPJ GDLNV5.GDT PRINT DATE: 2/17/20:KM

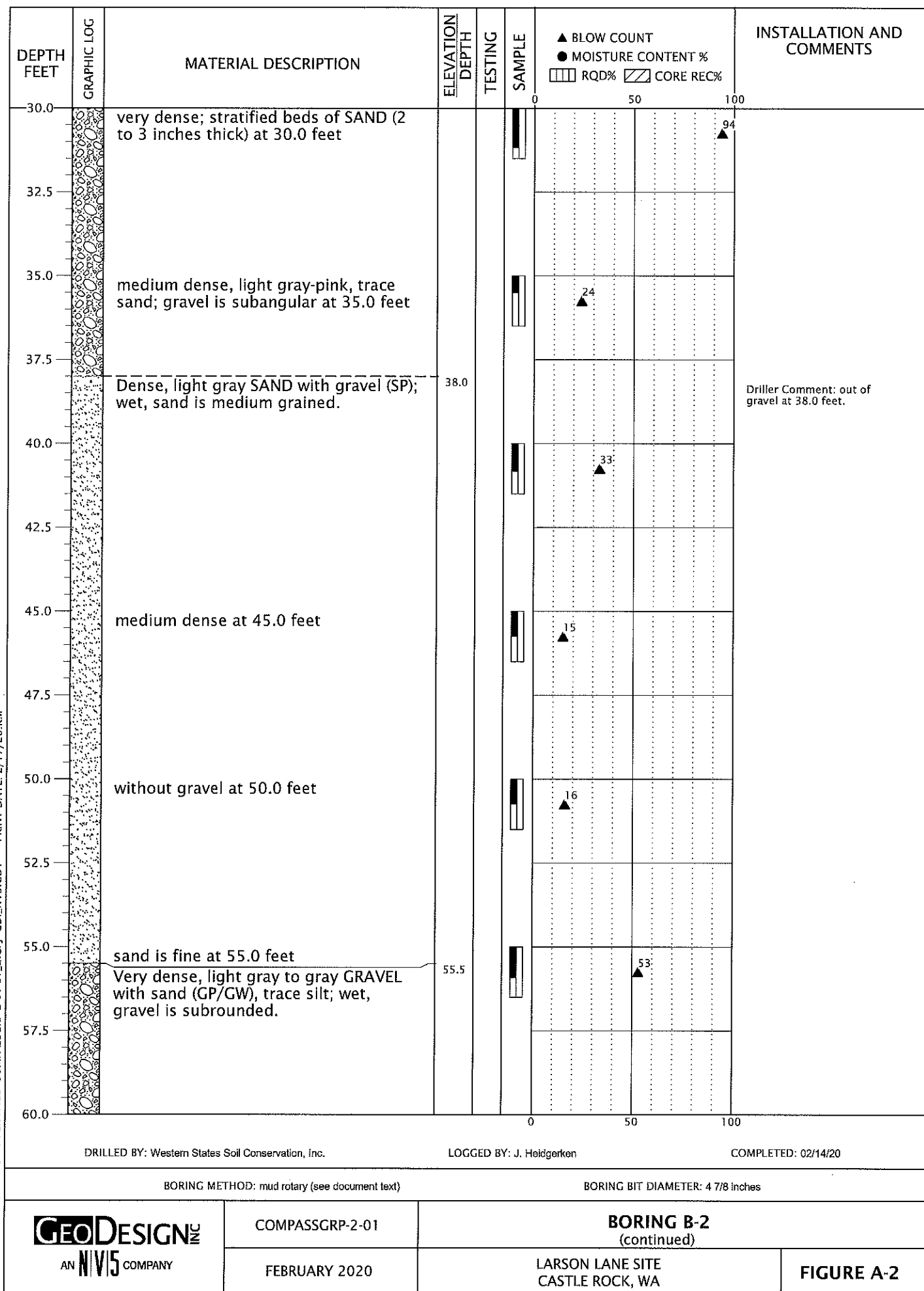


BORING LOG - CDH-NV5 - 1 PER PAGE COMPASSGRP-2-01-B1-2.GPJ GDLNV5.GDT PRINT DATE: 2/17/20:KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % □ RQD% ▨ CORE REC%	INSTALLATION AND COMMENTS
60.0		sand is medium at 60.0 feet				33	
62.5							
65.0						48	
66.0		Dense, gray-dark gray GRAVEL with sand (GP/GW), trace silt; wet.	66.0				
67.5							
70.0						38	Gravelly drilling at 70.0 feet.
72.5							
75.0		very dense at 75.0 feet				57	Gravelly drilling at 75.0 feet.
77.5							
80.0		dense at 80.0 feet				46	
81.5		Exploration completed at a depth of 81.5 feet. Hammer efficiency factor is 85.8 percent.	81.5				Surface elevation was not measured at the time of exploration.
82.5							
85.0							
87.5							
90.0							
DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: J. Heidgerken COMPLETED: 02/13/20							
BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches							
GEO DESIGN INC AN NVIS COMPANY		COMPASSGRP-2-01	BORING B-1 (continued)				
		FEBRUARY 2020	LARSON LANE SITE CASTLE ROCK, WA				
							FIGURE A-1

BORING LOG - CDI-HV5 - 1 PER PAGE COMPASSGRP-2-01-81-2.GPJ GDLNV5.GDT PRINT DATE: 2/17/20:KM





BORING LOG - GDI-NV5 - 1 PER PAGE COMPASSGRP-2-01-BT_2.GPJ GDI_NV5.GDT PRINT DATE: 2/17/20-KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC%	INSTALLATION AND COMMENTS
60.0		(continued from previous page)					
60.5		Medium dense, light gray-gray SAND (SP), trace silt; wet, sand is fine to medium.	60.5			29	
62.5							
63.5		Medium stiff, gray SILT (ML), some clay, trace organics (woody debris); moist, woody debris is less than 0.125-inch thick.	63.5			6	
65.0							
67.5							
70.0		stiff, trace clay at 70.0 feet				10	
72.5							
75.0		stiff to very stiff, gray-brown, without clay; laminated beds of organics at 75.0 feet				15	
77.5							
80.0		stiff at 80.0 feet				10	
81.5		Exploration completed at a depth of 81.5 feet. Hammer efficiency factor is 85.8 percent.	81.5				Surface elevation was not measured at the time of exploration.
82.5							
85.0							
87.5							
90.0							
DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: J. Heidgerken COMPLETED: 02/14/20							
BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 4 7/8 inches							
GEO DESIGN INC AN NVIS COMPANY		COMPASSGRP-2-01	BORING B-2 (continued)				
		FEBRUARY 2020	LARSON LANE SITE CASTLE ROCK, WA				FIGURE A-2

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0					050100		
0.8		Loose, dark brown, silty SAND (SM), trace organics; moist to wet, sand is fine (3-inch-thick root zone).	0.8		☒		
2.5		Loose, brown SAND with silt (SP-SM), trace organics; moist, sand is fine. without organics at 1.5 feet			☒		
5.0							
7.5							
10.0		Loose, brown SAND (SP), trace silt; wet, sand is medium.	10.0		☒		Severe caving observed at 9.5 feet. Rapid groundwater seepage observed at 10.5 feet.
12.5		Exploration completed at a depth of 12.5 feet.	12.5				Surface elevation was not measured at the time of exploration.
15.0							
17.5							
20.0					050100		
EXCAVATED BY: Tapani, Inc.		LOGGED BY: J. Guenther		COMPLETED: 01/14/20			
EXCAVATION METHOD: mini excavator (see document text)							
GEO DESIGN AN NV5 COMPANY		COMPASSGRP-2-01	TEST PIT TP-1				
		MARCH 2020	LARSON LANE SITE CASTLE ROCK, WA			FIGURE A-3	

TEST PIT LOG - GDI-NV5 - 1 PER PAGE COMPASSGRP-2-01-B1_2-TP1_6.GPJ GDI-NV5.GDT PRINT DATE: 3/3/20KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0		Loose, dark brown, silty SAND (SM), trace organics; moist, sand is fine (3-inch-thick root zone).			0	50	100
1.5		Loose, light brown SAND with silt (SP-SM), trace organics; moist, sand is fine.	1.5		0	50	100
2.5		without organics at 2.5 feet			0	50	100
5.0					0	50	100
7.5					0	50	100
10.0					0	50	100
11.5		Loose, brown SAND (SP), trace silt; moist, sand is medium.	11.5		0	50	100
12.5		Exploration completed at a depth of 13.0 feet.	13.0		0	50	100
15.0					0	50	100
17.5					0	50	100
20.0					0	50	100
EXCAVATED BY: Tapani, Inc. LOGGED BY: J. Guenther COMPLETED: 01/14/20							
EXCAVATION METHOD: mini excavator (see document text)							
		COMPASSGRP-2-01	TEST PIT TP-2				
AN NV5 COMPANY		MARCH 2020	LARSON LANE SITE CASTLE ROCK, WA				FIGURE A-4

TEST PIT LOG - GDI-NV5 - 1 PER PAGE COMPASSGRP-2-01-B1_2-TP1_6.GPJ GDI-NV5.GDT PRINT DATE: 3/3/20KM

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0		Medium dense, dark brown SAND with silt (SP-SM), trace gravel and organics; moist to wet, sand is fine to coarse, gravel is fine and subrounded (4-inch-thick root zone). gray-brown, minor gravel; sand is medium to coarse at 0.4 foot without organics at 1.5 feet				050100	Minor caving observed between 1.0 and 4.0 feet.
2.5							
5.0		gray at 5.5 feet					
7.5							
10.0							Slow groundwater seepage observed at 9.0 feet.
		Stiff, dark brown, sandy SILT (MH), trace organics; moist, silt has medium plasticity, sand is fine.	10.5				Surface elevation was not measured at the time of exploration.
		Exploration completed at a depth of 11.5 feet.	11.5				
12.5							
15.0							
17.5							
20.0						050100	
EXCAVATED BY: Tapani, Inc.		LOGGED BY: J. Guenther				COMPLETED: 01/14/20	
EXCAVATION METHOD: mini excavator (see document text)							
 AN NV5 COMPANY		COMPASSGRP-2-01		TEST PIT TP-3			
		MARCH 2020		LARSON LANE SITE CASTLE ROCK, WA		FIGURE A-5	

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0		Very loose to loose, gray-brown SAND with silt (SP-SM), minor gravel, trace organics; moist to wet, sand is medium to coarse.				050100	Severe caving observed from 0.0 to 10.5 feet.
2.5		without organics at 1.5 feet			☒		
5.0							
7.5							
10.0		gray at 9.5 feet			☒		Slow groundwater seepage observed at 10.0 feet.
10.5		Medium stiff, dark brown, sandy SILT (MH), trace organics; moist, silt has medium plasticity, sand is fine.	10.5		☒		
12.0		Exploration completed at a depth of 12.0 feet.	12.0				Surface elevation was not measured at the time of exploration.
12.5							
15.0							
17.5							
20.0						050100	
EXCAVATED BY: Tapani, Inc.		LOGGED BY: J. Guenther		COMPLETED: 01/14/20			
EXCAVATION METHOD: mini excavator (see document text)							
 AN NV5 COMPANY		COMPASSGRP-2-01		TEST PIT TP-4			
		MARCH 2020		LARSON LANE SITE CASTLE ROCK, WA		FIGURE A-6	

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0		Loose, gray-brown SAND with silt (SP-SM), minor gravel, trace organics; moist to wet, sand is fine to coarse, gravel is fine to coarse and subrounded (4-inch-thick root zone). without organics at 1.5 feet				0 50 100	Severe caving observed from 0.0 to 8.0 feet.
2.5					☒		
5.0							
7.5		Soft to very soft, dark brown, sandy SILT (MH), trace organics; moist, silt has medium plasticity, sand is fine.	7.5		☒		Numerous sticks and roots from 8.0 to 9.0 feet.
10.0							
12.5							Moderate groundwater seepage observed at 12.0 feet.
13.0		Exploration completed at a depth of 13.0 feet.	13.0				Surface elevation was not measured at the time of exploration.
15.0							
17.5							
20.0						0 50 100	
EXCAVATED BY: Tapani, Inc.		LOGGED BY: J. Guenther		COMPLETED: 01/14/20			
EXCAVATION METHOD: mini excavator (see document text)							
 AN NVIS COMPANY		COMPASSGRP-2-01		TEST PIT TP-5			
		MARCH 2020		LARSON LANE SITE CASTLE ROCK, WA		FIGURE A-7	

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION DEPTH	TESTING	SAMPLE	● MOISTURE CONTENT %	COMMENTS
0.0		Medium dense to dense, gray-brown SAND with silt (SP-SM), minor gravel, trace organics; moist to wet, sand is fine to coarse, gravel is fine to coarse and subrounded.				050100	Severe caving observed from 0.0 to 11.0 feet.
2.5		brown, without gravel and organics; sand is fine at 3.0 feet			☒		
5.0					☒		
7.5							
10.0		Loose, dark brown SAND (SP), trace silt; wet, sand is medium.	10.0		☒		Rapid groundwater seepage observed at 10.0 feet.
		Exploration terminated at a depth of 11.0 feet due to caving.	11.0		☒		Surface elevation was not measured at the time of exploration.
12.5							
15.0							
17.5							
20.0						050100	
EXCAVATED BY: Tapani, Inc.		LOGGED BY: J. Guenther		COMPLETED: 01/14/20			
EXCAVATION METHOD: mini excavator (see document text)							
 AN NVI5 COMPANY		COMPASSGRP-2-01		TEST PIT TP-6			
		MARCH 2020		LARSON LANE SITE CASTLE ROCK, WA		FIGURE A-8	

APPENDIX D

REPORT LIMITATIONS AND IMPORTANT INFORMATION

Date: March 30, 2023
Project: Landing on the Cowlitz
Castle Rock, Washington

Geotechnical and Environmental Report Limitations and Important Information

Report Purpose, Use, and Standard of Care

This report has been prepared in accordance with standard fundamental principles and practices of geotechnical engineering and/or environmental consulting, and in a manner consistent with the level of care and skill typical of currently practicing local engineers and consultants. This report has been prepared to meet the specific needs of specific individuals for the indicated site. It may not be adequate for use by other consultants, contractors, or engineers, or if change in project ownership has occurred. It should not be used for any other reason than its stated purpose without prior consultation with Columbia West Engineering, Inc. (Columbia West). It is a unique report and not applicable for any other site or project. If site conditions are altered, or if modifications to the project description or proposed plans are made after the date of this report, it may not be valid. Columbia West cannot accept responsibility for use of this report by other individuals for unauthorized purposes, or if problems occur resulting from changes in site conditions for which Columbia West was not aware or informed.

Report Conclusions and Preliminary Nature

This geotechnical or environmental report should be considered preliminary and summary in nature. The recommendations contained herein have been established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. The exploration and associated laboratory analysis of collected representative samples identifies soil conditions at specific discreet locations. It is assumed that these conditions are indicative of actual conditions throughout the subject property. However, soil conditions may differ between tested locations at different seasonal times of the year, either by natural causes or human activity. Distinction between soil types may be more abrupt or gradual than indicated on the soil logs. This report is not intended to stand alone without understanding of concomitant instructions, correspondence, communication, or potential supplemental reports that may have been provided to the client.

Because this report is based upon observations obtained at the time of exploration, its adequacy may be compromised with time. This is particularly relevant in the case of natural disasters, earthquakes, floods, or other significant events. Report conclusions or interpretations may also be subject to revision if significant development or other manmade impacts occur within or in proximity to the subject property. Groundwater conditions, if presented in this report, reflect observed conditions at the time of investigation. These conditions may change annually, seasonally or as a result of adjacent development.

Additional Investigation and Construction QA/QC

Columbia West should be consulted prior to construction to assess whether additional investigation above and beyond that presented in this report is necessary. Even slight variations in soil or site conditions may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent QA/QC construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this report or future

performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled *Report Ownership*. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

Report Limitations for Contractors

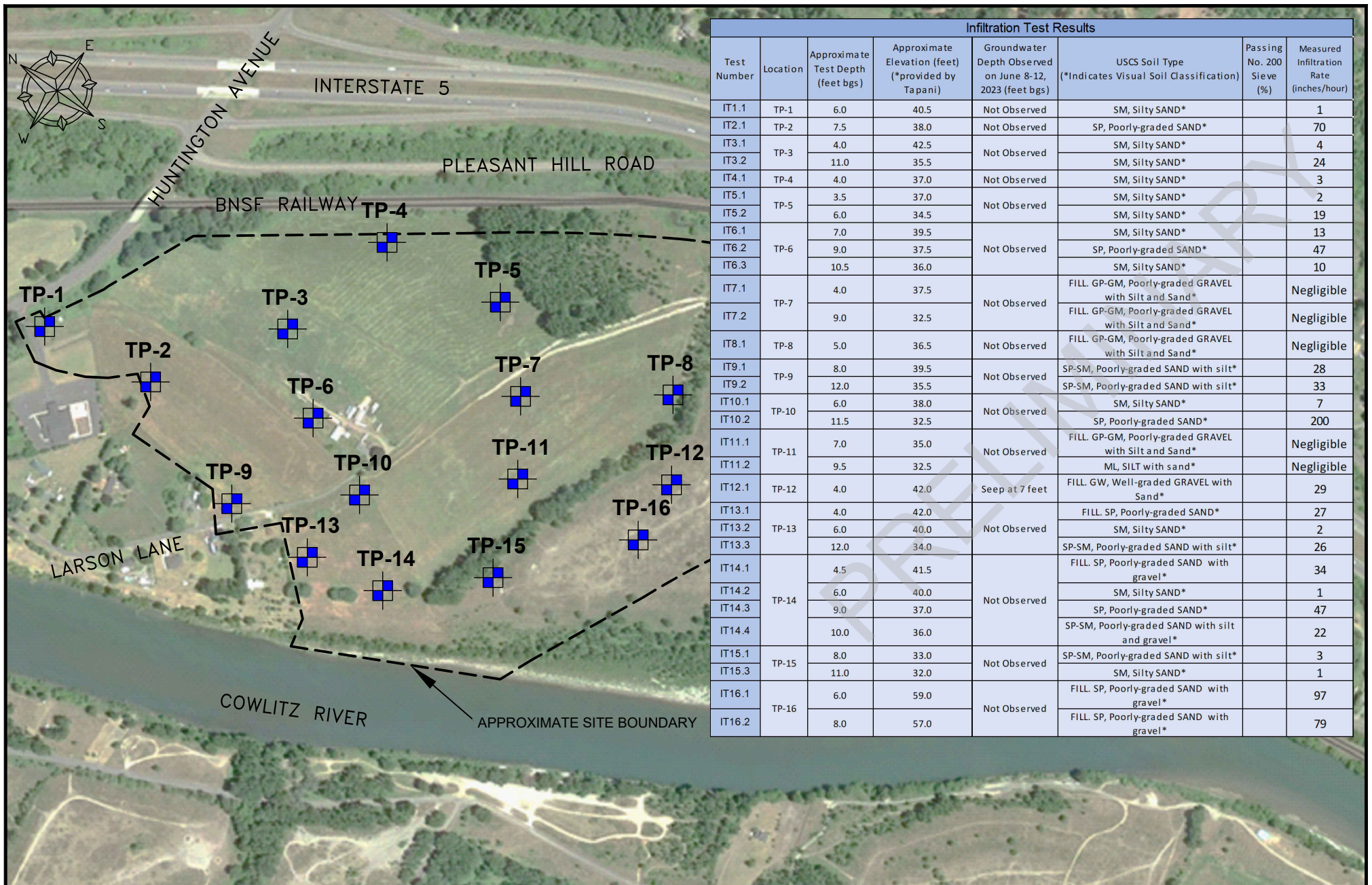
Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors should be advised of these report limitations, particularly as they relate to development of cost estimates. Contractors may gain valuable information from this report, but should rely upon their own interpretations as to how subsurface conditions may affect cost, feasibility, accessibility and other components of the project work. If believed necessary or relevant, contractors should conduct additional exploratory investigation to obtain satisfactory data for the purposes of developing adequate cost estimates. Clients or developers cannot insulate themselves from attendant liability by disclaiming accuracy for subsurface ground conditions without advising contractors appropriately and providing the best information possible to limit potential for cost overruns, construction problems, or misunderstandings.

Report Ownership

Columbia West retains the ownership and copyright property rights to this entire report and its contents, which may include, but may not be limited to, figures, text, logs, electronic media, drawings, laboratory reports, and appendices. This report was prepared solely for the client, and other relevant approved users or parties, and its distribution must be contingent upon prior express written consent by Columbia West. Furthermore, client or approved users may not use, lend, sell, copy, or distribute this document without express written consent by Columbia West. Client does not own nor have rights to electronic media files that constitute this report, and under no circumstances should said electronic files be distributed or copied. Electronic media is susceptible to unauthorized manipulation or modification, and may not be reliable.

Consultant Responsibility

Geotechnical and environmental engineering and consulting is much less exact than other scientific or engineering disciplines, and relies heavily upon experience, judgment, interpretation, and opinion often based upon media (soils) that are variable, anisotropic, and non-homogenous. This often results in unrealistic expectations, unwarranted claims, and uninformed disputes against a geotechnical or environmental consultant. To reduce potential for these problems and assist relevant parties in better understanding of risk, liability, and responsibility, geotechnical and environmental reports often provide definitive statements or clauses defining and outlining consultant responsibility. The client is encouraged to read these statements carefully and request additional information from Columbia West if necessary.

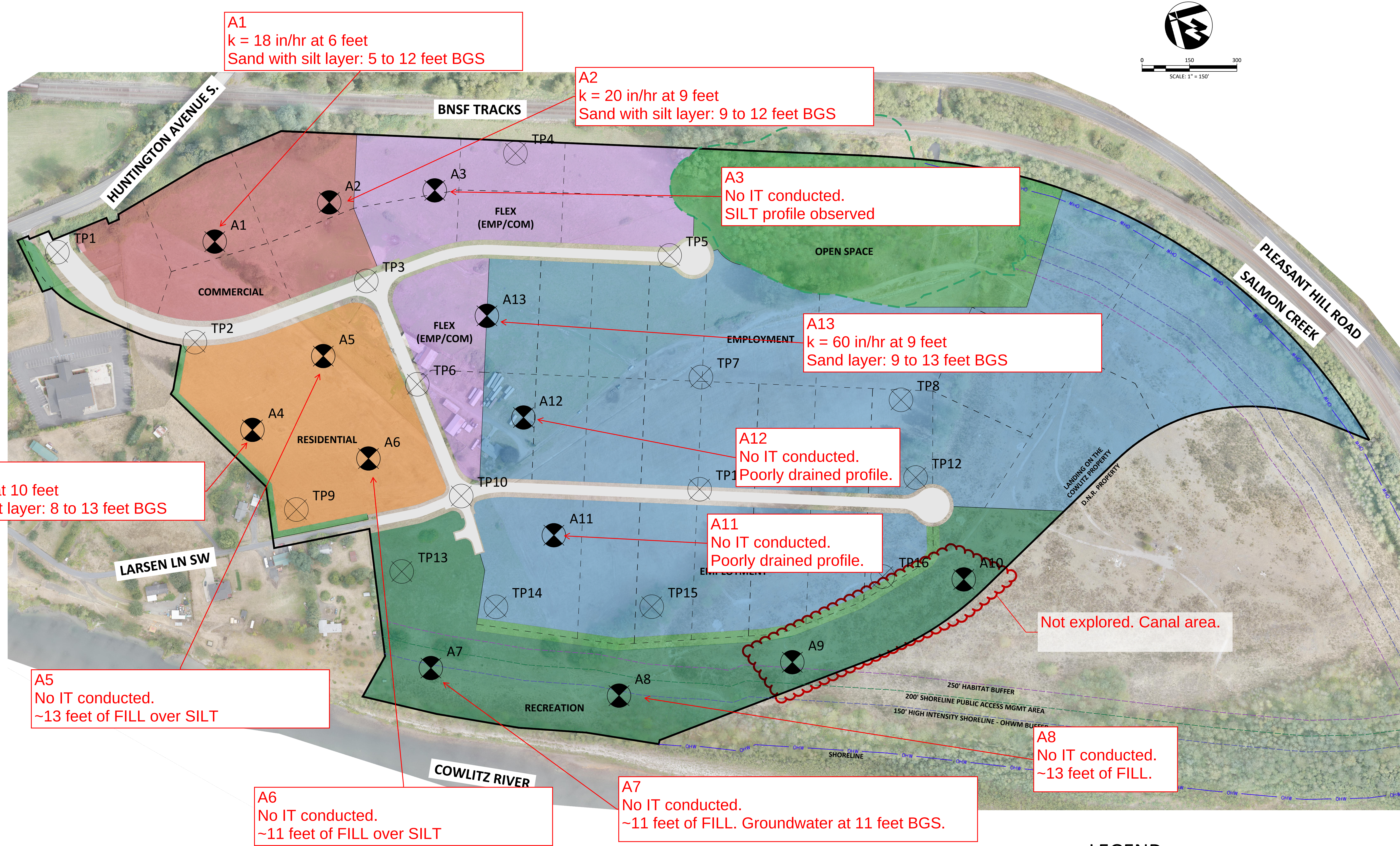


Test Number	Location	Approximate Test Depth (feet bgs)	Approximate Elevation (feet) (*provided by Tapani)	Groundwater Depth Observed on June 8-12, 2023 (feet bgs)	USCS Soil Type (*Indicates Visual Soil Classification)	Passing No. 200 Sieve (%)	Measured Infiltration Rate (inches/hour)
IT1.1	TP-1	6.0	40.5	Not Observed	SM, Silty SAND*		1
IT2.1	TP-2	7.5	38.0	Not Observed	SP, Poorly-graded SAND*		70
IT3.1	TP-3	4.0	42.5	Not Observed	SM, Silty SAND*		4
IT3.2		11.0	35.5		SM, Silty SAND*		24
IT4.1	TP-4	4.0	37.0	Not Observed	SM, Silty SAND*		3
IT5.1	TP-5	3.5	37.0	Not Observed	SM, Silty SAND*		2
IT5.2		6.0	34.5		SM, Silty SAND*		19
IT6.1	TP-6	7.0	39.5	Not Observed	SM, Silty SAND*		13
IT6.2		9.0	37.5		SP, Poorly-graded SAND*		47
IT6.3		10.5	36.0		SM, Silty SAND*		10
IT7.1	TP-7	4.0	37.5	Not Observed	FILL. GP-GM, Poorly-graded GRAVEL with Silt and Sand*		Negligible
IT7.2		9.0	32.5		FILL. GP-GM, Poorly-graded GRAVEL with Silt and Sand*		Negligible
IT8.1	TP-8	5.0	36.5	Not Observed	FILL. GP-GM, Poorly-graded GRAVEL with Silt and Sand*		Negligible
IT9.1	TP-9	8.0	39.5	Not Observed	SP-SM, Poorly-graded SAND with silt*		28
IT9.2		12.0	35.5		SP-SM, Poorly-graded SAND with silt*		33
IT10.1	TP-10	6.0	38.0	Not Observed	SM, Silty SAND*		7
IT10.2		11.5	32.5		SP, Poorly-graded SAND*		200
IT11.1	TP-11	7.0	35.0	Not Observed	FILL. GP-GM, Poorly-graded GRAVEL with Silt and Sand*		Negligible
IT11.2		9.5	32.5		ML, SILT with sand*		Negligible
IT12.1	TP-12	4.0	42.0	Seep at 7 feet	FILL. GW, Well-graded GRAVEL with Sand*		29
IT13.1	TP-13	4.0	42.0	Not Observed	FILL. SP, Poorly-graded SAND*		27
IT13.2		6.0	40.0		SM, Silty SAND*		2
IT13.3		12.0	34.0		SP-SM, Poorly-graded SAND with silt*		26
IT14.1	TP-14	4.5	41.5	Not Observed	FILL. SP, Poorly-graded SAND with gravel*		34
IT14.2		6.0	40.0		SM, Silty SAND*		1
IT14.3		9.0	37.0		SP, Poorly-graded SAND*		47
IT14.4		10.0	36.0		SP-SM, Poorly-graded SAND with silt and gravel*		22
IT15.1	TP-15	8.0	33.0	Not Observed	SP-SM, Poorly-graded SAND with silt*		3
IT15.3		11.0	32.0		SM, Silty SAND*		1
IT16.1	TP-16	6.0	59.0	Not Observed	FILL. SP, Poorly-graded SAND with gravel*		97
IT16.2		8.0	57.0		FILL. SP, Poorly-graded SAND with gravel*		79

 TEST PIT WITH INFILTRATION TESTING

FILE: W:\17783 CASTLE ROCK ENVIRO AND FILL PERMITS\500 DESIGN\502 DRAWINGS\EXHIBITS\2024-03-06 ADDITIONAL INFILTRATION

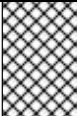
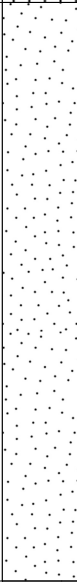
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PRELIMINARY RESULTS FROM TESTING CONDUCTED ON MARCH 13, 2024

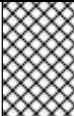
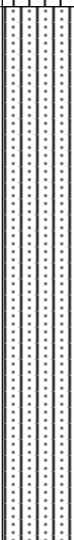
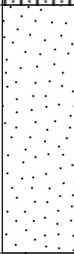


TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-17	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 0800	
FINISH TIME 0905											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0	TP17.1					FILL. Gray poorly-graded SAND and gravel, dense.					
				ML		Orange-tan sandy SILT, moist to wet, medium dense, sand is fine.					
5				SP-SM		Light brown poorly-graded SAND with silt, moist, loose, sand is medium-grained and subangular.					
10						Bottom of test pit at 12 feet bgs. Groundwater not encountered on 3/13/24.					
15											

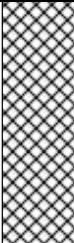
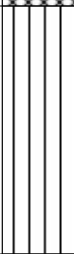
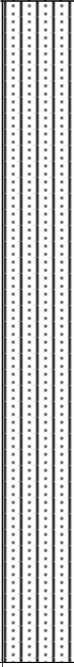
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TEST PIT LOG

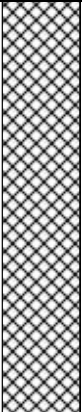
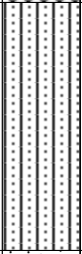
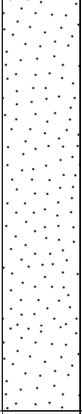
PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-18	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 0905	
FINISH TIME 0935											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0	TP18.1					FILL. Gray poorly-graded SAND and gravel, dense.					
				ML		Gray SILT with sand, moist, soft, sand is fine.					
				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-to medium-grained and subangular.					
5											
				SP-SM		Light brown poorly-graded SAND with silt, moist, loose, sand is medium-grained and subangular.					
10						Bottom of test pit at 12 feet bgs. Groundwater not encountered on 3/13/24.					
15											

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TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-19	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1010	
FINISH TIME 1040											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						Organic strippings.					
5				ML		Brown SILT, moist, soft, low to medium plasticity.					
10				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-grained and subangular.					
15						Bottom of test pit at 14.5 feet bgs. Groundwater not encountered on 3/13/24.					
						Preliminary 03/20/2024 3:58:48 PM					

TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-20	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 0935	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		FINISH TIME 1010	
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0	TP20.1					FILL. Gray poorly-graded SAND and gravel, dense.					
5				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-grained and subangular.					
10				SP-SM		Gray and brown poorly-graded SAND with silt, moist, loose, sand is medium-grained and subangular.					
15						Bottom of test pit at 13 feet bgs. Groundwater not encountered on 3/13/24.					

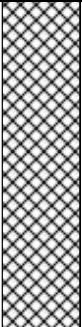
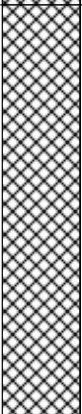
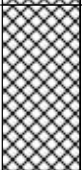
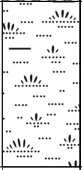
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TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-21	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1040	
FINISH TIME 1105											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						FILL. Gray poorly-graded SAND and gravel, dense.					
5						FILL. Light gray, poorly-graded GRAVEL with silt and sand, moist, very dense dense.					
10						FILL. Gray poorly-graded SAND and gravel, dense.					
				OH		Black organic SILT, moist, soft.					
15						Bottom of test pit at 14.5 feet bgs. Groundwater not encountered on 3/13/24.					

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TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-22	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1105	
FINISH TIME 1130											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						FILL. Gray poorly-graded SAND and gravel, dense.					
5						FILL. Light gray, poorly-graded GRAVEL with silt and sand, moist, very dense dense.					
10						FILL. Gray poorly-graded SAND and gravel, dense.					
				OH		Black organic SILT, moist, soft.					
15						Bottom of test pit at 13 feet bgs. Groundwater not encountered on 3/13/24.					
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Geotechnical ■ Environmental ■ Special Inspections

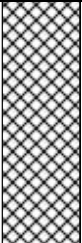
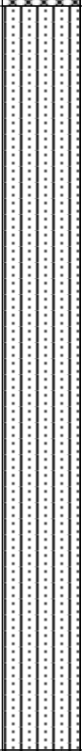


PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC			PROJECT NO. 22310		TEST PIT NO. TP-23		
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC		DATE 3/13/24	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Observed at 11 feet BG		START TIME \$330		FINISH TIME 1500	
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS			Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						3 inch root zone contained in 10 inches of sandy silt topsoil.							
						FILL. Light gray, poorly-graded GRAVEL with silt and sand, moist, very dense dense.							
5													
10						Becomes wet.							
						Bottom of test pit at 11 feet bgs. Groundwater encountered at 11 feet on 3/13/24.							
15						Preliminary 03/20/2024 3:58:49 PM							

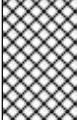
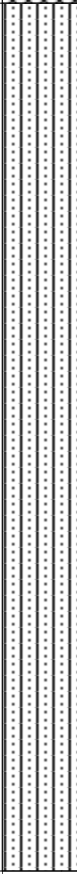
TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-24		
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC		
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1500		
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		FINISH TIME 1555		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS		Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						3 inch root zone contained in 10 inches of sandy silt topsoil.						
5						FILL. Light gray, poorly-graded GRAVEL with silt and sand, moist, very dense dense.						
10												
15						Bottom of test pit at 13 feet bgs. Groundwater not encountered on 3/13/24.						
						Preliminary 03/20/2024 3:58:49 PM						

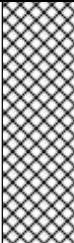
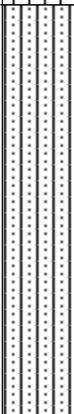
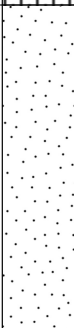
TEST PIT LOG

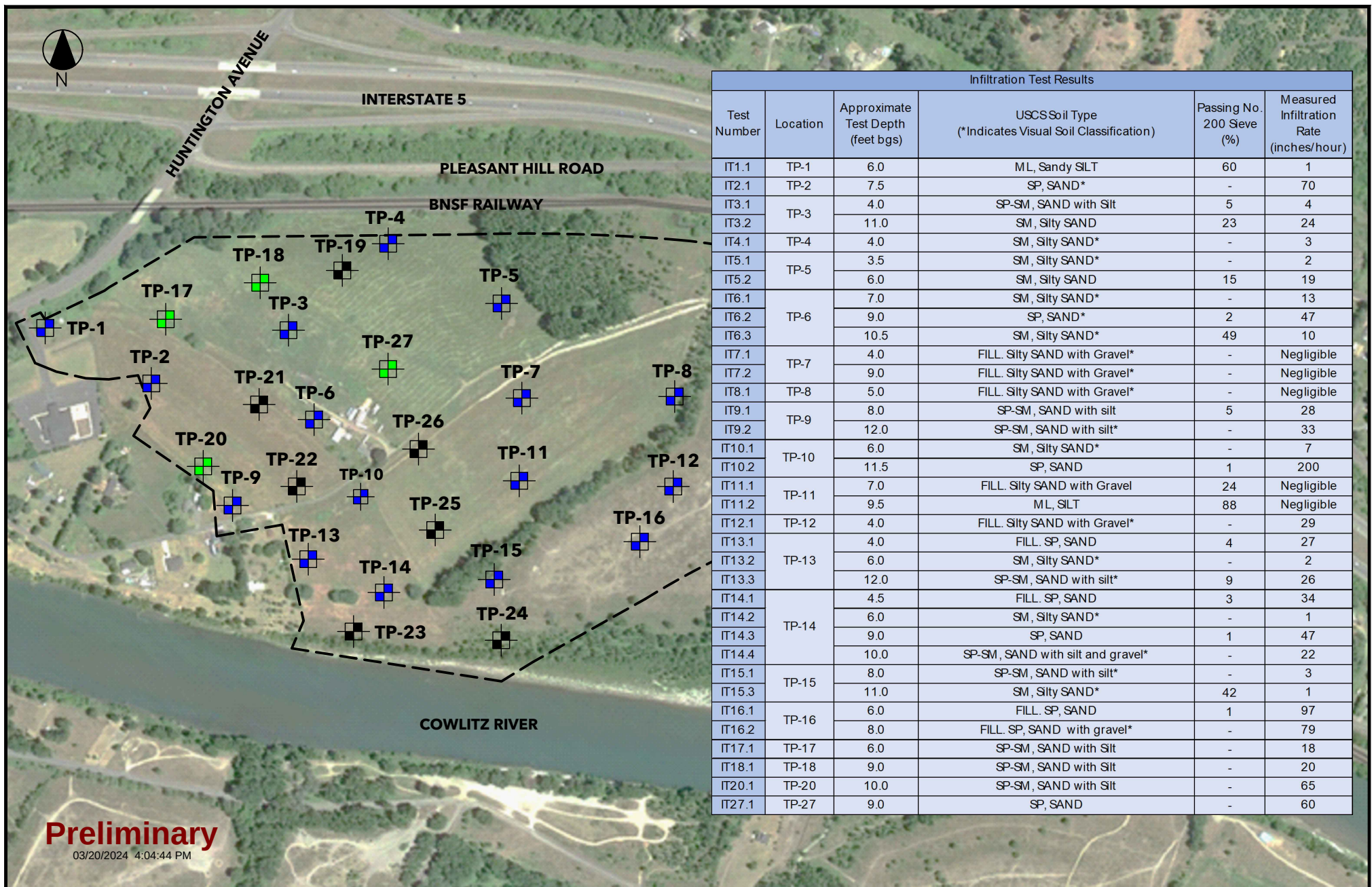
PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-25	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1130	
FINISH TIME 1215											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						FILL. Gray poorly-graded SAND and gravel, dense.					
5				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-grained and subangular.					
10											
15						Bottom of test pit at 12 feet bgs. Groundwater not encountered on 3/13/24.					
						Preliminary 03/20/2024 3:58:49 PM					

TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-26	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1245	
FINISH TIME 1330											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0						FILL. Gray poorly-graded SAND and gravel, dense.					
5				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-grained and subangular.					
10											
15						Bottom of test pit at 14.5 feet bgs. Groundwater not encountered on 3/13/24.					
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TEST PIT LOG

PROJECT NAME Landing at Cowlitz						CLIENT CT6, LLC		PROJECT NO. 22310		TEST PIT NO. TP-27	
PROJECT LOCATION Castle Rock, Washington						CONTRACTOR Tapani		EQUIPMENT CAT 215 Excavator		ENGINEER MAC	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION Not Surveyed		GROUNDWATER DEPTH Not Observed		START TIME 1215	
FINISH TIME 1245											
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Groundwater Depth
0	TP27.1					FILL. Gray poorly-graded SAND and gravel, dense.					
				ML		Orange-tan sandy SILT, moist to wet, medium dense, sand is fine.					
5				SM		Brown silty SAND, moist, loose to medium dense, sand is fine-grained and subangular.					
10				SP-SM		Gray and brown poorly-graded SAND with silt, moist, loose, sand is medium-grained and subangular.					
15						Bottom of test pit at 13 feet bgs. Groundwater not encountered on 3/13/24.					
						Preliminary 03/20/2024 3:58:49 PM					



Infiltration Test Results					
Test Number	Location	Approximate Test Depth (feet bgs)	USCS Soil Type (* Indicates Visual Soil Classification)	Passing No. 200 Sieve (%)	Measured Infiltration Rate (inches/hour)
IT1.1	TP-1	6.0	ML, Sandy SILT	60	1
IT2.1	TP-2	7.5	SP, SAND*	-	70
IT3.1	TP-3	4.0	SP-SM, SAND with Silt	5	4
IT3.2		11.0	SM, Silty SAND	23	24
IT4.1	TP-4	4.0	SM, Silty SAND*	-	3
IT5.1	TP-5	3.5	SM, Silty SAND*	-	2
IT5.2		6.0	SM, Silty SAND	15	19
IT6.1	TP-6	7.0	SM, Silty SAND*	-	13
IT6.2		9.0	SP, SAND*	2	47
IT6.3		10.5	SM, Silty SAND*	49	10
IT7.1	TP-7	4.0	FILL. Silty SAND with Gravel*	-	Negligible
IT7.2		9.0	FILL. Silty SAND with Gravel*	-	Negligible
IT8.1	TP-8	5.0	FILL. Silty SAND with Gravel*	-	Negligible
IT9.1	TP-9	8.0	SP-SM, SAND with silt	5	28
IT9.2		12.0	SP-SM, SAND with silt*	-	33
IT10.1	TP-10	6.0	SM, Silty SAND*	-	7
IT10.2		11.5	SP, SAND	1	200
IT11.1	TP-11	7.0	FILL. Silty SAND with Gravel	24	Negligible
IT11.2		9.5	ML, SILT	88	Negligible
IT12.1	TP-12	4.0	FILL. Silty SAND with Gravel*	-	29
IT13.1	TP-13	4.0	FILL. SP, SAND	4	27
IT13.2		6.0	SM, Silty SAND*	-	2
IT13.3		12.0	SP-SM, SAND with silt*	9	26
IT14.1	TP-14	4.5	FILL. SP, SAND	3	34
IT14.2		6.0	SM, Silty SAND*	-	1
IT14.3		9.0	SP, SAND	1	47
IT14.4		10.0	SP-SM, SAND with silt and gravel*	-	22
IT15.1	TP-15	8.0	SP-SM, SAND with silt*	-	3
IT15.3		11.0	SM, Silty SAND*	42	1
IT16.1	TP-16	6.0	FILL. SP, SAND	1	97
IT16.2		8.0	FILL. SP, SAND with gravel*	-	79
IT17.1	TP-17	6.0	SP-SM, SAND with Silt	-	18
IT18.1	TP-18	9.0	SP-SM, SAND with Silt	-	20
IT20.1	TP-20	10.0	SP-SM, SAND with Silt	-	65
IT27.1	TP-27	9.0	SP, SAND	-	60

- - - - SITE BOUNDARY
 TEST PIT WITH INFILTRATION TEST (2023)
 TEST PIT WITH INFILTRATION TEST (2024)
 TEST PIT (2024)

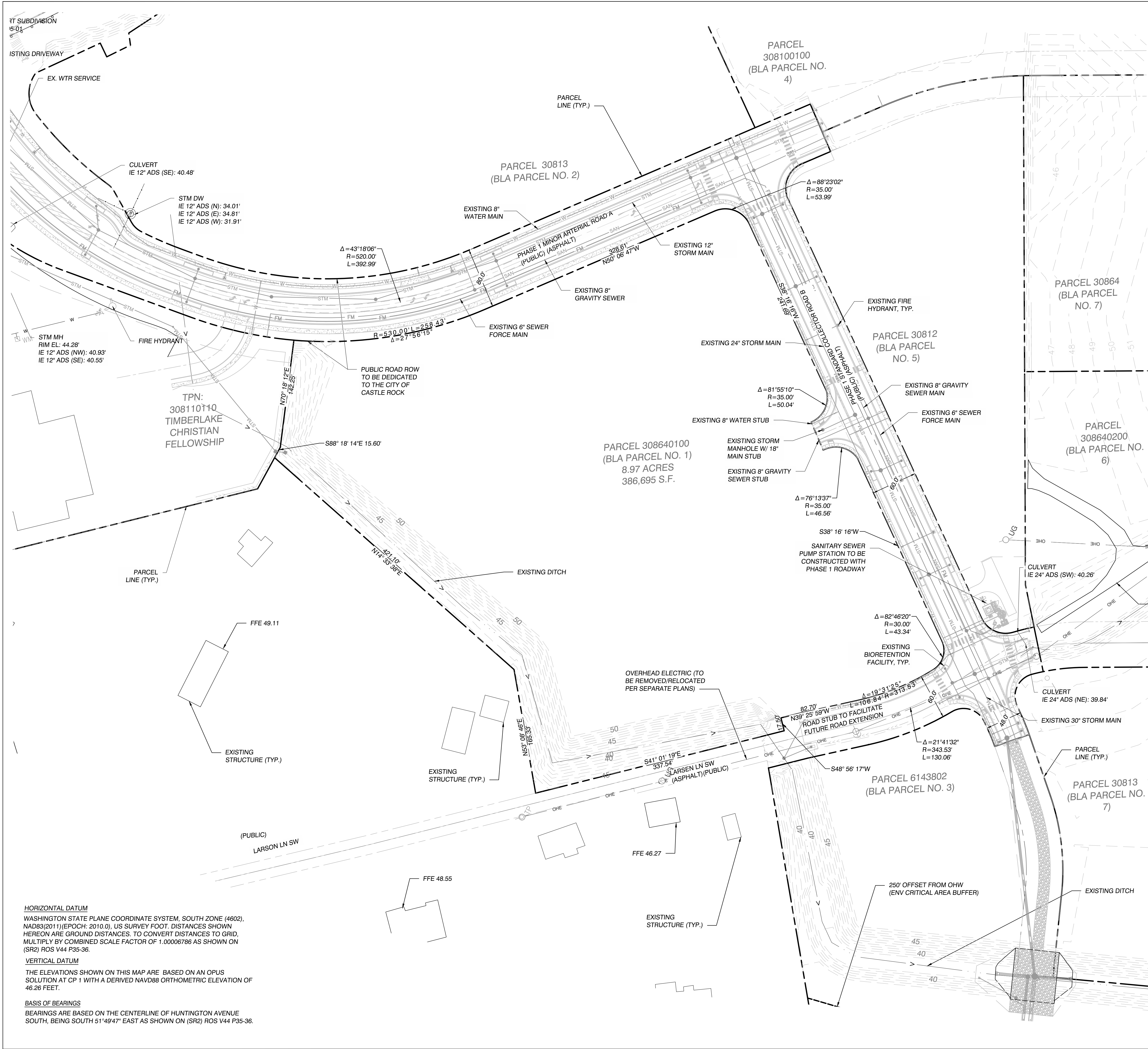
Appendix D Final Plans

Existing Conditions Plan

Grading & Erosion Control Plans

Street and Storm Plans

Street and Storm Profiles



HORIZONTAL DATUM
WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE (4602), NAD83(2011)(EPOCH: 2010.0), US SURVEY FOOT. DISTANCES SHOWN HEREON ARE GROUND DISTANCES. TO CONVERT DISTANCES TO GRID, MULTIPLY BY COMBINED SCALE FACTOR OF 1.00006786 AS SHOWN ON (SR2) ROS V44 P35-36.

VERTICAL DATUM
THE ELEVATIONS SHOWN ON THIS MAP ARE BASED ON AN OPUS SOLUTION AT CP 1 WITH A DERIVED NAVD88 ORTHOMETRIC ELEVATION OF 46.26 FEET.

BASIS OF BEARINGS
BEARINGS ARE BASED ON THE CENTERLINE OF HUNTINGTON AVENUE SOUTH, BEING SOUTH 51°49'47" EAST AS SHOWN ON (SR2) ROS V44 P35-36.

SITE STATISTICS	
ZONING:	INDUSTRIAL
LANDING ON THE COWLITZ (LOT): MASTER PLAN DESIGNATION	RESIDENTIAL
APPLICABLE ZONING : DISTRICT STANDARDS	HIGH DENSITY RESIDENTIAL (R-2) (LANDING ON THE COWLITZ CONDITIONS OF MATER PLAN APPROVAL, ITEM 2.C.)
RECENT LAND USE DECISIONS : AFFECTING THE PROPERTY	LANDING ON THE COWLITZ MASTER PLAN
EXISTING USE OF PROPERTY:	VACANT AND UNDEVELOPED
SURROUNDING USES:	RESIDENTIAL (NORTH); CHURCH (NORTHEAST); DEPARTMENT OF NATURAL RESOURCES (SOUTHEAST)
CRITICAL AREA:	THE EXISTING SITE AT THE TIME OF PRELIMINARY SUBDIVISION APPLICATION IS LOCATED WITHIN THE FEMA 100-YEAR FLOODPLAIN. HOWEVER, THE SUBDIVISION HAS BEEN DESIGNED TO BE ABOVE THE BASE FLOOD ELEVATION (BFE) AT 50.8.

NOTES

- EXISTING CONDITIONS SHOWN IN THIS PLAN SHALL BE THE EXISTING CONDITIONS FOLLOWING THE CONSTRUCTION OF THE PHASE 1 ACCESS AND UTILITIES, AS WELL AS THE LOTC OUTFALL. THIS CONSTRUCTION WILL BE COMPLETED PRIOR TO THE CONSTRUCTION OF THE RIVER'S EDGE SUBDIVISION.
- REFER TO AFN 3762029 AND AFN 3763318 FOR FULL LEGAL DESCRIPTIONS OF THE EXISTING PARCELS REFERENCED IN THIS EXISTING CONDITIONS PLAN.
- PORTIONS OF THE SITE CURRENTLY LIE WITHIN THE FEMA 100-YEAR FLOOD PLAIN BUT BUILDING PADS WILL BE PROPOSED A MINIMUM OF 1' ABOVE THE BASE FLOOD ELEVATION OF 48 FEET.

SURVEY NOTE

THE BOUNDARY AND THE SUSEQUENT MATHEMATICAL SOLUTIONS USED IN THE ADJUSTED LEGAL DESCRIPTIONS HEREON ARE BASED ON BOUNDARY LINE ADJUSTMENT SURVEY RECORDED UNDER AUDITOR'S FILE NUMBER 3597924 IN CONJUNCTION WITH RECORD OF SURVEY BY MACKAY SPOSITO, RECORDED UNDER AUDITOR'S FILE NUMBER 3732400, 34620229, AND 3763318.

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
EXISTING CONDITIONS

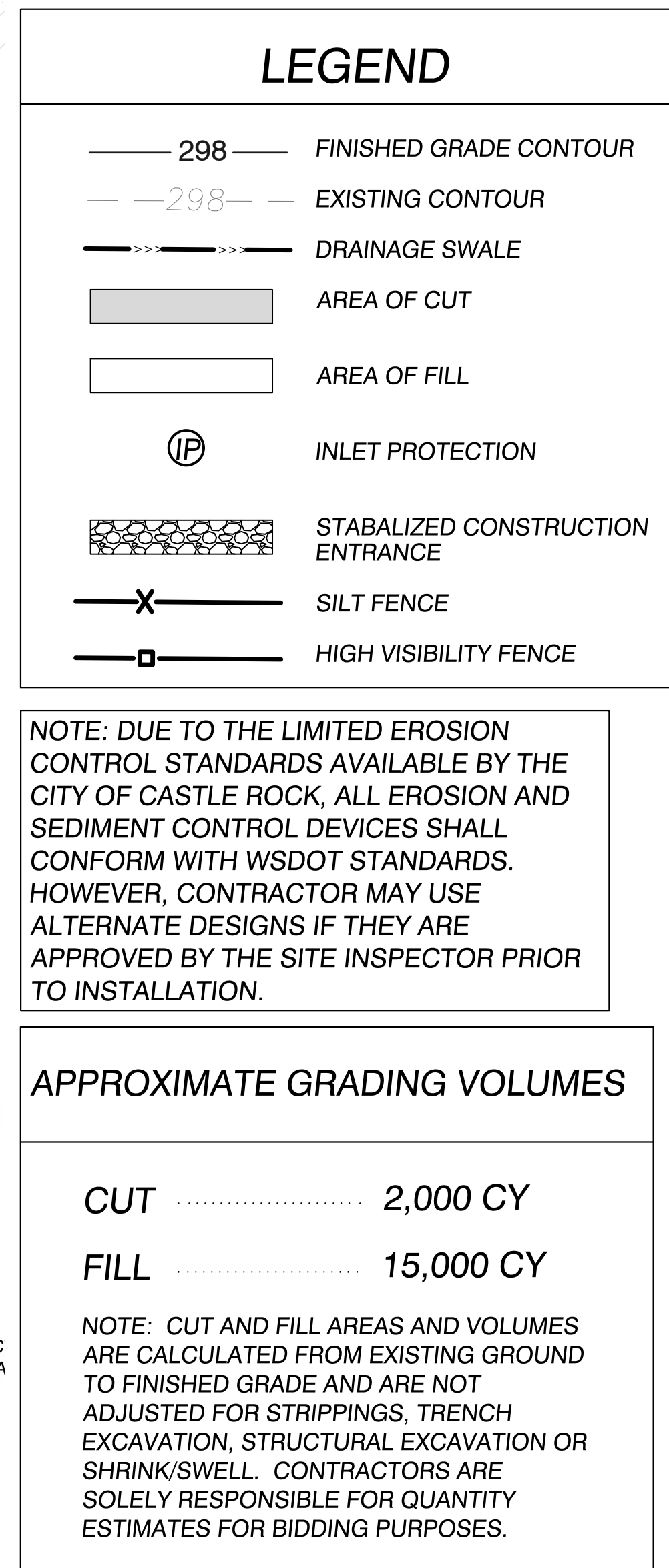
REVISIONS:

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DATE:	3/27/2025
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DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C0.2

3/27/2025



TYPICAL LOT SECTION



3/27/2025

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

GRADING AND EROSION CONTROL PLAN (PHASE 1)

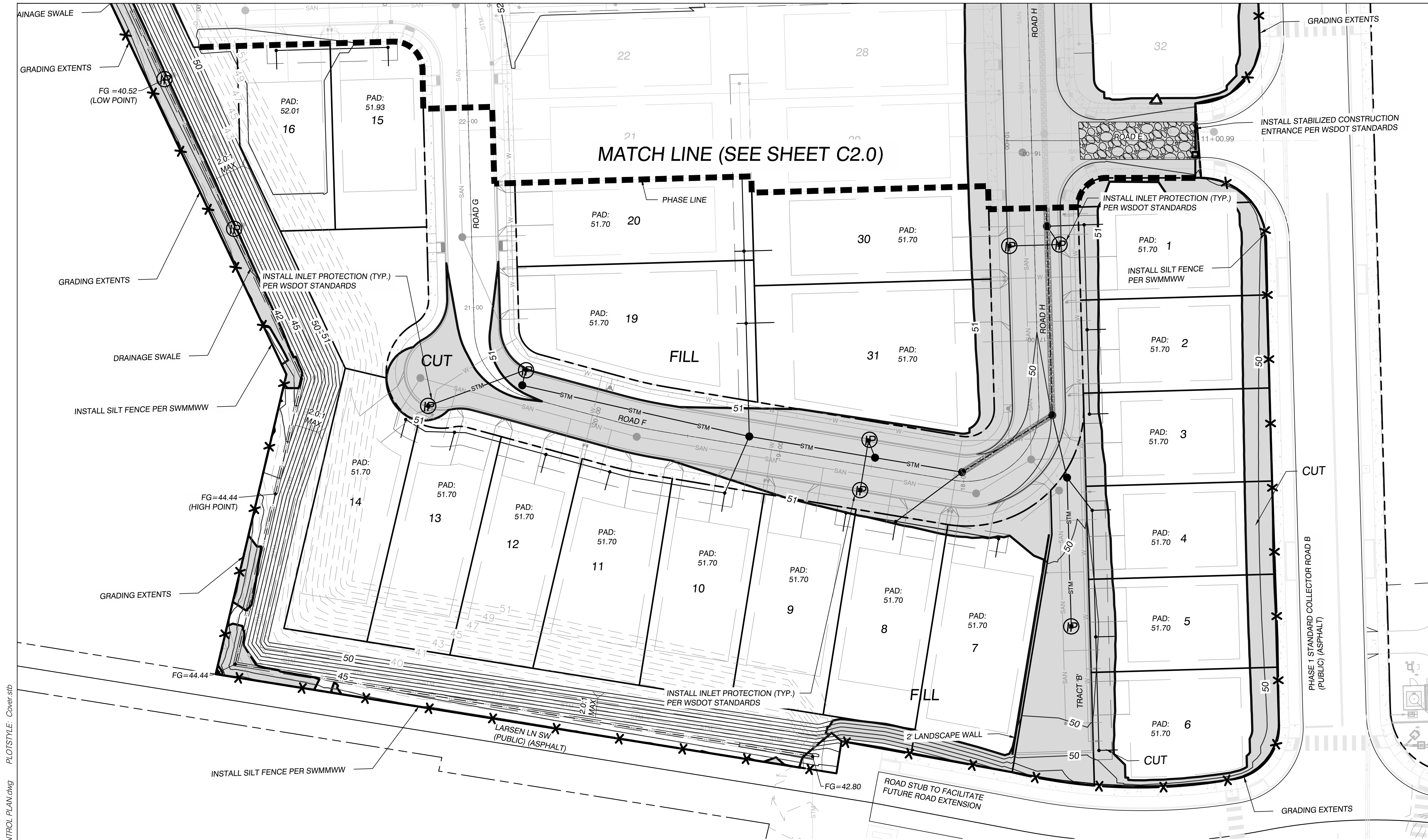
REVISIONS

JOB NO.:	18591
DATE:	3/27/2025
SCALE: H: 1" = 30'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C2.0

FILE: W116591 LOTC Phase 1500 Design\502 Drawings\502 Drawings\502 0 GRADING AND EROSION CONTROL PLAN.dwg PLOT STYLE: Cover.stb



LEGEND

	298	FINISHED GRADE CONTOUR
	298	EXISTING CONTOUR
		DRAINAGE SWALE
		AREA OF CUT
		AREA OF FILL
		INLET PROTECTION
		STABILIZED CONSTRUCTION ENTRANCE
		SILT FENCE
		HIGH VISIBILITY FENCE

NOTE: DUE TO THE LIMITED EROSION CONTROL STANDARDS AVAILABLE BY THE CITY OF CASTLE ROCK, ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL CONFORM WITH WSDOT STANDARDS. HOWEVER, CONTRACTOR MAY USE ALTERNATE DESIGNS IF THEY ARE APPROVED BY THE SITE INSPECTOR PRIOR TO INSTALLATION.

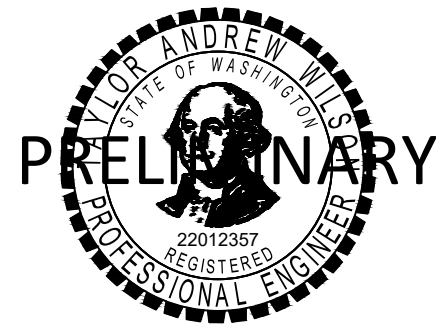
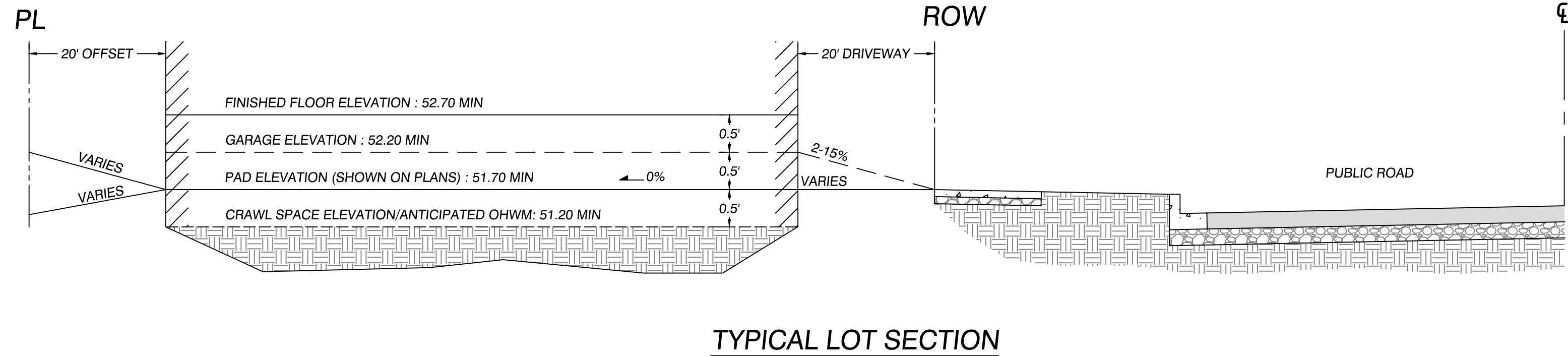
APPROXIMATE GRADING VOLUMES

CUT	2,000 CY
FILL	15,000 CY

NOTE: CUT AND FILL AREAS AND VOLUMES ARE CALCULATED FROM EXISTING GROUND TO FINISHED GRADE AND ARE NOT ADJUSTED FOR STRIPPINGS, TRENCH EXCAVATION, STRUCTURAL EXCAVATION OR SHRINK/SWELL. CONTRACTORS ARE SOLELY RESPONSIBLE FOR QUANTITY ESTIMATES FOR BIDDING PURPOSES.

- ### CONSTRUCTION NOTES

 - ALL EROSION CONTROL DEVICES PROPOSED SHALL CONFORM WITH WSDOT STANDARDS.
 - CONTRACTOR TO CONSTRUCT EQUIPMENT AND PARKING AREA AT A SUITABLE LOCATION PRIOR TO BEGINNING GRADING ACTIVITIES. LOCATION TO BE DETERMINED PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
 - IF TRACKING OF SEDIMENT FROM THE SITE BECOMES A PROBLEM, A WHEEL WASH SHALL BE INSTALLED AT THE SITE ENTRANCE.
 - STOCKPILE AREAS PLACED ONSITE SHALL BE COORDINATED BY THE CONTRACTOR AND SURROUNDED WITH SILT FENCE AND COVERED WITH PLASTIC AS NECESSARY DURING CONSTRUCTION. MATERIAL NOT STOCKPILED ONSITE SHALL BE REMOVED TO AN APPROPRIATE IMPORT SITE.
 - ANY SLOPE LESS THAN 3:1 TO BE STABILIZED WITH SEEDING AND MULCH/STRAW.
 - CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING BMP T5.13.
 - EROSION CONTROL INSPECTION REQUIRED BEFORE YOU BEGIN ANY SITEWORK
 - THE BASE FLOOD ELEVATION IS 48.0 AND MINIMUM PAD ELEVATION (AS SHOWN ON PLAN) IS 51.70.



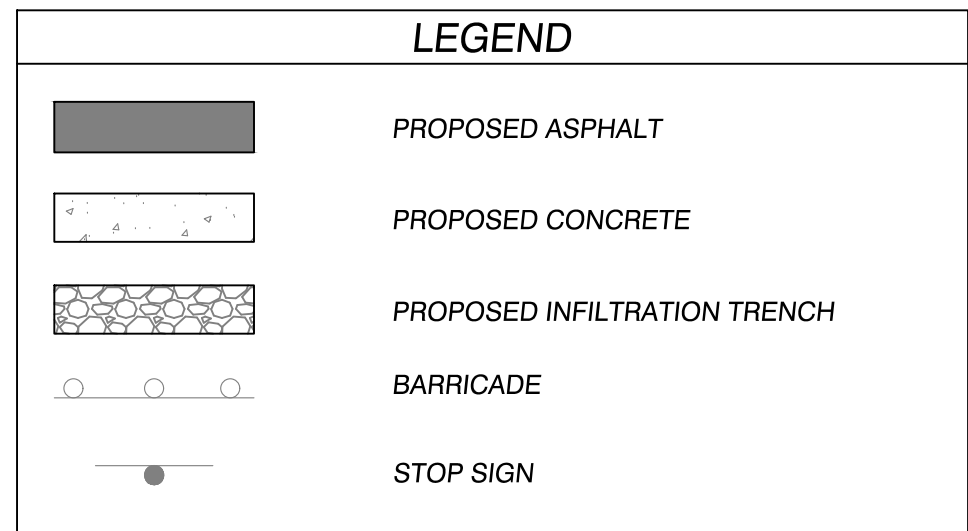
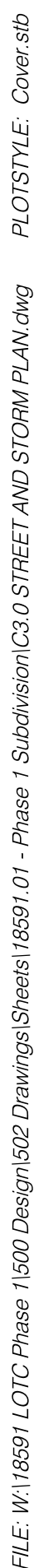
3/27/2025

RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
GRADING AND EROSION CONTROL PLAN (PHASE 2)

REVISIONS:	
JOB NO.:	18591
DATE:	3/27/2025
SCALE: H: 1" = 30'	V: N/A
DESIGNED BY:	PJM
DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

C2.1



1. HMA SECTIONS ARE TO BE CONSTRUCTED PER STREET SECTIONS, SHEET C3.2 .

1. ALL STORMWATER SYSTEMS WILL BE DESIGNED IN CONFORMANCE WITH CITY OF CASTLE ROCK STANDARDS AND THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.

2. ALL STORMWATER FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED WITH A BLANKET ACCESS AND INSPECTION EASEMENT OVER THE PROPERTY DEDICATED TO CITY OF CASTLE ROCK.
3. NATIVE SOILS ON THE SITE ARE CONSIDERED TO BE WWHM GROUP (EXCESSIVELY DRAINED SOILS A & B).
4. STORMWATER RUNOFF FROM PAVED SURFACES WILL BE ROUTED TO CONTECH STORMWATER CATCHBASINS AND THEN CONVEYED TO AN OUTFALL AFTER PROPER TREATMENT. STORMWATER RUNOFF WILL BE INFILTRATED ON SITE AND/OR DISCHARGED INTO THE COWLITZ RIVER.
5. INSTALL INFILTRATION TRENCH PER DETAIL BELOW



REVISIONS:

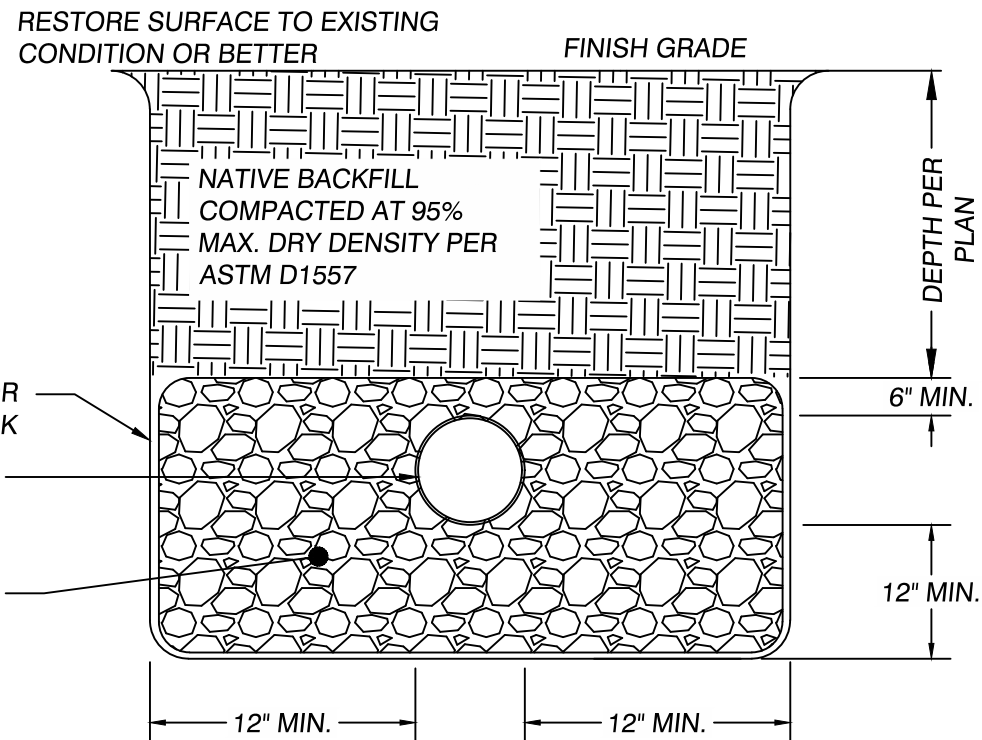
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CHECKED BY:	TAW

PRELIMINARY

C3.0

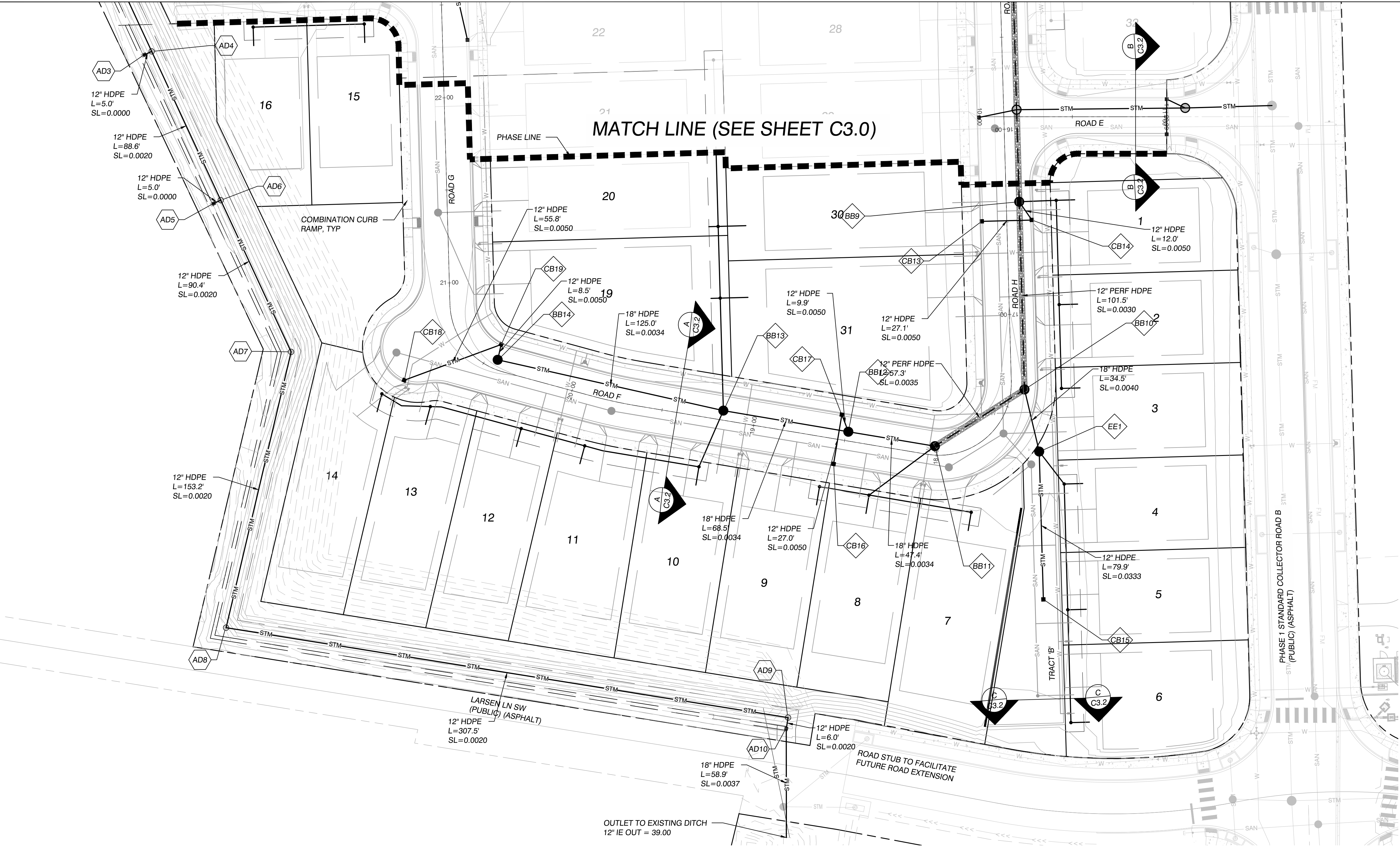
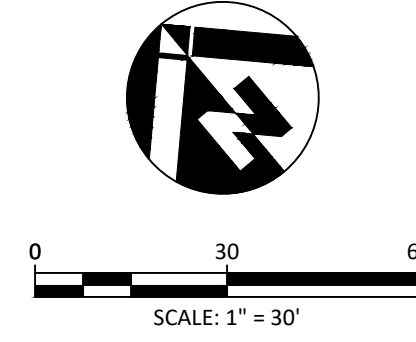
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INLET DATA		INLET DATA		INLET DATA		STORM MANHOLE DATA		STORM MANHOLE DATA	
STRUCTURE ID	STRUCTURE DATA	STRUCTURE ID	STRUCTURE DATA	STRUCTURE ID	STRUCTURE DATA	STRUCTURE ID	STRUCTURE DATA	STRUCTURE ID	STRUCTURE DATA
AD3	N: 346548.33 E: 1035056.97 INSTALL DITCH INLET RIM = 40.52 12" IE OUT = 40.52	AD8	N: 346282.27 E: 103489.92 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.20 12" IE IN = 39.85 12" IE OUT = 39.85	CB15	N: 346010.85 E: 1035241.56 INSTALL 1-CARTRIDGE(18") CONTECH STORMFILTER CB RIM = 49.36 12" IE OUT = 47.09	BB9	STA 16+39.18 (7.0' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 49.70 12" IE IN = 43.27 12" IE IN = 44.89 12" IE OUT = 43.07	BB14	STA 20+43.64 (5.2' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.93 12" IE IN = 45.54 18" IE OUT = 45.38
AD4	N: 346547.04 E: 1035061.80 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.92 12" IE IN = 40.52 12" IE IN = 40.52 12" IE OUT = 40.52	AD9	N: 346050.26 E: 1035094.76 INSTALL 24" AREA DRAIN W/ SOLID COVER RIM = 41.53 12" IE IN = 39.23 12" IE OUT = 39.23	CB16	STA 18+53.78 (13.5' LT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 50.20 12" IE OUT = 46.20	BB10	STA 17+39.92 (7.2' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 49.99 12" IE IN = 43.77 18" IE IN = 44.09 12" IE OUT = 43.57	DD1	STA 13+78.53 (55.9' RT-ROAD B) INSTALL 48" STM MH RIM = 49.53 18" IE OUT = 42.22
AD5	N: 346462.71 E: 1035034.03 INSTALL DTCH INLET RIM = 40.88 12" IE OUT = 40.34	AD10	N: 346046.36 E: 1035090.20 INSTALL DITCH INLET RIM = 42.80 12" IE IN = 39.22 18" IE OUT = 39.22	CB17	STA 18+53.78 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 50.20 12" IE IN = 46.06 12" IE OUT = 45.56	BB11	STA 18+00.88 (4.8' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.22 18" IE IN = 44.17 12" IE OUT = 43.97	EE1	N: 346073.60 E: 1035291.06 INSTALL 48" STM MH RIM = 50.53 12" IE IN = 44.43 18" IE OUT = 44.23
AD6	N: 346461.42 E: 1035038.86 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.76 12" IE IN = 40.34 12" IE IN = 40.34 12" IE OUT = 40.34	CB13	STA 16+49.18 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 49.59 12" IE OUT = 45.59	CB18	STA 20+66.47 (37.4' LT-SUBDIVISION MAIN CIRCULATION) INSTALL STM CB RIM = 50.36 12" IE OUT = 46.36	BB12	STA 18+48.78 (5.0' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.36 18" IE IN = 44.53 12" IE IN = 45.51 18" IE OUT = 44.33		
AD7	N: 346374.13 E: 1035015.47 INSTALL 24" RISER W/ ATRIUM GRATE RIM = 42.54 12" IE IN = 40.16 12" IE OUT = 40.16	CB14	STA 16+49.25 (13.6' LT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 49.59 12" IE IN = 45.45 12" IE OUT = 44.95	CB19	STA 20+45.96 (13.5' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 1-CARTRIDGE(27") CONTECH STORMFILTER CB RIM = 50.78 12" IE IN = 46.08 12" IE OUT = 45.58	BB13	STA 19+17.27 (5.1' RT-SUBDIVISION MAIN CIRCULATION) INSTALL 48" STM MH RIM = 50.56 18" IE IN = 44.96 18" IE OUT = 44.76		



INFILTRATION TRENCH SECTION
NO SCALE

- LEGEND**
- PROPOSED ASPHALT
 - PROPOSED CONCRETE
 - PROPOSED INFILTRATION TRENCH
 - BARRICADE
 - STOP SIGN
- NOTE:**
- HMA SECTIONS ARE TO BE CONSTRUCTED PER STREET SECTIONS, SHEET C3.2 .
- STORMWATER:**
- ALL STORMWATER SYSTEMS WILL BE DESIGNED IN CONFORMANCE WITH CITY OF CASTLE ROCK STANDARDS AND THE STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON.
 - ALL STORMWATER FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED WITH A BLANKET ACCESS AND INSPECTION EASEMENT OVER THE PROPERTY DEDICATED TO CITY OF CASTLE ROCK.
 - NATIVE SOILS ON THE SITE ARE CONSIDERED TO BE WWHM GROUP 1 (EXCESSIVELY DRAINED SOILS A & B).
 - STORMWATER RUNOFF FROM PAVED SURFACES WILL BE ROUTED TO CONTECH STORMFILTER CATCHBASINS AND THEN CONVEYED TO AN OUTFALL AFTER PROPER TREATMENT. STORMWATER RUNOFF WILL BE INFILTRATED ON SITE AND/OR DISCHARGED INTO THE COWLITZ RIVER.
 - INSTALL INFILTRATION TRENCH PER DETAIL BELOW



RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

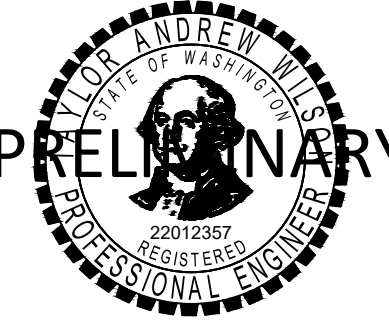
STREET AND STORM PLAN (PHASE 2)

REVISIONS:

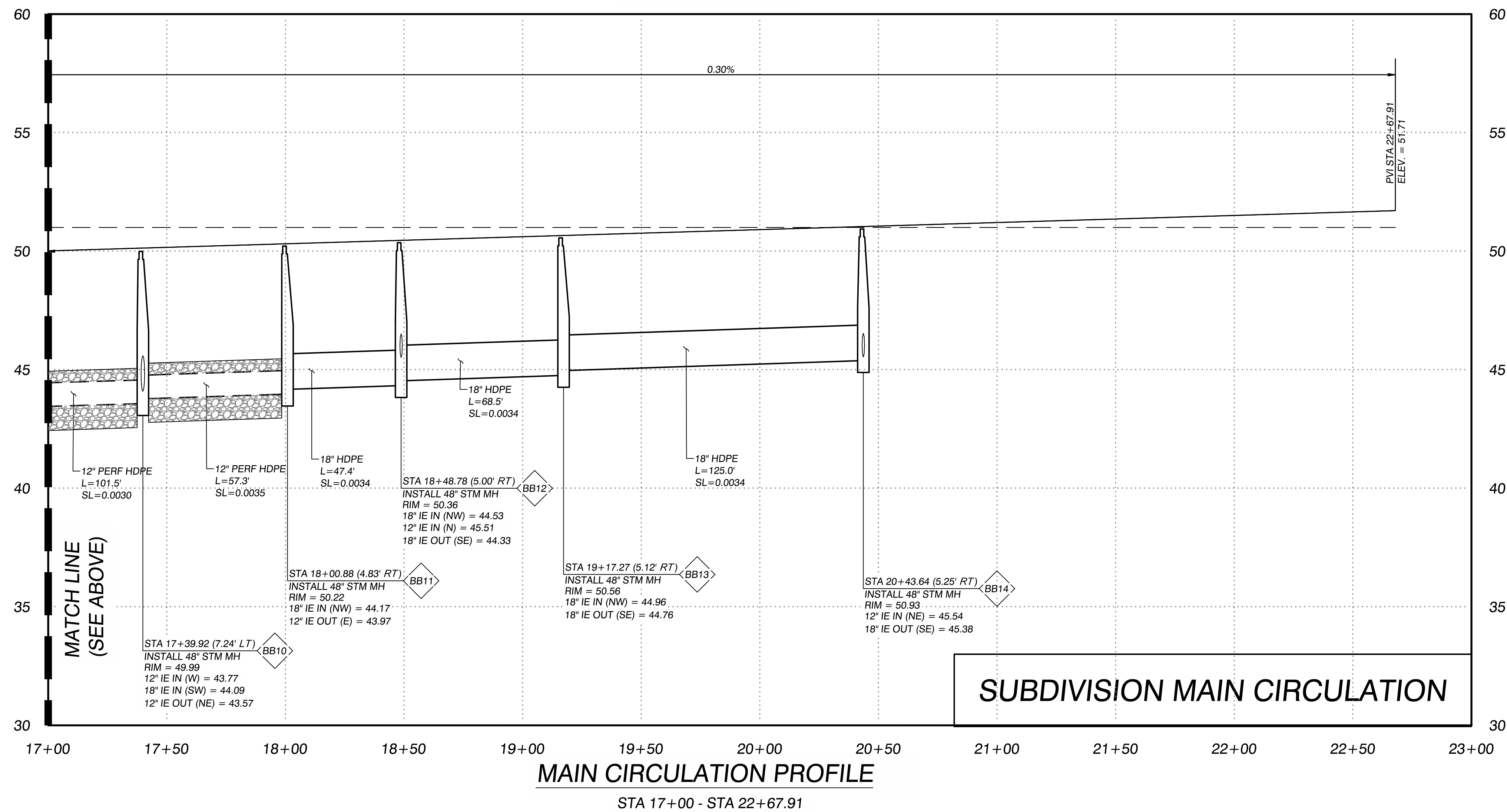
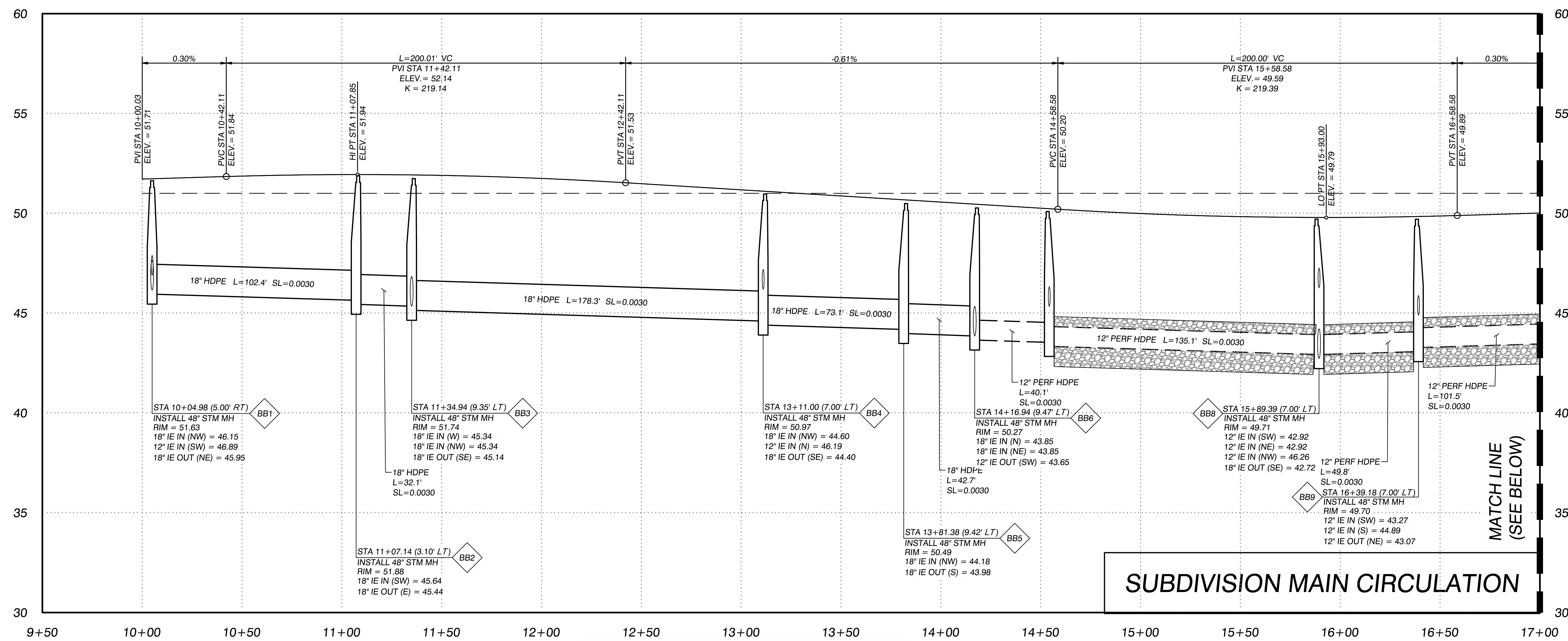
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DRAWN BY:	PJM
CHECKED BY:	TAW

PRELIMINARY

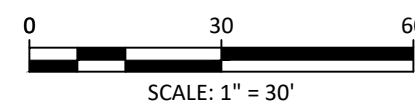
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3/27/2025



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RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON

MAIN CIRCULATION STREET AND STORM PROFILE

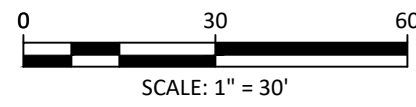
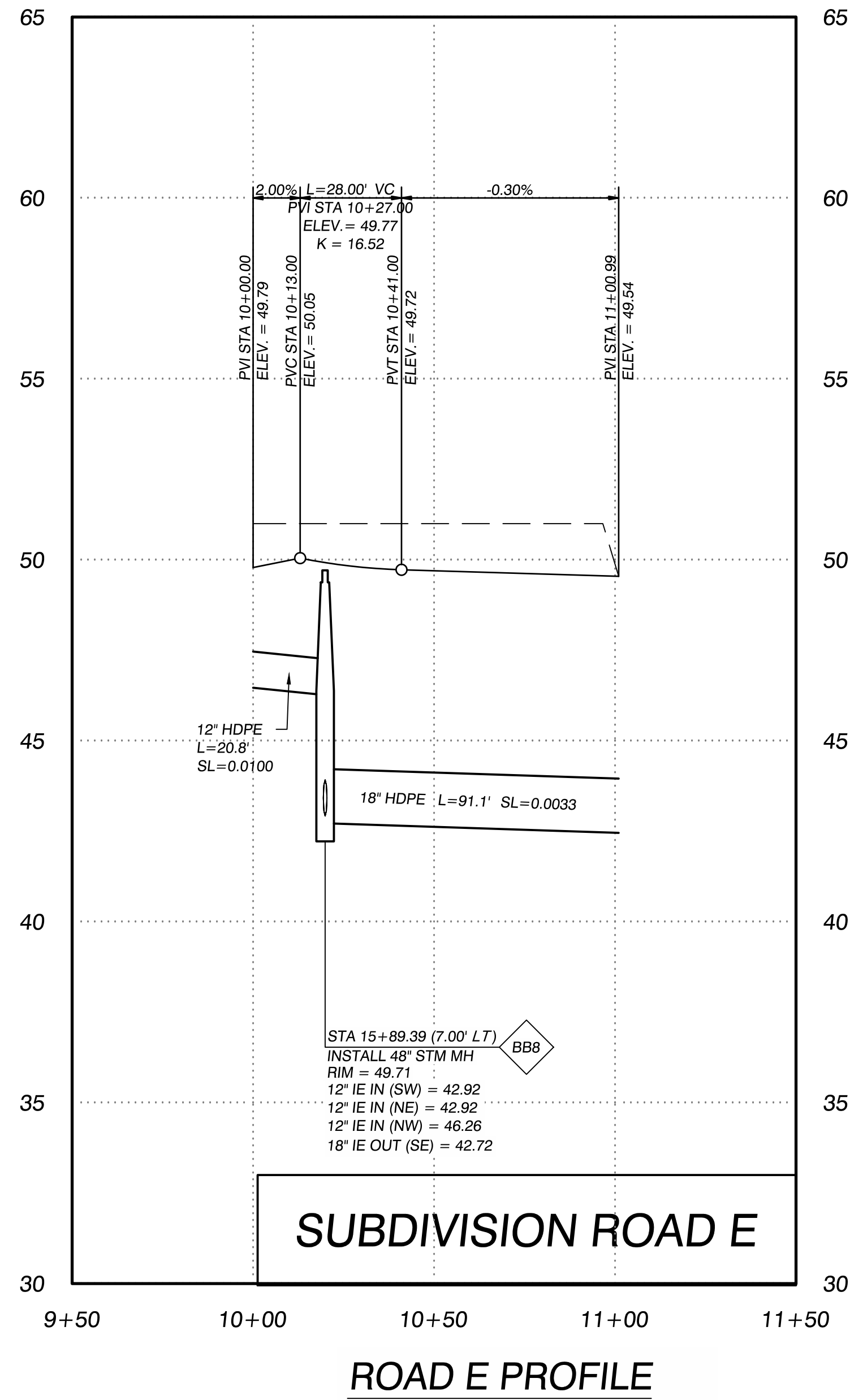
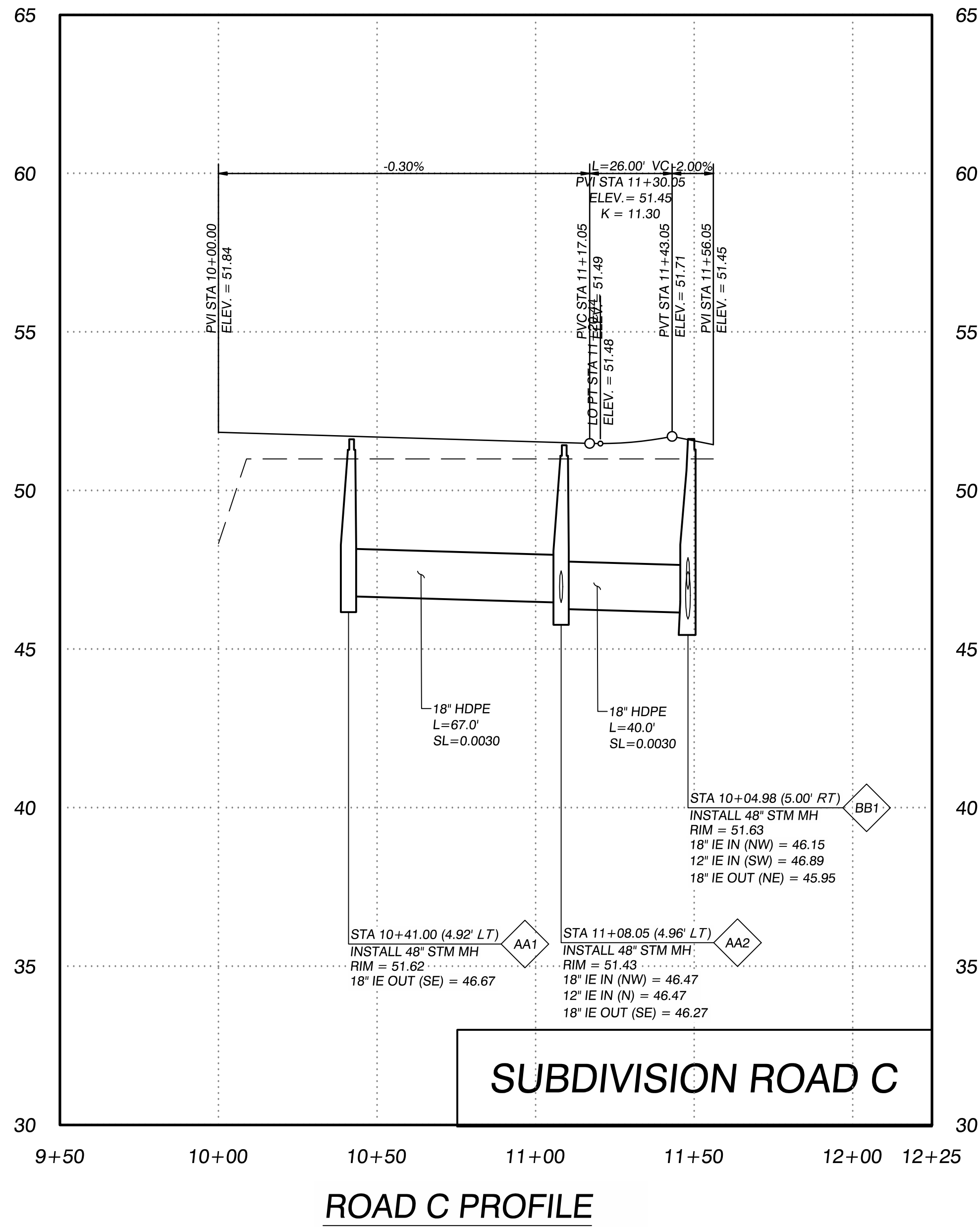
REVISIONS

JOB NO.:	18591
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CHECKED BY:	TAW

PRELIMINARY

C3.3

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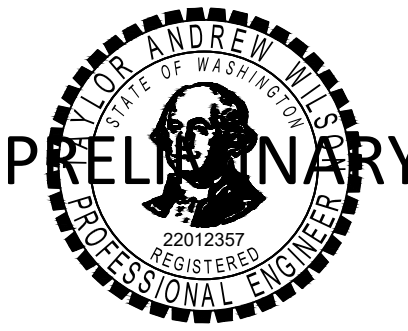
RIVER'S EDGE AT THE LANDING SUBDIVISION
CASTLE ROCK, WASHINGTON
ROAD C AND ROAD E STREET AND STORM PROFILES

REVISIONS:

JOB NO.: 18591
DATE: 3/27/2025
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CHECKED BY: TAW

PRELIMINARY

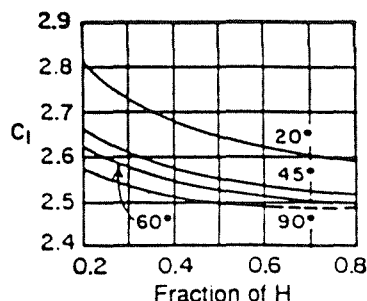
C3.4



3/27/2025

Appendix E Operation and Maintenance

Control Structures and Catch Basins (1992 SWMMPSB)



$$Q = C_d(\tan(\theta/2))H^{5/2}, \text{ in cfs}$$

Details

Standard control structure details are shown in Figures III-2.36 and III-2.37.

III-2.4.3 Maintenance of Control Structures

Control structures and catch basins have a history of maintenance-related problems and it is imperative that a good maintenance program be established for their proper functioning. A typical problem is that sediment builds up inside the structure which blocks or restricts flow to the inlet. To prevent this problem these structures should be routinely cleaned out a least twice per year. Regular inspections of control structures should be conducted to detect the need for non-routine cleanout, especially if construction or land-disturbing activities are occurring in the contributing drainage area.

A 15-foot wide access road to the control structure should be installed for inspection and maintenance.

Table III-2.10 provides maintenance recommendations for control structures and catch basins.

Figure III-2.36 Standard Control Structure Detail - Orifice Control

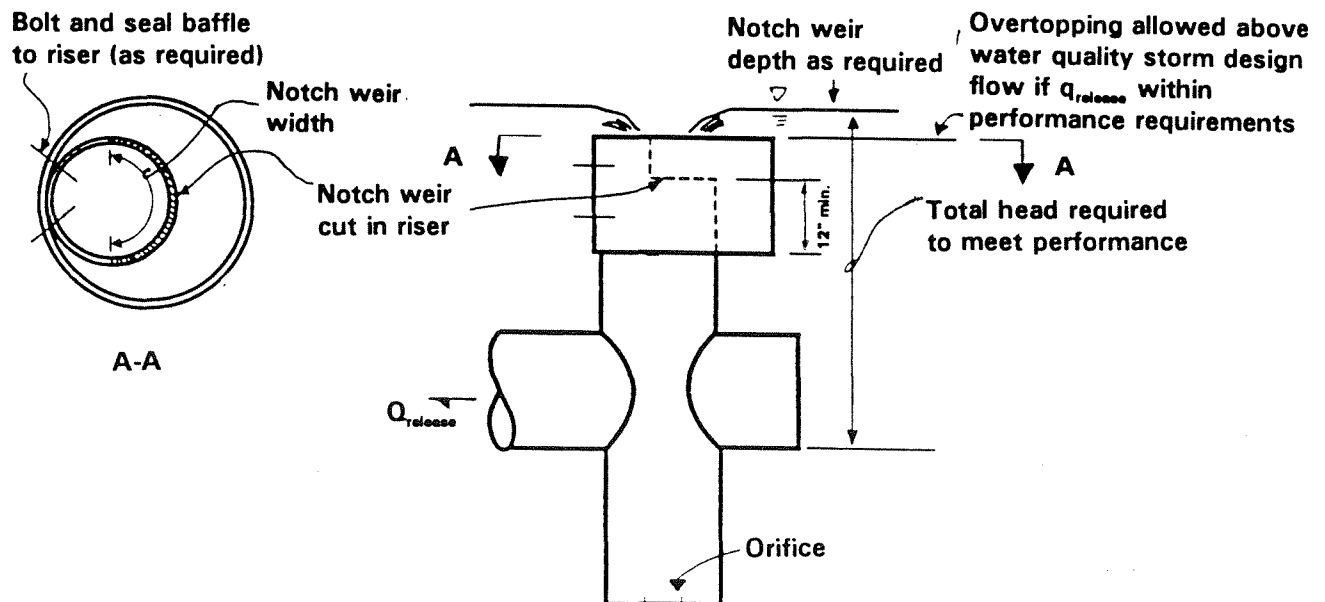
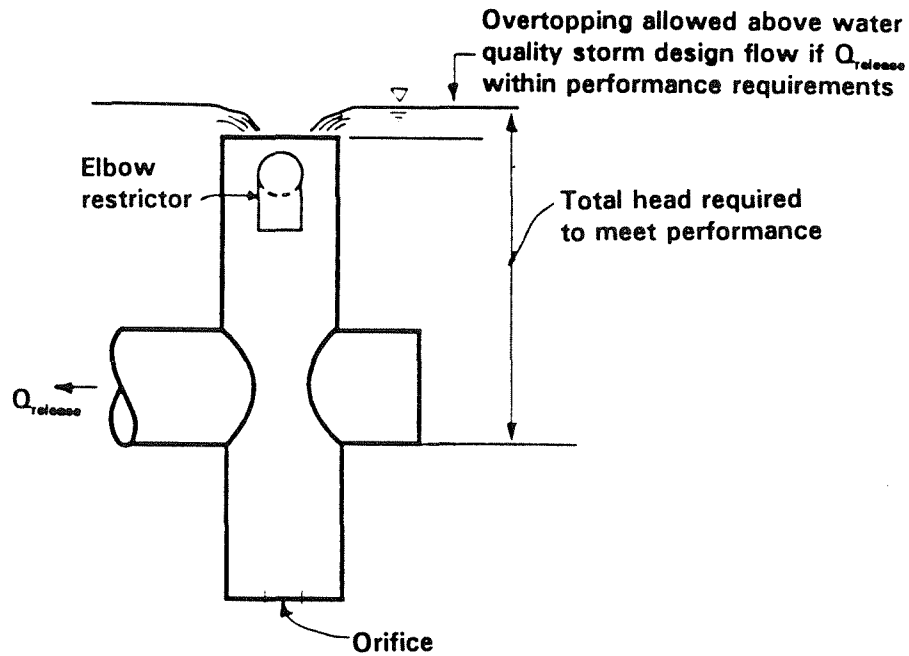
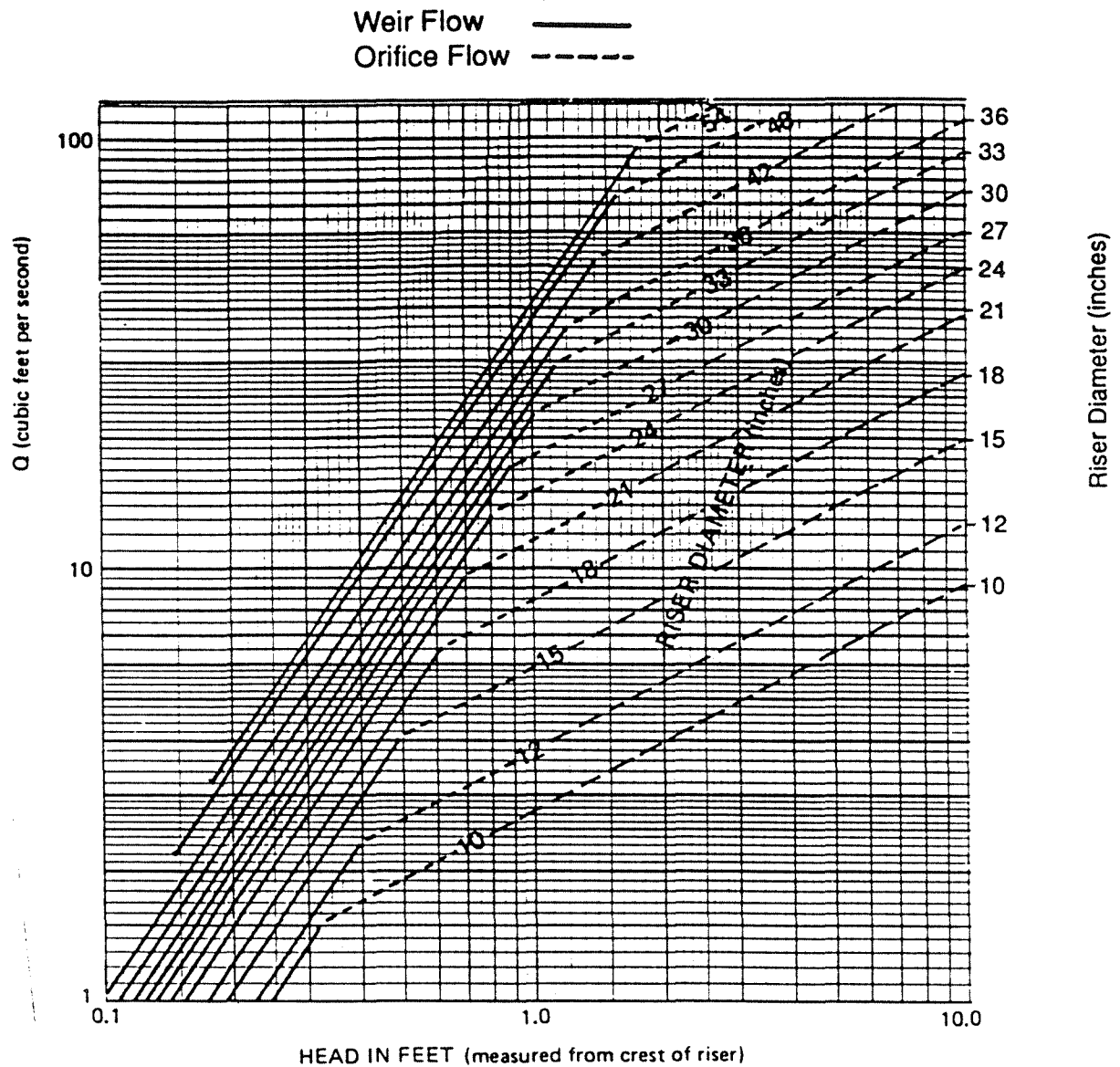


Figure III-2.37 Standard Control Structure Detail - Notch Control

Figure III-2.38 Riser Inflow Curves



SOURCE: USDA-SCS

$$Q_{\text{WEIR}} = 9.739 D H^{3/2}$$

$$Q_{\text{ORIFICE}} = 3.782 D^2 H^{1/2}$$

Q in cfs, D and H in feet

Table III-2.10 Maintenance of Control Structures and Catchbasins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
I. Control Structure/ Flow Restrictor - General	Trash & Debris (includes sediment)	Distance between debris buildup & bottom of orifice is $< 1\frac{1}{2}$ feet.	All trash & debris removed.
		Structure is not securely attached to manhole wall & outlet pipe structure should support at least 1000# of up or down pressure.	Structure securely attached to wall & outlet pipe.
	Structural Damage	Structure is not in upright position (up to 10% from plumb allowed).	Structure in correct position.
		Connections to outlet pipe are not watertight & show signs of rust.	Connections to outlet pipe are watertight; structure repaired or replaced and works as designed.
		Any holes - other than designed holes - in structure.	Structure has no holes other than designed holes.
		Cleanout gate is not watertight or is missing.	Gate is watertight and works as designed.
	Cleanout Gate	Gate cannot be moved up & down by one maintenance person.	Gate moves up and down easily and is watertight.
		Chain leading to gate is missing or damaged.	Chain is in place & works as designed.
		Gate is rusted over 50% of its surface area.	Gate is repaired or replaced to meet design standards.
	Obstructions	Trash, debris, sediment or vegetation blocking the plate.	Plate is free of all obstructions & works as designed.
Overflow Pipe	Obstructions	Trash or debris is blocking or potentially blocking the overflow pipe.	Pipe is free of all obstructions & works as designed.
Manhole		See "Pipes/Tanks" standard, Section III-4.6.1.	See "Pipes/Tanks" standard, Section III-4.6.1.
II. Catchbasins - General	Trash & Debris (includes sediment)	Trash & debris $\geq \frac{1}{2}$ ft. ³ which is located immediately in front of the catchbasin opening or is blocking capacity by $> 10\%$.	No trash or debris immediately in front of the catchbasin opening.
		Trash or debris in the basin that exceeds $\frac{1}{8}$ the depth from the bottom of basin to the invert of the lowest pipe.	No trash or debris in the catchbasin.
		Trash or debris in any inlet or pipe blocking more than $\frac{1}{8}$ of its height.	Inlet & outlet pipes free of trash or debris.
		Dead animals or vegetation that could generate odors or dangerous gases (e.g. methane).	No dead animals or vegetation present within the catchbasin.

STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Catchbasins - General, con't.		No condition present which would attract or support the breeding of insects or rodents.	
	Structural Damage to Frame and/or Top Slab	Frame is even with curb. Top slab is free of holes & cracks. Frame is sitting flush on top slab.	
	Cracks in Basin Walls or Bottom	Basin repaired or replaced to design standards. No cracks more than ¼ in. wide at the joint of inlet/outlet pipe.	
	Settlement/misalignment	Basin replaced or repaired to design standards.	
	Fire Hazard	No flammable chemicals present.	
	Vegetation	No vegetation blocking opening to basin. No vegetation or root growth present.	
	Pollution	No pollution present other than surface film	
	68°F or colder than ½ in. & longer than 1 ft. at the joint of any inlet or outlet pipe or any evidence of soil particles entering the catchbasin through cracks.		
	Basin has settled > 1 in. or has rotated > 2 in. out of alignment.		
	Presence of chemicals such as natural gas, oil and gasoline.		
	Vegetation growing across & blocking > 10% of the basin opening.		



Memorandum

To: **Shane Tapani**
CT6, LLC

From: **Daniel Stumpf, PE**

Date: **March 7, 2025**

Subject: **River's Edge on the Landing Subdivision**
Transportation Compliance Letter

3/7/2025

Daniel W
Stumpf



Introduction

This Transportation Compliance Letter (TCL) details a trip generation and accounting analysis for the proposed River's Edge on the Landing Subdivision, to be located within the Landing on the Cowlitz (LOT) Master Plan area in Castle Rock, Washington. The project will develop a 45-lot residential subdivision a single property (tax parcel 308640100) in Castle Rock, Washington.

Since the proposed development will be located in the Landing on the Cowlitz Master Plan area, according to the LOTC Development Agreement all subsequent land use development applications in the LOTC Master Plan area are required to prepare a trip generation and accounting analysis to verify the following:

- Ensure total site trip generation of all existing/planned/proposed developments within the LOTC Master Plan area does not exceed the reserved number of PM peak hour trips.
- Determine if/when mitigation will be triggered at nearby transportation facilities based on the total PM peak hour trip generation of all existing/planned/proposed developments within the LOTC Master Plan area.

The City of Castle Rock has reserved transportation capacity for the LOTC development. The LOTC development has been granted an initial 1,000 PM peak hour trips for reservation. Additional transportation capacity, up to 1,750 PM peak hour trips, may be reserved when the development consumes 80% (800 PM peak hour trips) of the initial capacity as outlined in the Development Agreement.

Detailed trip generation calculations and supporting data are included as attachments to this memorandum.

Project Site Description

The project site is located southwest of Huntington Avenue S and east/northeast of Larson Lane SW in Castle Rock, Washington. The site consists of three properties (tax parcels 30813, 308120100, and 30812), all of which are currently undeveloped.

As described in the *Introduction*, the site will be redeveloped as a 45-lot residential subdivision consisting of single-family detached houses. Main access to the site will be provided via a proposed Minor Arterial connection to Huntington Avenue S.

Trip Generation Analysis

To estimate the number of trips that will be generated by the proposed use, trip rates from the *Trip Generation Manual*¹ were used. Data from the land use code 210, *Single-Family Detached Housing*, was used to estimate site trip generation based on the square footage of the gross building floor area.

In accordance with the *Landing on the Cowlitz Master Plan Transportation Impact Study* (TIS), dated November 13, 2023, the following internal capture rates were applied to the proposed development's trip generation:

- AM Peak Hour: Approximately 6% of the total site trips.
- PM Peak Hour & Average Weekday: Approximately 13% of the total site trips.

The trip generation calculations show that the proposed development is projected to generate the following:

- Total Trips (Excluding Internal Capture Trips): 30 AM peak hour trips, 37 PM peak hour trips, and 368 average weekday trips.
- Pass-by Trips (Excluding Internal Capture Trips): 0 AM peak hour trips, 0 PM peak hour trips, and 0 average weekday trips.
- Primary Trips (Excluding Internal Capture Trips): 30 AM peak hour trips, 37 PM peak hour trips, and 368 average weekday trips.

The trip generation estimates are summarized in Table 1. Detailed trip generation calculations are included as an attachment to this memorandum.

¹ Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.



Table 1: Trip Generation Summary

Land Use Code		Size	AM Peak Hour			PM Peak Hour			Weekday Total
			Enter	Exit	Total	Enter	Exit	Total	
Single-Family Detached Housing	210	45 units	8	24	32	26	16	42	424
<i>Pass-by Trips</i>	-	<i>0% (0%)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
Total Primary Trips			8	24	32	26	16	42	424
<i>Internal Trip Reduction (Total Trips)</i>		6% (13%)	<i>0</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>5</i>	<i>56</i>
<i>Internal Trip Reduction (Pass-by Trips)</i>			<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>Internal Trip Reduction (Primary Trips)</i>			<i>0</i>	<i>2</i>	<i>2</i>	<i>3</i>	<i>2</i>	<i>5</i>	<i>56</i>
Total External Trips			8	22	30	23	14	37	368
<i>Total External Pass-by Trips</i>			0	0	0	0	0	0	0
Total External Primary Trips			8	22	30	23	14	37	368

Table Notes: AM and PM/ADT internal and pass-by rates denoted as AM (PM/ADT).

Trip Accounting Analysis

As described above, the proposed development will be located within the LOTC Master Plan where per the LOTC Development Agreement a reserved number of PM peak hour trips are vested. Additionally, PM peak hour thresholds to determine when transportation mitigation at nearby facilities would be necessary were established. To determine if the proposed development will not exceed the vested trip thresholds or trigger the need for transportation mitigation, a trip accounting analysis was conducted.

LOTC Trip Accounting

The proposed River's Edge on the Landing Subdivision will be the first development application proposed in the LOTC Master Plan area, where currently the total remaining trips vested are 1,000 PM peak hour trips. After approval of the River's Edge on the Landing Subdivision application, 963 PM peak hour trips will remain available in the bank of trips. Table 2 below summarizes the remaining trips vested in the LOTC Master Plan area following approval of the proposed development application.



Table 2: Remaining Vested Trip Summary (Total Trips Generated)

Project Name	Total PM Peak Hour Trips Allocated	Total PM Peak Hour Trips Remaining in Bank	Cumulative PM Peak Hour Trips Consumed from Bank
LOTC Master Plan	-	1,000	-
River's Edge on the Landing	37	963	37

Mitigation Threshold Analysis

Per the *Landing on the Cowlitz Master Plan TIS*, three intersections were identified as requiring capacity related mitigation improvements at specific impact thresholds. These intersections include the following:

1. SR-411 at Westside Highway
 - a. Mitigation required under 2043 conditions with or without impacts from the LOTC Master Plan area.
 - b. The LOTC will impact the intersection with 15% of externally generated primary trips.
2. Site Access at Huntington Avenue
 - a. Mitigation required once impacted by 657 PM peak hour trips.
 - b. The LOTC will impact the intersection with 100% of externally generated primary trips and pass-by trips.
3. I-5 Northbound Ramps at Huntington Avenue
 - a. Mitigation required once impacted by 384 PM peak hour trips.
 - b. The LOTC will impact the intersection with the following:
 - i. 10% of externally generated primary trips exiting the site.
 - ii. 50% of externally generated primary trips entering the site.
 - iii. 47.5% of externally generated pass-by trips.

Table 3 evaluates the PM peak hour trip thresholds of mitigation at nearby transportation facilities and if they will be necessary as part of this application.



Table 3: Mitigation Trip Impact Summary (Externally Generated PM Peak Hour Trips)

Transportation Facility		Planned Mitigation	Mitigation Threshold	Prior Approved Development Impacts	Proposed Development Impacts	Total Trip Impact	Mitigation Threshold Exceeded?
<i>Apply Externally Generated Primary Trip Impacts</i>							
1	SR-411 at Westside Highway	TBD, Collect Proportionate Share Contributions	0	0	5	5	Yes
<i>Apply Externally Generated Primary & Pass-by Trip Impacts</i>							
2	Site Access at Huntington Avenue	Single Lane Roundabout with NEB Right-turn Bypass Lane	657	0	37	37	No
3	I-5 NB Ramps at Huntington Avenue	TBD	384	0	13	13	No

A trip assignment figure for the proposed development is included as an attachment to this TCL.

Analysis Summary

Based on Tables 2 and 3, the proposed development will not increase PM peak hour trip generation to a level that exceeds the number of trips vested in the LOTC Master Plan area. The threshold for improvements at the SR-411 at Westside Highway intersection are met; however, these improvements were triggered without impacts from the LOTC Master Plan project. No other mitigation is necessary or recommended as part of the River's Edge on the Landing Subdivision application.

Conclusions

The proposed River's Edge on the Landing Subdivision is projected to generate 30 total AM peak hour trips, 37 total PM peak hour trips, and 368 total average weekday trips. After approval of the development application, 963 PM peak hour trips will remain available in the bank of trips, and therefore, will not increase PM peak hour trip generation to a level that exceeds the number of trips vested in the LOTC Master Plan area.

The threshold for improvements at the SR-411 at Westside Highway intersection are met; however, these improvements were triggered without impacts from the LOTC Master Plan project. No other mitigation is necessary or recommended as part of the River's Edge on the Landing Subdivision application.

If you have any questions or concerns regarding the preparation of this Transportation Compliance Letter, please don't hesitate to contact us.





TRIP GENERATION CALCULATIONS
Source: Trip Generation Manual, 11th Edition

Land Use: Single-Family Detached Housing

Land Use Code: 210

Land Use Subcategory: All Sites

Setting/Location: General Urban/Suburban

Variable: Dwelling Units

Trip Type: Vehicle

Formula Type: Rate

Variable Quantity: 45

AM PEAK HOUR

Trip Rate: 0.7

	Enter	Exit	Total
Directional Split	25%	75%	
Trip Ends	8	24	32

PM PEAK HOUR

Trip Rate: 0.94

	Enter	Exit	Total
Directional Split	63%	37%	
Trip Ends	26	16	42

WEEKDAY

Trip Rate: 9.43

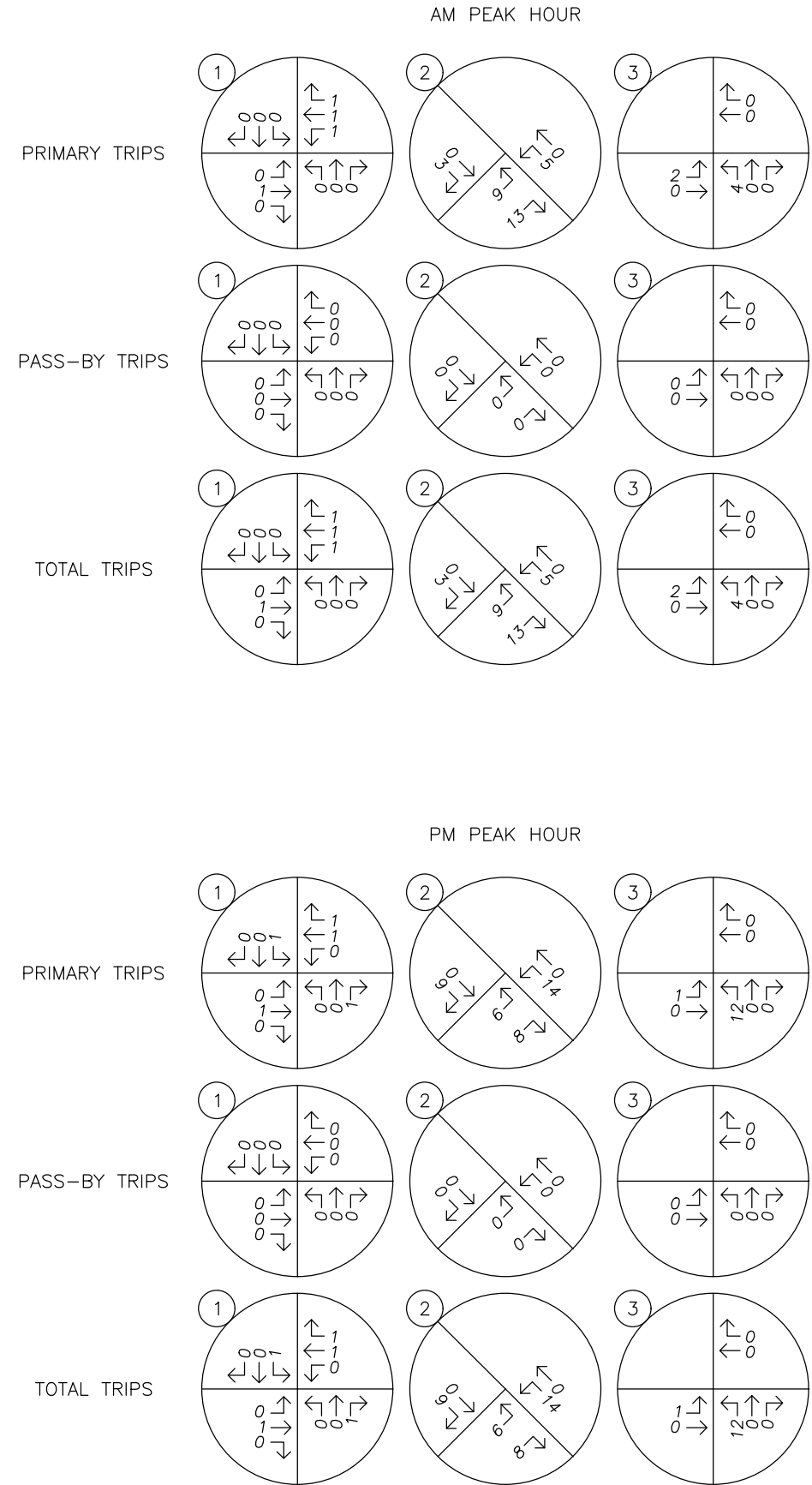
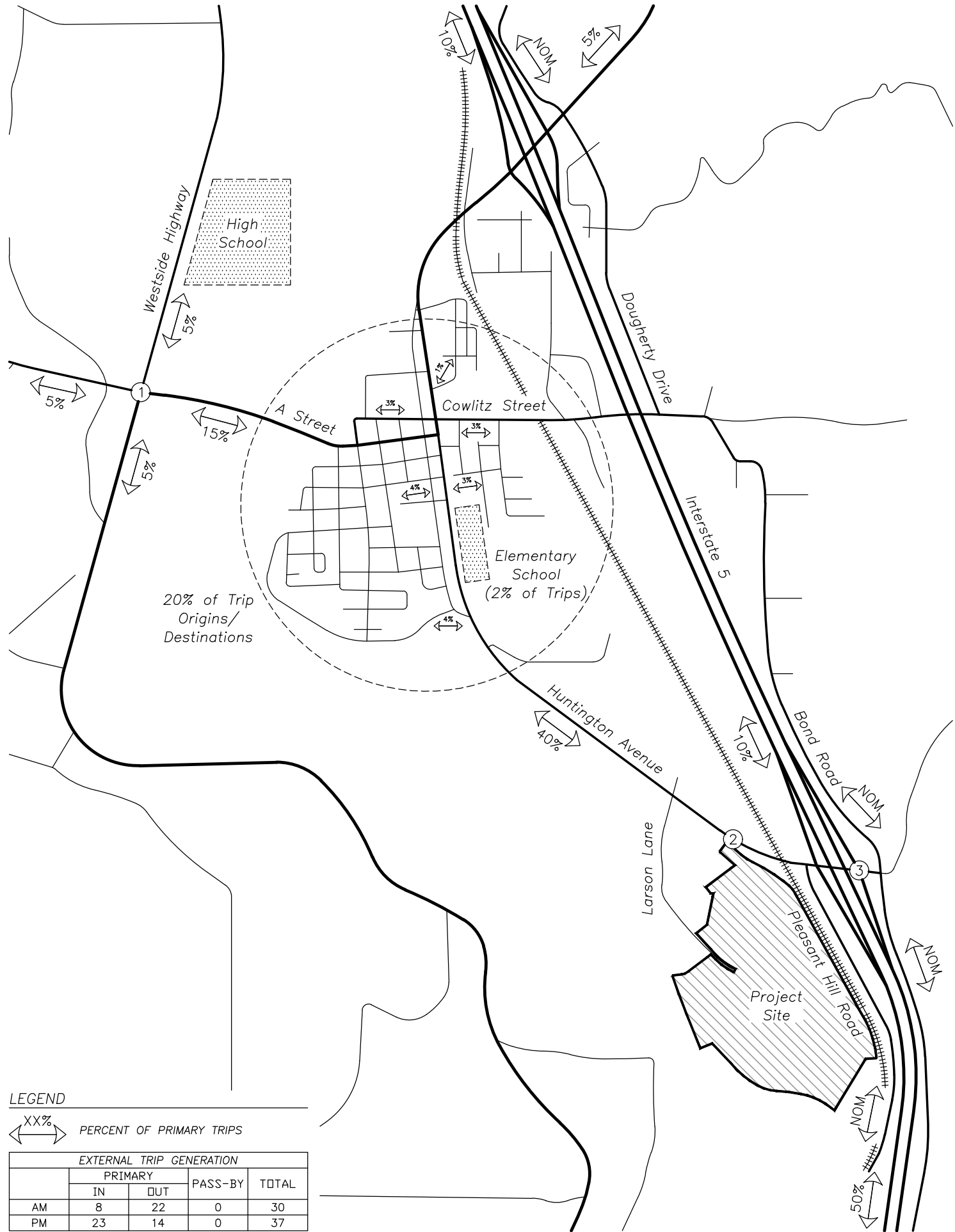
	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	212	212	424

SATURDAY

Trip Rate: 9.48

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	213	213	426

Source: Trip Generation Manual, 11th Edition



Memorandum

To: **Shane Tapani**
CT6, LLC

From: **Daniel Stumpf, PE**

Date: **January 14, 2025**

Subject: **SR-411 at Westside Highway – Mitigation Analysis**
Due Diligence Analysis Memorandum

Introduction

This memorandum reports the findings of a due diligence analysis conducted for the Landing on the Cowlitz (LOT) Master Plan area and subsequent development that will occur on-site. Specifically, this analysis reviews operation and potential mitigation at the intersection of SR-411 at Westside Highway. Prior study of the intersection was found it to exceed WSDOT mobility standards during the PM peak hour by year 2043 without impacts from the LOTC project.

Analysis items reviewed in this study include the following:

- Determine what year the intersection will operate in excess of WSDOT standards when considering both general traffic growth in the area in conjunction with added site trips.
- Review potential mitigation at the intersection that will allow for acceptable operation with full site buildout under year 2043 conditions.

The analysis conducted in this study focuses specifically on the PM peak hour since the intersection was found to operate acceptably during the AM peak hour under year 2043 conditions with full buildout of the project site. All potential mitigative measures reviewed in this study are not expected to worsen intersection operation during the AM peak hour to levels below WSDOT mobility standards.

Detailed information on traffic volume projections and level of service calculations are included as attachments to this memorandum.

Intersection Failure Year

The intersection of SR-411 at Westside Highway operates under the jurisdiction of WSDOT, where WSDOT mobility standards require the intersection operate at Level of Service (LOS) C or better. According to the *Landing on the Cowlitz Master Plan Development Agreement Transportation Impact Study* (TIS), dated November 13, 2023, the intersection of SR-411 at Westside Highway is projected to operate in excess of this LOS C standard during the PM peak hour by year 2043, without added impacts from the LOTC Master Plan area. To determine what year the intersection may exceed standards when considering both general traffic volume growth in the area and added impacts from future development withing LOTC Master Plan area, the following methodology was used:

- Traffic volumes, trip generation/distribution methodologies, and growth assumptions used in the 2023 TIS were referenced and utilized in developing volumes at the intersection of SR-411 at Westside Highway. These assumptions/data include the following:
 - PM peak hour counts were collected on Tuesday, October 17, 2023, from 4:00 PM to 6:00 PM.
 - A compounding annual growth rate of 2% per year over a 20-year period was applied to the collected 2023 traffic counts to estimate future year 2043 conditions.
 - With full buildout of the LOTC Master Plan area, the intersection is projected to be impacted by up to 174 PM peak hour trips.
 - Trips traveling between the intersection and project site will do so via SR-411 to the east. From the intersection approximately 5% of trips will travel to/from the north intersection leg, 5% of trips to/from the south leg, and 5% of trips to/from the west leg.
- Intersection volumes were estimated for each year between 2023 and 2043 by:
 - Applying a 2% compounding growth factor to the collected counts for each year after 2023.
 - Assuming 5% of the of the LOTC Master Plan area will be developed each year after 2023 until full buildout in 2043. The peak hour trips impacting the intersection were adjusted accordingly based on the percentage of site buildout.
- Intersection volumes for each year between 2023 and 2043 were inputted into a Trafficware Synchro/SimTraffic capacity analysis model to determine when the intersection will operate in excess of LOS C standards.

Based on the analysis findings, the SR-411 at Westside Highway intersection is projected to operate in excess of LOS C by year 2037 with approximately 70% of the LOTC Master Plan area developed.

The LOS, delay, and v/c results of the 2036 and 2037 capacity analyses are shown in Table 1 for the PM peak hour. The traffic volume projections and capacity reports are included as an attachment to this memorandum.



Table 1: 2036 and 2037 Intersection Capacity Analysis Summary

Analysis Scenario		PM Peak Hour		
Year	Percent of Site Buildout	LOS	Delay (s)	v/c
1. SR-411 at Westside Highway				
2036 Conditions	65%	C	23	0.81
2037 Conditions	70%	D	27	0.86

Table Notes: **BOLDED** text indicates intersection operates in excess of agency standards.

Mitigation Analysis

Under the existing lane and traffic control configuration, the intersection of SR-411 at Westside Highway was found to operate at LOS F during the PM peak hour under year 2043 conditions with full buildout of the site. In order to meet WSDOT's LOS C standard, three potential mitigative measures were considered and evaluated for the intersection. These measures include the following:

1. Add additional travel lanes at critical intersection approaches and turning movements.
2. Install a traffic signal with no revisions to intersection approach lanes.
3. Install a single-lane roundabout.

A fourth mitigative measure was initially considered which involved converting the all-way stop-controlled intersection to two-way stop-controlled by either removing the northbound/southbound stop signs or eastbound/westbound stop signs. Such mitigation was found infeasible given the highest volume intersection approaches during the PM peak hour were the northbound and westbound approaches, and no practical number of lane additions will allow the intersection to operate at LOS C or better.

Mitigation 1: Add Lanes

Focusing on the PM peak hour, the most critical and highest demand intersection approaches from greatest to least were 1) the westbound approach, 2) the northbound approach, 3) the southbound approach, and 4) the eastbound approach. Dedicated turn lanes were added to highest volume left or right turn movements of each approach until an LOS C result was obtained. The following intersection configuration was found to be necessary:

- Northbound and Westbound Approaches: Install a dedicated right-turn lane and revise the existing travel lane to serve both left-turn and through traffic.
- Southbound and Eastbound Approaches: No changes.

The aforementioned lane configuration is the most efficient design found to improve intersection operation to acceptable standards. However, alternative lane configuration designs that will still satisfy WSDOT standards are available. If obtaining adequate right-of-way or designing the intersection as described above is not practical, these alternative lane configuration designs can be further explored at your request.



Mitigation 2: Install a Traffic Signal

Based on a preliminary review of traffic signal Warrant 1 in the *Manual on Uniform Traffic Control Devices*, a traffic signal is projected to be warranted at the intersection by year 2037 with 70% of the LOTC Master Plan area development. Note the intersection is projected to trigger signal warrants by year 2043 without any added trips from the project site. Therefore, the installation of a signal at this intersection is reasonable.

Without revising the existing intersection lane configuration, the installation of a traffic signal will allow the intersection to operate at LOS B during the PM peak hour.

Mitigation 3: Install a Single-Lane Roundabout

The third reviewed mitigation would include reconstructing the intersection as a single-lane roundabout. The existing paved area of the intersection could potentially accommodate a roundabout with an outer radius of approximately 45 to 50 feet (90 to 100-foot inscribed diameter). This outer radius is sufficient to design either a mini-roundabout or a smaller roundabout with an inner radius of approximately 25 to 30 feet (50 to 60-foot diameter) with a circulating lane width of 20 feet.

Assuming the intersection is reconstructed as a single-lane roundabout, the intersection is projected to operate at LOS A during the PM peak hour.

Analysis Summary

The LOS, delay, and v/c results of each mitigation analysis scenario is shown in Table 2 for the PM peak hour. A figure depicting the 2043 buildout year volumes in the LOTC TIS is included in the attachments to this memorandum for reference purposes. The capacity reports for each mitigative analysis scenario and the preliminary signal warrant calculations are included in the attachments.

Table 2: Mitigation Capacity Analysis Summary

Analysis Scenario		PM Peak Hour		
Year	Mitigation	LOS	Delay (s)	v/c
1. SR-411 at Westside Highway				
2043 Site Buildout Conditions	None	F	60	1.11
2043 Site Buildout Conditions	Added NB & WB RT Lanes	C	21	0.68
2043 Site Buildout Conditions	Traffic Signal	B	12	-
2043 Site Buildout Conditions	Roundabout	A	9	0.59

Table Notes: **BOLDED** text indicates intersection operates in excess of agency standards.



Conclusions

The intersection of SR-411 at Westside Highway is projected to operate in excess of WSDOT's LOS C standard by year 2037 with approximately 70% of the LOTC Master Plan area developed.

Potential mitigation that will allow the intersection to operate acceptably with full buildout of the LOTC Master Plan area may include the following:

- Install dedicated right-turn lanes on the northbound and westbound intersection approaches. Note, alternative intersection lane configuration designs can be explored if this suggested design is not practical.
- Install a traffic signal at the intersection. No changes to intersection approach lanes or geometry are necessary.
- Reconstruct the intersection as either mini-roundabout or a smaller roundabout.

If you have any questions or concerns regarding this analysis, please don't hesitate to contact me.

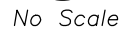


Year 2036 Traffic Volumes (13 Years of Growth and 65% Site Buildout)

	1. SR-411 & Westside Highway										1. SR-411 & Westside Highway																						
	AM Peak Hour										PM Peak Hour																						
Existing Conditions (Blue: Heavy Vehicle Percentages)								R	136										R	164													
								T	47	6.4%									T	54	1.6%												
								L	50										L	98													
	7.3%																																
	14	89	143																														
	R	T	L	PHF																													
							0.76				L	T	R							L	T	R											
							L	8				81	76							L	43				135	102							
							4.0%	25					10.9%										2.3%	28					2.1%				
								50																45									
							24																14										
Background Conditions (Blue: Growth Factor)								R	176										R	212													
								T	61	1.29									T	70	1.29												
								L	65										L	127													
	1.29																																
	18	115	185																														
	R	T	L	PHF																													
							1.00				L	T	R							L	T	R											
							L	10				105	98							L	56				175	132							
							1.29	65					1.29										1.29	58					1.29				
								31																18									
External Site Trips (Blue: Full Buildout Trips and Assumed Percentage of Site Buildout)								R	8	65%	12								R	23	65%	35											
								T	8	65%	12								T	23	65%	35											
								L	8	65%	12								L	23	65%	35											
	31																																
	65%																																
	0	0	20																														
	R	T	L	PHF																													
							1.00				L	T	R							L	T	R											
							L	0				0	20							L	0				0	15							
							31	65%	20					65%										23	65%	15					65%		
							0					31											0					23					
Buildout Conditions								R	184										R	235													
								T	69										T	93													
								L	73										L	150													
	18																																
	115																																
	205																																
	R	T	L	PHF																													
							1.00				L	T	R							L	T	R											
							L	10				105	118							L	56				175	147							
								32																36									
							85																73										
							31																18										

Year 2037 Traffic Volumes (14 Years of Growth and 70% Site Buildout)

	1. SR-411 & Westside Highway										1. SR-411 & Westside Highway													
	AM Peak Hour										PM Peak Hour													
Existing Conditions (Blue: Heavy Vehicle Percentages)								R	136										R	164				
								T	47	6.4%									T	54	1.6%			
								L	50										L	98				
	7.3%																							
	14	89	143																					
	R	T	L	PHF																				
							0.76				L	T	R											
							L					8	81	76										
	4.0%						25	L																
							50	T																
						24	R																	
										10.9%														
Background Conditions (Blue: Growth Factor)								R	179										R	216				
								T	62	1.32									T	71	1.32			
								L	66										L	129				
	1.32																							
	18	117	189																					
	R	T	L	PHF																				
							1.00				L	T	R											
							L					11	107	100										
	1.32						33	L																
							66	T																
						32	R																	
										1.32														



Traffic Signal Warrant Analysis



Project: SR-411 at Westside Highway Mitigation Analysis
 Date: 1/13/2025
 Scenario: 2037 Traffic Volumes (70% Site Buildout)

Major Street:	North/South Approaches	Minor Street:	East/West Approaches
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	660	PM Peak Hour Volumes:	431

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
Major St.	Minor St.	100% Warrants	70% Warrants	100% Warrants	70% Warrants
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	6,600	6,200	
Minor Street*	4,310	1,850	Yes
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	6,600	9,300	
Minor Street*	4,310	950	No
<i>Combination Warrant</i>			
Major Street	6,600	7,440	
Minor Street*	4,310	1,480	No

* Minor street right-turning traffic volumes reduced by 25%

Traffic Signal Warrant Analysis



Project: SR-411 at Westside Highway Mitigation Analysis
 Date: 1/13/2025
 Scenario: 2043 Traffic Volumes (0% Site Buildout)

Major Street:	North/South Approaches	Minor Street:	East/West Approaches
Number of Lanes:	1	Number of Lanes:	1
PM Peak Hour Volumes:	707	PM Peak Hour Volumes:	409

Warrant Used:

	100 percent of standard warrants used
X	70 percent of standard warrants used due to 85th percentile speed in excess of 40 mph or isolated community with population less than 10,000.

Number of Lanes for Moving Traffic on Each Approach:		ADT on Major St. (total of both approaches)		ADT on Minor St. (higher-volume approach)	
		100%	70%	100%	70%
<u>Major St.</u>	<u>Minor St.</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>	<u>Warrants</u>
1	1	8,850	6,200	2,650	1,850
2 or more	1	10,600	7,400	2,650	1,850
2 or more	2 or more	10,600	7,400	3,550	2,500
1	2 or more	8,850	6,200	3,550	2,500
WARRANT 1, CONDITION B					
1	1	13,300	9,300	1,350	950
2 or more	1	15,900	11,100	1,350	950
2 or more	2 or more	15,900	11,100	1,750	1,250
1	2 or more	13,300	9,300	1,750	1,250

Note: ADT volumes assume 8th highest hour is 5.6% of the daily volume

	Approach Volumes	Minimum Volumes	Is Signal Warrant Met?
Warrant 1			
<i>Condition A: Minimum Vehicular Volume</i>			
Major Street	7,070	6,200	
Minor Street*	4,090	1,850	Yes
<i>Condition B: Interruption of Continuous Traffic</i>			
Major Street	7,070	9,300	
Minor Street*	4,090	950	No
<i>Combination Warrant</i>			
Major Street	7,070	7,440	
Minor Street*	4,090	1,480	No

* Minor street right-turning traffic volumes reduced by 25%

Intersection

Intersection Delay, s/veh 23.1

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	73	18	150	93	235	56	175	147	131	107	28
Future Vol, veh/h	36	73	18	150	93	235	56	175	147	131	107	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	36	73	18	150	93	235	56	175	147	131	107	28
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12.9	30.6	21.4	16.8
HCM LOS	B	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	28%	31%	49%
Vol Thru, %	46%	57%	19%	40%
Vol Right, %	39%	14%	49%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	378	127	478	266
LT Vol	56	36	150	131
Through Vol	175	73	93	107
RT Vol	147	18	235	28
Lane Flow Rate	378	127	478	266
Geometry Grp	1	1	1	1
Degree of Util (X)	0.667	0.258	0.812	0.506
Departure Headway (Hd)	6.353	7.326	6.117	6.847
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	563	493	588	521
Service Time	4.438	5.326	4.194	4.942
HCM Lane V/C Ratio	0.671	0.258	0.813	0.511
HCM Control Delay, s/veh	21.4	12.9	30.6	16.8
HCM Lane LOS	C	B	D	C
HCM 95th-tile Q	5	1	8.1	2.8

Intersection

Intersection Delay, s/veh 26.7

Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	37	75	18	154	96	241	57	178	151	135	110	29
Future Vol, veh/h	37	75	18	154	96	241	57	178	151	135	110	29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	37	75	18	154	96	241	57	178	151	135	110	29
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	13.4	37	24	18.2
HCM LOS	B	E	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	28%	31%	49%
Vol Thru, %	46%	58%	20%	40%
Vol Right, %	39%	14%	49%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	386	130	491	274
LT Vol	57	37	154	135
Through Vol	178	75	96	110
RT Vol	151	18	241	29
Lane Flow Rate	386	130	491	274
Geometry Grp	1	1	1	1
Degree of Util (X)	0.707	0.272	0.863	0.539
Departure Headway (Hd)	6.594	7.52	6.328	7.088
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	548	476	574	507
Service Time	4.624	5.59	4.35	5.149
HCM Lane V/C Ratio	0.704	0.273	0.855	0.54
HCM Control Delay, s/veh	24	13.4	37	18.2
HCM Lane LOS	C	B	E	C
HCM 95th-tile Q	5.6	1.1	9.5	3.2

Intersection

Intersection Delay, s/veh 59.8

Intersection LOS F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	90	21	181	115	279	64	201	175	157	123	33
Future Vol, veh/h	42	90	21	181	115	279	64	201	175	157	123	33
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	42	90	21	181	115	279	64	201	175	157	123	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	16.7	101.5	43.8	26.6
HCM LOS	C	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	27%	31%	50%
Vol Thru, %	46%	59%	20%	39%
Vol Right, %	40%	14%	49%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	440	153	575	313
LT Vol	64	42	181	157
Through Vol	201	90	115	123
RT Vol	175	21	279	33
Lane Flow Rate	440	153	575	313
Geometry Grp	1	1	1	1
Degree of Util (X)	0.874	0.357	1.117	0.674
Departure Headway (Hd)	7.584	8.849	6.995	8.229
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	480	409	518	441
Service Time	5.584	6.849	5.067	6.229
HCM Lane V/C Ratio	0.917	0.374	1.11	0.71
HCM Control Delay, s/veh	43.8	16.7	101.5	26.6
HCM Lane LOS	E	C	F	D
HCM 95th-tile Q	9.3	1.6	18.8	4.9

Intersection

Intersection Delay, s/veh 20.5

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕	↕		↕	
Traffic Vol, veh/h	42	90	21	181	115	279	64	201	175	157	123	33
Future Vol, veh/h	42	90	21	181	115	279	64	201	175	157	123	33
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	3	3	3
Mvmt Flow	42	90	21	181	115	279	64	201	175	157	123	33
Number of Lanes	0	1	0	0	1	1	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay, s/veh	16.3	20.6	17.8	26.3
HCM LOS	C	C	C	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	0%	27%	61%	0%	50%
Vol Thru, %	76%	0%	59%	39%	0%	39%
Vol Right, %	0%	100%	14%	0%	100%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	175	153	296	279	313
LT Vol	64	0	42	181	0	157
Through Vol	201	0	90	115	0	123
RT Vol	0	175	21	0	279	33
Lane Flow Rate	265	175	153	296	279	313
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.576	0.339	0.359	0.645	0.528	0.683
Departure Headway (Hd)	7.822	6.977	8.457	7.844	6.811	7.857
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	461	515	424	459	527	460
Service Time	5.59	4.745	6.55	5.612	4.579	5.926
HCM Lane V/C Ratio	0.575	0.34	0.361	0.645	0.529	0.68
HCM Control Delay, s/veh	20.8	13.3	16.3	23.9	17	26.3
HCM Lane LOS	C	B	C	C	C	D
HCM 95th-tile Q	3.6	1.5	1.6	4.5	3.1	5

HCM 7th Signalized Intersection Summary

1: SR-411 & Ph 10 & Westside Highway

01/13/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	90	21	181	115	279	64	201	175	157	123	33
Future Volume (veh/h)	42	90	21	181	115	279	64	201	175	157	123	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	0.99		0.99	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	42	90	21	181	115	279	64	201	175	157	123	33
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	244	477	97	295	174	335	153	292	228	315	222	48
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	300	1066	217	406	388	748	161	868	679	552	661	143
Grp Volume(v), veh/h	153	0	0	575	0	0	440	0	0	313	0	0
Grp Sat Flow(s),veh/h/ln	1583	0	0	1542	0	0	1708	0	0	1356	0	0
Q Serve(g_s), s	0.0	0.0	0.0	10.8	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	13.5	0.0	0.0	9.3	0.0	0.0	7.8	0.0	0.0
Prop In Lane	0.27		0.14	0.31		0.49	0.15		0.40	0.50		0.11
Lane Grp Cap(c), veh/h	819	0	0	804	0	0	673	0	0	586	0	0
V/C Ratio(X)	0.19	0.00	0.00	0.71	0.00	0.00	0.65	0.00	0.00	0.53	0.00	0.00
Avail Cap(c_a), veh/h	1132	0	0	1125	0	0	1042	0	0	876	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.9	0.0	0.0	10.0	0.0	0.0	12.3	0.0	0.0	11.5	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.3	0.0	0.0	1.1	0.0	0.0	0.8	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	3.2	0.0	0.0	2.9	0.0	0.0	1.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.0	0.0	0.0	11.3	0.0	0.0	13.3	0.0	0.0	12.3	0.0	0.0
LnGrp LOS	A			B			B			B		
Approach Vol, veh/h	153			575			440			313		
Approach Delay, s/veh	7.0			11.3			13.3			12.3		
Approach LOS	A			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.5			23.2			18.5			23.2		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	23.5			27.5			23.5			27.5		
Max Q Clear Time (g_c+I1), s	11.3			4.1			9.8			15.5		
Green Ext Time (p_c), s	2.2			0.8			1.7			3.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	11.7											
HCM 7th LOS	B											

Intersection				
Intersection Delay, s/veh	9.3			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	153	575	440	313
Demand Flow Rate, veh/h	156	587	449	323
Vehicles Circulating, veh/h	474	313	297	367
Vehicles Exiting, veh/h	216	433	333	533
Ped Vol Crossing Leg, #/h	10	0	0	5
Ped Cap Adj	0.999	1.000	1.000	0.999
Approach Delay, s/veh	6.2	11.6	8.6	7.6
Approach LOS	A	B	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
A (Intercept)	1380	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	156	587	449	323
Cap Entry Lane, veh/h	851	1003	1019	949
Entry HV Adj Factor	0.982	0.979	0.980	0.970
Flow Entry, veh/h	153	575	440	313
Cap Entry, veh/h	834	982	999	920
V/C Ratio	0.184	0.585	0.441	0.341
Control Delay, s/veh	6.2	11.6	8.6	7.6
LOS	A	B	A	A
95th %tile Queue, veh	1	4	2	2

After Recording Return To:

CT6, LLC
PO Box 1419
Battle Ground, WA 98604

**MASTER DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS
LANDING ON THE COWLITZ MASTER PLAN
LANDING ON THE COWLITZ MASTER ASSOCIATION**

**MASTER DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS
LANDING ON THE COWLITZ MASTER PLAN
LANDING ON THE COWLITZ MASTER ASSOCIATION**

This Master Declaration of Covenants, Conditions, Restrictions and Easements is made by CT6, LLC, as the Declarant and owner of the Property described below.

A. Declarant is the owner of real property located in the Cowlitz County, Washington, described in **Exhibit A** and illustrated in **Exhibit A-1**, attached and incorporated by reference into this Declaration (Property). The Property is comprised of the real property legally described in **Exhibit A** and any other real property added by an amendment to this Declaration according to the procedures in this Declaration. Declarant is developing property within the master planned community (Master Community) on the Property in accordance with the Landing on the Cowlitz Master Plan (Master Plan) approved by the City of Castle Rock on November 8, 2021, and in accordance with the Development Agreement dated February 20, 2024, a memorandum of which was recorded on May 3, 2024, under Cowlitz County Auditor's File No. 3751162.

B. Declarant plans to develop, own and convey the Property subject to these covenants, conditions, restrictions and easements and subject to any other matters of record.

C. Declarant hereby declares that all of the Property will be held, leased, encumbered, used, occupied, improved, sold and conveyed subject to the following covenants, conditions, restrictions, reservations and easements, all and each of which are for the purpose of enhancing and perfecting the value, desirability, and attractiveness of the Property, in furtherance of a general plan for the protection of the Property. All and each of these covenants, conditions, restrictions, and easements are hereby imposed as equitable servitudes upon the Property. They will run with the Property, and every portion of the Property, will be binding on all parties having or acquiring any right, title or interest in the Property, and every portion of the Property, and their lessees, guests, heirs, successors and assigns, will inure to the benefit of every portion of the Property and any interest therein, will inure to the benefit of each Owner, and his or her heirs, successors and assigns, and may be enforced by the Owners, the Association and Declarant in accordance with the terms of this Declaration. Acceptance of any portion of the Property will be deemed acceptance of the terms and provisions of this Declaration.

NARRATIVE AND PURPOSE

The Landing on the Cowlitz Master Plan, adopted by the City of Castle Rock on November 8, 2021, in Ordinance 2021-10, encompasses a total area of approximately 118 acres. The approved Master Plan is for a large scale industrial, commercial, residential, and recreational mixed-used development. The goal of the Landing on the Cowlitz Master Plan is to provide a mixed-use community offering prospective owners a place to live, work and play.

The Landing on the Cowlitz Master Plan will include several different types of residential housing and industrial and commercial buildings. In addition, the area includes parks, open spaces, water quality facilities, pathways, and other recreational facilities that serve the entire community on a community-wide basis. These community-wide features, along with the diversity of housing and land use, require the adoption of this Master Declaration and other documents and the creation of an organization responsible for the management of all amenities and utilities deemed "community-wide" by the Declarant. Additionally, the Declarant finds that the creation of a master association will assist in the individual development of parcels throughout the Master Plan area at the direction of the Declarant.

Therefore, Declarant hereby declares the creation of the Landing on the Cowlitz Master Association (Master Association) and this Master Declaration for the purpose of providing governance for the Landing on the Cowlitz Master Plan Area subject to this Declaration and the active management of all regional amenities, utilities and facilities.

ARTICLE 1. DEFINITIONS

The following words, when used in this Declaration, and in any amendment to this Declaration, have the following meanings unless otherwise expressly provided in this Declaration or an amendment:

1.1 "Articles" means the Articles of Incorporation of the Association which have been or will be filed in the office of the Secretary of State of the State of Washington, as such Articles may be amended from time to time.

1.2 "Assessment(s)" means all assessments imposed pursuant this Declaration, including without limitation General Assessments, Capital Improvement Assessments, Special Assessments, and Reconstruction Assessments. Assessment does not include any assessments levied by a Sub Association, which assessments will be governed by the Sub Association's Governing Documents.

1.3 "Assessment Period" means a calendar year for General Assessments, and such other period as determined by the Board for other Assessments.

1.4 "Association" means the Landing on the Cowlitz Master Association, a Washington non-profit corporation, its successors and assigns.

1.5 "Sub Association" means any other non-profit association governing a Development Parcel located within the Landing on the Cowlitz Master Plan.

1.6 "Association Lien" means a lien in favor of the Association imposed pursuant to this Declaration.

1.7 "Board of Directors" or "Board" means the Board of Directors of the Association.

1.8 "Budget" means the operating budget for the Association adopted pursuant to Section 4.4 below.

1.9 "Bylaws" mean the Bylaws of the Association, as adopted by the Board, and as may be amended from time to time.

1.10 "Capital Improvement Assessment(s)" means an Assessment imposed pursuant to Section 4.5 below.

1.11 "Capital Improvement Work" has the meaning ascribed to it in Section 4.5 below.

1.12 "Close of Escrow" means the date on which a deed conveying a Lot or Development Parcel is Recorded.

1.13 "Common Areas" mean all real property and Improvements: (a) owned, maintained or leased by the Association; (b) in which the Association has an easement for access or maintenance for the use, enjoyment, and benefit of the Members; and (c) in which the Members have a right of control by any written instrument, including this Declaration, the Master Plan or Plat, but excluding streets or other areas dedicated or conveyed to a governmental entity for public use. The Common Areas may be improved with certain common facilities and, if and when improved, will include such common facilities. If meeting the definition above, the Common Areas may include (where applicable, if and when improved) common greens and open space areas, including Improvements, street lights, street trees and other landscaping, Signs, recreational, picnic and athletic facilities, pedestrian and hiking paths and trails, bicycle paths, private alleys, irrigation systems located in public rights of way, drainage and storm water detention areas and sewer, water, storm drainage, and other utility systems located on or in the Common Areas. In addition, or specific to the above list, the Common Areas include the areas and facilities as determined by the Declarant or Board of Directors. At a minimum the Common Areas include the areas and facilities listed in **Exhibit B** in addition to the foregoing.

1.14 "Common Expenses" means all costs and expenses incurred by the Association, including, but not limited to, the following: (a) expenses of administration, maintenance, and operation, including, but not limited to, reasonable compensation to employees of the Association, (b) costs of maintenance, repair, replacement and capital improvement of the Common Areas and any Improvements, (c) premiums or deductibles for all insurance policies and bonds required or permitted by this Declaration, (d) all real property and other taxes and assessments on the Common Areas, (e) utility and service charges, (f) funding of reserves for anticipated operational shortfalls or for replacement of capital items, (g) funding of reserves for the replacement of the Common Areas and any improvements and community facilities therein, and start-up expenses and operating contingencies of a nonrecurring nature, (h) legal fees and costs, (i) the costs of recovering unpaid Assessments, including legal fees and other costs of foreclosure of an Association Lien, (j) expenses of administration, maintenance, operation, repair or replacement of landscaping performed by the Association or the

Association's agent on the Owners' Lots and Development Parcels, (k) costs payable under Section 3.5(b) below, (l) the cost of maintaining or repairing any storm water drainage system, and (m) any other costs and expenses determined from time to time as reasonably necessary by the Board to carry out the purposes of this Declaration, or as otherwise incurred by the Association pursuant to this Declaration.

1.15 "Declarant" means CT6, LLC, its successors or assigns and any Person to which it has been assigned, in whole or in part, any of its rights hereunder by an express written assignment or deed prior to the Turnover Date.

1.16 "Declaration" means this Declaration of Covenants, Conditions, Restrictions and Easements for Landing on the Cowlitz Master Association, as it may be amended from time to time.

1.17 "Development Parcel" means any division of land within the Landing on the Cowlitz Master Plan area proposed for future or current development of residential, industrial, or commercial Lots.

1.18 "Development Period" means the period of time from the date of Recording this Declaration until the Turnover Date.

1.19 "Development Rights" mean those rights of Declarant reserved throughout this Declaration. Declarant may exercise any and all Development Rights at any time during the Development Period in Declarant's sole discretion.

1.20 "General Assessment(s)" means Assessments imposed by the Association pursuant to Section 4.4 below.

1.21 "Governing Documents" means those documents identified in RCW 64.90.010(28).

1.22 "Improvement" means all structures and appurtenances thereto of every kind, whether above or below the land surface, including but not limited to, buildings dwellings, garages, utility systems, walkways, driveways, parking areas, loading areas, landscaping items, swimming pools, sports courts, fences, walls, decks, stairs, poles, landscaping vegetation, irrigation systems, Streets, Signs, exterior fixtures, playfields and appurtenant facilities, recreational facilities, play structures, picnic structures and any other structure of any kind.

1.23 "Institutional Lender" means one or more commercial or savings banks, savings and loan associations, trust companies, credit unions, industrial loan associations, insurance companies, pension funds or business trusts, including, but not limited to real estate investments trusts, any other lender regularly engaged in financing the purchase, construction, or Improvement of real estate, or any assignee of loans made by such a lender, or any private or governmental institution which has insured the loan of such a lender, including Federal Mortgage Agencies, or any combination of any of the foregoing entities.

1.24 "Lot" means each separate parcel, including in a recorded Plat or in a Development Parcel, to be used for construction of approved development and which is not a Common Area nor dedicated to the public.

1.25 "Majority Vote" means a vote of more than 50% of the Total Voting Power of the Association or Board.

1.26 "Map" or "Master Plan" means the Landing on the Cowlitz Master Plan and any amendments made to the Master Plan.

1.27 "Member" means every person or entity who or which holds a Membership in the Association, as provided in Section 3.8 below. "Membership" means the status of being a Member.

1.28 "Mortgage"— "Mortgagee"— "Mortgagor." A Mortgage means any recorded mortgage or deed of trust on a Lot or Development Parcel. A Mortgagee means any holder of a Mortgage and is deemed to include the beneficiary of a deed of trust. A Mortgagor means the borrower under a Mortgage and is deemed to include the trustor or grantor of a deed of trust.

1.29 "Occupant" means a tenant, lessee or licensee of an Owner or any other person or entity, other than an Owner, in lawful possession of a Lot or Development Parcel, or a portion thereof, with the permission of the Owner.

1.30 "Owner" means the Person(s), including Declarant, holding fee simple title of record to any Lot or Development Parcel, including purchasers under recorded executory contracts of sale. "Co-Owners" means more than one Owner. "Ownership" means the status of being an Owner. The Declarant is an Owner until it sells the last Lot and Development Parcel within the Property, including within additional properties added to this Declaration and the Association during the Development Period.

1.31 "Person" means a natural individual, partnership, limited liability company, company, corporation or any other entity with the legal right to hold title to real property.

1.32 "Plat" means the legally adopted and recorded subdivision of a Development Parcel within the Landing on the Cowlitz Master Plan area.

1.33 "Property" means all of the real property described in **Exhibit A** to this Declaration and all real property added by amendment of this Declaration and/or the Master Plan.

1.34 "Prorata Share" means, for any particular Owner, that portion of any Assessment it is responsible for paying.

1.35 "Reconstruction Assessment(s)" means an Assessment imposed pursuant to Section 11.1 below.

1.36 "Record" or "File" means, with respect to any document, the recordation thereof, and with respect to any map, the filing thereof, in the official Records of Cowlitz County, Washington.

1.37 "Signs" means any structure, device or contrivance, electric or non-electric, upon or within which any poster, bill, bulletin, printing, lettering, painting, device, or other advertising of any kind whatsoever is used placed, posted, tacked, nailed, or otherwise fastened or affixed.

1.38 "Special Assessment(s)" means an Assessment imposed as a Special Assessment pursuant to any provision of this Declaration.

1.39 "Street" means any public or private street, drive-way lane (if located in a public right of way or Common Area), place or other thoroughfare either as shown on the Master Plan or any recorded survey, plan or Plat of the Property, however designated, or as so used as a part of the Common Areas.

1.40 "Turnover Date" means the date the last of the Lots and Development Parcels have been conveyed by Declarant, including Lots and Development Parcels within additional properties added by Declarant to this Declaration prior to expiration of the Development Period; provided, however, that Declarant may accelerate the Turnover Date by recording a written notice surrendering Declarant's Development Rights arising under this Declaration.

ARTICLE 2. PHASED DEVELOPMENT; DEVELOPMENT RIGHTS

2.1 **Additional Properties.** Declarant reserves as a Development Right the right to add and subject additional properties to this Declaration at any time prior to termination of the Development Period. Declarant further reserves as a Development Right the right to withdraw Common Areas or any properties it owns from this Declaration at any time prior to termination of the Development Period. Each Owner appoints and constitutes the Declarant as his/her attorney-in-fact to unilaterally adopt and file amendments to this Declaration necessary to add or subtract such properties to and from this Declaration consistent with these Development Rights. The Declarant also has, as a Development Right, the right to extend existing easements and may create new easements over any Common Area or over any Development Parcel or Lot still within Declarant's control so as to provide access to and serve the additional properties. The rights reserved by Declarant in this Section may be exercised by Declarant at Declarant's sole discretion.

2.2 **Rights and Obligations.** The Owners of properties added to this Declaration will be Members of the Association and will be entitled to all benefits and subject to

all obligations of a Member, including, but not limited to, representation in the Association and the obligation to pay assessments as set forth in this Declaration.

2.3 No Requirement to Include Additional Properties. Nothing contained in this Declaration may be construed to require the Declarant to subject additional properties to this Declaration.

2.4 Dedication to Governmental Entities. Until the termination of the Development Period, Declarant reserves the right to dedicate, transfer or convey it to any state, county, municipal or other governmental entity the Common Areas, or any part of the Property it owns, or reserve the foregoing areas for Declarant's use and/or sale. The rights reserved by Declarant in this Section 2.4 may be exercised by Declarant at Declarant's sole discretion.

ARTICLE 3. THE ASSOCIATION

3.1 Formation. The Association has been, or will be, incorporated under the name of Landing on the Cowlitz Master Association, as a non-profit corporation under Revised Code of Washington, Chapter 24.03A. Declarant may change the name of the Association during the Development Period in its sole discretion.

3.1 Development Period. During the Development Period, the Declarant has no obligation to publish financial statements, hold meetings or otherwise account to or consent with the Members, except as required under Chapter 64.90 RCW and Chapter 24.03A RCW, or as expressly required in this Declaration. The Declarant will have full control of the Association until the Turnover Date. During the Development Period, the Declarant has the sole authority to (1) appoint or remove members of the Board of Directors who need not be Owners; (2) appoint or remove officers of Association who need not be Owners; (3) determine when to commence charging assessments; (4) veto or approve any action of the Board of Directors or Owners in its sole discretion; (5) unilaterally adopt and record amendments to this Declaration without any other Owner approval, including but not limited to amendments subjecting additional property to this Declaration, and any modified or additional restrictions; (6) adopting and amending Bylaws; (7) establishing Sub Associations and preparing, executing and recording Sub Associations' Governing Documents; and (8) adding or subtracting properties from this Declaration and the Association, as further provided in this Declaration. The Declarant's control of the Association during the Development Period is established in order to ensure that the Property and the Association will be adequately administered in the initial phases of development and to ensure an orderly transition of Association operations. Upon termination of the Development Period, administrative power and authority for management of the Common Areas will pass to the Board of Directors and Members as provided herein and in the Bylaws of the Association. RCW 64.90.300(9) and (10) regarding termination of Declarant's control of the Association apply.

3.2 **Bylaws.** Prior to the termination of the Development Period, the Declarant, acting pursuant to its authority to act on behalf of the Association, must adopt Bylaws.

3.3 **Board of Directors.** The Association will be managed by a Board of Directors, elected or appointed in accordance with this Declaration, the Articles, and the Bylaws of the Association.

3.4 **Delegation to Manager.** The Board may delegate any of its managerial duties, powers, or functions to any Person or entity unless prohibited by law. The Board members are not liable for any omission or improper exercise by the manager of any duty, power, or function so delegated by written instrument and entered into by the requisite vote of the Board.

3.5 **Duties and Powers of Association.** The duties and powers of the Association are those set forth in its Articles and Bylaws, together with its general and implied powers as a not for profit corporation, generally to do any and all things that a corporation organized under the laws of the State of Washington may lawfully do which are necessary or proper in operating for the peace, health, comfort, safety and general welfare of its Members, subject only to the limitations upon the exercise of such powers as are expressly set forth in its Articles, its Bylaws, the Plats, this Declaration, and the law.

(a) Purposes. Specifically, but not by way of limitation, the Association will effectuate the purposes of this Declaration, including but not limited to: (i) adopting and enforcing rules and regulations (through action of the Board pursuant to Section 3.5(c) below); (ii) adopting an operating and capital budget; (iii) controlling and administering the Association's funds, including the levy, collection, and disbursement of Assessments; and (iv) administering and enforcing this Declaration. The Association has the authority and obligation to establish, manage, repair, and administer the Common Areas. Subject to the approval of any applicable governmental agency, the Association may at any time, and from time to time, construct, reconstruct, improve, replace and/or restore any Improvement or portion thereof upon the Common Areas, and the Association may construct, reconstruct, improve and/or replace trees or other vegetation and plant trees, shrubs, ground cover and other landscaping upon the Common Areas. The Association may employ personnel necessary for the effective operation and maintenance of the Common Areas, including the employment of legal and accounting services.

(b) Operating Costs. The Association is responsible for the payment of power bills, maintenance, repair, and any other associated operating costs for the Common Areas and the Improvements thereon unless that responsibility is otherwise assigned by this Declaration, the Map or regulations of a governmental agency with jurisdiction over the same.

(c) Rules and Regulations. The Board has the power to adopt from time to time and to enforce rules and regulations governing the use of all Common Areas, whether or not expressly contemplated herein, provided that such rules and regulations are not inconsistent with this Declaration. The rules and regulations may not unreasonably differentiate among Owners. The Board may prescribe penalties for the violation of such rules and regulations,

including but not limited to suspension of the right to use the Common Areas or portions thereof, and the imposition of fines pursuant to a previously adopted schedule. Any such rules and regulations, and/or amendments, will become effective 30 days after promulgation and must be mailed to all Owners within 30 days after promulgation. A copy of the rules and regulations in force at any time will be retained by the secretary of the Association and must be available for inspection by any Owner during reasonable business hours. Such rules will have the same force and effect as if set forth in this Declaration.

3.6 Association Priorities and Inconsistencies. In the event of conflicts or inconsistencies between this Declaration and either the Articles or the Bylaws, the terms and provisions of this Declaration will prevail.

3.7 Sub Association Subordination to Master Association. Any and all Sub Associations created as part of a Development Parcel or approved Plat of a portion of the Property is automatically subordinate to the Master Association's Declaration, Bylaws and Articles unless as otherwise provided in writing by Declarant during the Development Period. In the event of conflicts or inconsistency between a Sub Association and a Master Association, the Master Association Governing Documents, as that term is defined in RCW 64.90.010(33), control. During the Development Period, the Declarant has the sole right in its discretion to create Sub Associations and prepare and execute any Governing Documents established for a Sub Association.

3.8 Membership. An Owner of a Lot or Development Parcel is automatically a Member of the Association and will remain a Member until such time as Ownership ceases for any reason, at which time such Membership will automatically cease. The Owners covenant and agree that the administration of the Property must be in accordance with the provisions of this Declaration, the Articles, the Bylaws and adopted Rules and Regulations. The rights, duties, privileges and obligations of all Members will be as set forth in this Declaration, the Articles, the Bylaws, the Rules and Regulations and applicable law.

3.9 Transfer. Membership held by any Owner may not be transferred, pledged or alienated in any way, except upon the sale or conveyance of such Owner's Lot or Development Parcel. Any attempt to make a prohibited transfer is void and will not be reflected upon the books and records of the Association.

3.10 Voting Rights.

(a) Voting Rights. The right to vote may not be severed or separated from any Lot or Development Parcel, and any sale, transfer or conveyance of a Lot or Development Parcel to a new Owner will operate to automatically transfer the appurtenant vote without the requirement of any expressed reference thereto. Notwithstanding the foregoing, the voting rights of any Member may be suspended as provided in this Declaration, the Articles, or the Bylaws. Member votes may be tabulated by mail, facsimile, email, or other electronic transmission.

(b) Vote Allocation. Each Lot is allocated one vote. For the purposes of the Lot that will be further divided into residential lots, that Lot is allocated one vote under this Declaration representing all future residential lots, with that vote to be cast as determined by the board of directors of the future residential subdivision homeowners association.

(c) Co-Owners. Co-Owners must, by written notice delivered to the Board, designate a voting representative for their voting rights. The Association will have no responsibility to accept any vote for a Lot or Development Parcel owned by Co-Owners, if such vote is disputed among the Co-Owners.

(d) Proxies. Members may vote at any meeting of the Association in person or by proxy as further detailed in the Bylaws.

ARTICLE 4. ASSESSMENTS

4.1 **Creation of the Lien and Personal Obligation of Assessments**. Each Owner of a Lot or Development Parcel by acceptance of a deed for the Lot or Development Parcel, whether or not it is so expressed in such deed, is deemed to covenant and agree to pay to the Association any Assessment duly levied by the Association directly or levied by a Sub Association as provided in this Declaration. Such Assessments, together with interest, costs, late charges and reasonable attorneys' fees, will also be a charge on the land and will be a continuing lien upon the Lot or Development Parcel against which each such Assessment is made. Each such Assessment, together with interest, costs, late charges, and attorneys' fees (including all such costs and fees incurred in connection with collection of the Assessment), will also be the personal obligation of the person who was the Owner of such Lot or Development Parcel at the time when the Assessment fell due. The personal obligation for delinquent Assessments will not pass to an Owner's successor in title unless the lien for such delinquent Assessments has been recorded prior to title transfer or unless expressly assumed by the successor in title; provided however, an Assessment lien need not be recorded to be a valid lien against the Lot or Development Parcel. When Ownership of a Lot or Development Parcel changes, Assessments which have been levied but are not yet due and payable in full will be prorated between the transferor and the transferee based on a 365-day year.

4.2 **Declarant's Liability for Assessments**. Declarant will not be obligated to pay any Assessment levied against any Lot or Development Parcel it owns until that Lot or Development Parcel is conveyed to a third party.

4.3 **Sub Association Liability for Collection and Payment**. Each Sub Association is responsible for the collection of Assessments due and owing under this Declaration from individual Lot or Development Parcel Owners within the jurisdiction of the Sub Association. Each Sub Association must collect the Assessments and transmit the Assessments that it has a responsibility to collect by check or wire transfer on a quarterly basis to the treasurer of the Association. Failure to collect and convey the full amount of the Assessments due from Lot or

Development Parcel Owners by the Sub Association within its jurisdiction will result in penalties as described in ARTICLE 5.

4.4 Budget and General Assessments.

(a) Association Budget. Except for the Initial Budget adopted by the Declarant, by October 1st of each year, the Board must prepare, or cause the preparation of, an operating budget (Budget) for the Association for each ensuing calendar year. Declarant may adopt the Initial Budget of the Association without Owner approval. Every Budget must set forth sums required by the Association, as estimated by the Board or Declarant, to meet its annual Common Expenses. Within 30 days after adoption by the Board or Declarant of any proposed regular or special Budget of the Association, the Board must set a date for a meeting of the Owners to consider ratification of the Budget not less than 14 nor more than 50 days after mailing of the summary. Unless at that meeting the Owners by a Majority Vote of the total voting power in the Association are allocated or any larger percentage specified in the Governing Documents reject the Budget, in person or by proxy, the Budget is ratified, whether or not a quorum is present. In the event the proposed Budget is rejected or the required notice is not given, the periodic Budget last ratified by the Owners will be continued until such time as the Owners ratify a subsequent Budget proposed by the Board. If during the year the Budget proves to be inadequate for any reason, including nonpayment of any assessments that a Sub Association is required to collect, the Board may prepare a supplemental Budget for the remainder of the year. A supplemental Budget that results in an increase in Assessments must be ratified by the Owners pursuant to this Section.

(b) Levy of General Assessment. In order to meet the costs and expenses projected in its Budget, the Board will determine and levy a General Assessment. Each General Assessment must be based on the gross acreage within each Sub Association's jurisdiction. Each Sub Association must then determine the amount of the Assessment that each Owner within its jurisdiction must pay as its Prorata Share of the General Assessment; provided, however that for single-family residential Sub Associations, the Assessment for each Owner will be based on the total amount of the General Assessment for the Sub Association divided by all Lots within the jurisdiction of the Sub Association multiplied by the number of Lots or Development Parcels each Owner owns. If a Lot or Development Parcel is not part of a Sub Association, the Association will directly bill the Owner of that Lot or Development Parcel its Prorata Share of the General Assessments.

(c) Payment of General Assessment. Except for Initial Assessments, General Assessments are payable in a lump sum annually on the date determined by the Board or may be billed on a quarterly or monthly basis, if the Board so elects. General Assessments will commence on all or any portion of the Property on the date determined by the Board in its sole discretion.

(d) Initial Assessment. At the time of the first transfer of title to a Lot or Development Parcel to an Owner other than Declarant, the Owner must pay to the Association

at the Close of Escrow, an Initial General Assessment. The Initial General Assessment is the Prorata amount of the current General Assessment applicable to a Lot or Development Parcel for the year in which the Lot or Development Parcel is purchased, as of the Close of Escrow, which amount must be prorated on a 365-day per year basis. The Declarant will not be responsible for paying the balance of the General Assessment which is not paid as the first Owner's Initial General Assessment. The Initial General Assessment will be considered Association funds.

(e) Amount of General Assessment. After ratification of the Budget by the Owners as set forth in Section 4.4 (a), the Board must notify the Sub Associations, or Owners of a Lot or Development Parcel not within a Sub Association, of the amount of the General Assessment payable by each Sub Association or Owner for an Assessment Period at least 30 days in advance of its due date; provided, however, that failure to notify a Sub Association or Owner of the amount of a General Assessment will not render such General Assessment void or invalid and each Sub Association and Owner are obligated for such General Assessment even if no notice is given, and/or notice is given late. Any failure by the Board, before the expiration of any Assessment Period, to fix the amount of the General Assessment for the next Assessment Period, will not be deemed a waiver or modification in any respect of the provisions hereof or a release of any Sub Association or Owner from the obligation to pay the General Assessment, or any installment, for that or any subsequent Assessment Period.

(f) Assessment Period. The amount of the General Assessment for the preceding Assessment Period will continue until a new Budget is approved. The Assessment Period for General Assessments is a calendar year, except that upon any revision of the Budget by a supplemental Budget, the Board will, if necessary, recalculate the General Assessment levied against the Owners and give notice of the same in the same manner as the initial levy of a General Assessment for the Assessment Period, which revision may be applicable within the current Assessment Period. The Assessment Period for any other Assessment will be as determined by the Board.

(g) Assessment Method. Association Assessments must be collected by each Sub Association through its duly adopted budget, which budget must be consistent with the General Assessment levied by the Board. Each Sub Association is required to include as a line item in their budget "Master Association Dues" equal to the amount adopted by the Board.

4.5 Capital Improvement Assessments.

(a) Capital Improvement Work. In addition to the General Assessments authorized by this Article, the Board may levy Capital Improvement Assessments at any time for the purpose of paying the cost of any installation, construction, reconstruction, repair or replacement of any capital improvements (Capital Improvement Work) in or on a Common Area, or for such other purposes as the Board may consider appropriate, and a Capital Improvement Assessment needs to be reflected in an adopted budget. Capital Improvement Assessments during the Development Period are at the sole discretion of the Declarant. Capital Improvement Assessments after the Turnover Date must require a Majority Vote of the Board. Each Owner's

Prorata Share of the Capital Improvement Assessment must be calculated and collected in the same manner as for General Assessments. Capital Improvement Assessments are payable in one lump sum, or in installments, as determined by the Board. The Association may charge interest on any Capital Improvement Assessment payable in installments, as determined by the Board, and such interest will become part of the installments due. Capital Improvement Assessments may be levied either before or after the Capital Improvement Work is done, at the discretion of the Board.

(b) Special Facilities. If the Association determines that costs incurred for Capital Improvement Work are in connection with facilities shared in common by one or more, but fewer than all, of the Lots and Development Parcels, then the Capital Improvement Assessment for such Capital Improvement Work will be assessed only against the Sub Associations, Lots and Development Parcels for Owners of the Lots and Development Parcels served by such facilities, and must be calculated and collected in same manner as General Assessments.

4.6 Special Assessments. The Association may levy Special Assessments against one or more Lots or Development Parcels to reimburse the Association for costs expended to bring a Lot or Development Parcel into compliance with this Declaration or for any benefit received by the Lot or Development Parcel that is not enjoyed by all Owners as a whole. Special assessments levied against less than all of the Lots or Development Parcels do not require a vote of the Owners but may be approved and assessed by the Board of Directors. Special Assessments are payable in one lump sum, or in installments, as determined by the Board. The Association may charge interest on any Special Assessment, as determined by the Board, and such interest will become part of the installments due. The Sub Association associated with each Special Assessment is responsible for collecting the Special Assessment and transmittal of the Assessments to the Association's treasurer.

4.7 Accounts. Any Assessments collected by the Association must be deposited in one or more federally insured institutional depository accounts established by the Board. The Board has exclusive control of such accounts and must maintain accurate records. No withdrawal may be made from the accounts except to pay for charges and expenses authorized by the Association's Governing Documents.

4.8 Waiver of Homestead or exemption Rights Under Law. Each Owner hereby waives, to the extent of any liens created pursuant to this Article, the benefit of any homestead or exemption law in effect at the time any Assessment or installment becomes due and payable pursuant to the terms of this Declaration.

4.9 Records and Financial Statements. The Board must prepare or cause to be prepared for any fiscal year in which the Association levies or collects any Assessments, a balance sheet and an operating (income/expense) statement for the Association which must include a schedule of delinquent Assessments identified by the Sub Association, and the name and address of the delinquent Owner; provided, however, such documents need not be prepared by a

certified public accountant unless requested by the Board. The annual financial statement of the Association need not be audited unless the total of all Assessments for the year for all Lots and Development Parcels is \$50,000 or more. The Board must cause detailed and accurate records of the receipts and expenditures of the Association to be kept specifying and itemizing the maintenance, operating, and any other expense incurred. Such records, copies of this Declaration, the Articles and the Bylaws, and any resolutions authorizing expenditures of Association funds must be available for examination by any Owner at convenient weekday hours upon reasonable advance notice determined by the Board.

4.10 Certificate of Assessment. A certificate executed and acknowledged by the treasurer or the president of the Association (or an authorized agent of either officer, if neither the president nor treasurer is available) stating the indebtedness for Assessments and charges, or lack thereof, upon any Lot or Development Parcel will be conclusive upon the Association as to the amount of such indebtedness on the date of the certificate, in favor of all persons who rely thereon in good faith. Such a certificate must be furnished to any Sub Association, Owner or any Mortgagee of a Lot or Development Parcel within a reasonable time after request, in recordable form, at a reasonable fee. Unless otherwise prohibited by law, any Mortgagee holding a lien on a Lot or Development Parcel may pay any unpaid Assessments or charges with respect to such Lot or Development Parcel, and, upon such payment, will have a lien on such Lot or Development Parcel for the amounts paid.

4.11 Contribution to Working Capital Fund. In connection with the Close of Escrow for the closing of the sale of each Lot to an Owner other than Declarant, the initial Owner of such Lot (including a builder who acquires a Lot or Lots from Declarant) must make a nonrefundable working capital contribution payment to the Association for an initial working capital fund (Working Capital Fund), which contribution must be in an amount equal to \$350.00 per Lot (Initial Working Capital Contribution) or such other amount as the Board determines from time to time is appropriate. The Initial Working Capital Contribution may not be considered as an advance payment of any Assessments. The Working Capital Fund may be used as determined by the Board.

ARTICLE 5. NONPAYMENT OF ASSESSMENTS

5.1 Delinquency. Any installment of any Assessment provided for in this Declaration will be delinquent, if it is not paid on the due date as established by the Board. With respect to each installment of an Assessment not paid within 10 days after its due date, the Board may, at its election, require the Owner or the Sub Association responsible for the delinquent Owner to pay a late charge in the amount set forth in a previously approved schedule thereof which has been delivered to the Owners and the Sub Association, together with interest on such delinquent sum at a rate to be determined by the Board, but not to exceed the maximum rate permitted by law, calculated from the date of delinquency to and including the date full payment is received by the Association. If any installment of an Assessment is not paid within 30 days after its due date, the Board must mail a notice to the Sub Association, the delinquent Owner, and to any Mortgagee of the delinquent Owner. The notice must specify (1) the fact that the installment

4906-8558-6734.1

is delinquent; (2) the amount of the Assessment and any late fees and interest accrued thereon; and (3) that (a) failure to cure the default on or before the date specified in the notice may result in acceleration of the balance of the installments of the Assessments for the then current fiscal year and (b) the Association has the right to record a lien (Association Lien) against each individual Owner's Lot or Development Parcel for the Pro-rata amount of the Assessment and related charges. The Association has the right to accelerate all of the unpaid balance of all Assessments for the then current fiscal year, attributable to any Owner and their Lot, Development Parcel or interest therein, after written notice as specified above. Such accelerated Assessments will be immediately due and payable without further demand. The Association may record the Association Lien against the individual Owner's Lot or Development Parcel and enforce the collection of the Assessments and all charges thereon in any manner authorized by law or by this Declaration, but a lien is not required to be recorded to be valid. All late fees, legal fees, interest or any other charges levied by the Association will be assessed against the Owner and billed through the applicable Sub Association.

5.2 Lien and Notice of Lien. Each Owner vests in the Association, or its assigns, the right and power to bring all actions at law or to foreclose an Association Lien provided for in Section 5.1 against an Owner and such Owner's Lot or Development Parcel for the collection of delinquent Assessments. No action may be brought to foreclose said delinquent Association Lien or to proceed under the power of sale herein provided sooner than 30 days after the date a notice of claim of lien is recorded by the Association in the Office of the Cowlitz County Auditor and a copy thereof is deposited in the United States mail, certified or registered, postage prepaid, to the Owner of said Lot or Development Parcel at said Owner's last known address. The notice of claim of lien must contain a sufficient legal description of the Lot or Development Parcel, the record Owner or reputed Owner thereof, and the amount claimed, including, at the Association's option, the cost of preparing and recording the notice of claim of lien, interest on the unpaid Assessments and costs of collections, including attorney's fees. Each Owner, by acceptance of the deed for a Lot or Development Parcel subject to this Declaration, acknowledges that all liens authorized hereunder are consensual and arise at the time the Assessments are levied.

5.3 Foreclosure and Sale. Any such foreclosure and sale provided for in Section 5.2 must be conducted in accordance with the laws of the State of Washington applicable to the exercise of powers of judicial and non-judicial foreclosures and sale of mortgages. The Association, through its duly authorized agents, has the power to bid on the Lot or Development Parcel at the foreclosure sale and to acquire and hold, lease, mortgage and convey the same.

5.4 Curing the Default. Upon the timely curing of any default for which an Association Lien was recorded by the Association, the Board, or an authorized representative thereof, must record an appropriate release of such notice upon payment by the applicable Owner of a fee to be determined by the Board to cover the cost of preparing and recording such release, together with the payment of such other costs, interests and fees as will have been incurred by the Association by reason of such default. Any purchaser or encumbrancer, who has acted in good faith and extended value, may rely upon such release as conclusive evidence of the full satisfaction of the sums stated in the release.

5.5 **Cumulative Remedies.** The Association Lien and right of foreclosure and sale are in addition to, and not in substitution for, all other rights and remedies which the Association, and/or its assigns, may have hereunder, in equity and at law, including, but not limited to, a suit to recover a money judgment for unpaid Assessments, or the suspension of an owner's right to vote until any Assessments unpaid for a period in excess of 30 days are paid. Any institution of a suit to recover a money judgment will not constitute an affirmation of the adequacy of money damages.

5.6 **Subordination of Association Liens.** All sums assessed in accordance with the provisions of this Declaration will constitute a lien on the respective Lot or Development Parcel prior and superior to all other liens, except (1) all taxes, bonds, assessments and other levies or liens which, by law, would be superior thereto, and (2) the lien or charge of any Mortgage of Record made in good faith and for value and recorded prior to the date the Board levies the Assessment through Board action. Upon the foreclosure of, or acceptance of a deed in lieu of foreclosure of, such a prior Mortgage that has priority over an Assessment lien, the foreclosure purchaser or deed-in-lieu grantee will take title free of the lien for unpaid, non-priority Assessments, but subject to the lien hereof for all said charges that accrue subsequent to the foreclosure or deed given in lieu of foreclosure.

5.7 **Exempt Property.** The following property is exempt from the Assessments created herein and will not be subject to liens for unpaid Assessments: (a) all properties dedicated to and accepted by a public authority; (b) all Common Areas; and (c) all vacant Lots, Development Parcels or other portions of the Property the fee title to which is retained by Declarant

5.8 **Rights of Board – Waiver of Owners.** Each Owner hereby vests in and delegates to the Board, the right and power to bring all actions at law, including lien foreclosures, whether judicially or by power of sale or otherwise, against any Owner for collection of the delinquent assessments in accordance herewith. Each Owner hereby expressly waives any objection to the enforcement in accordance with this Declaration, of the obligation to pay Assessments as set forth herein.

ARTICLE 6. EASEMENTS, DEDICATIONS, AND RIGHTS OF ENTRY

6.1 Easements.

(a) Access. Declarant expressly reserves for the benefit of the Association and for the Owners of the Property reciprocal, non-exclusive easements over all of the Common Areas for access to the Lots, Development Parcels and other Common Areas. Subject to the provisions of this Declaration and the applicable Plat or survey governing use and enjoyment thereof, such easements may be used by Declarant, its successors, the Owners, and any guests, tenants, and invitees residing upon or temporarily visiting the Property, for areas designated as walkways, vehicular access, parking, drainage and such other purposes reasonably

necessary for use and enjoyment of any Lot or Development Parcel in the Property. In addition to the foregoing, each Lot and Development Parcel is subject to an easement for encroachments created by construction, settlement, and overhangs as designed or constructed by the Declarant.

(b) Maintenance and Repair. Declarant expressly reserves for the benefit of the Association and all agents, officers and employees of the Association non-exclusive easements over the Common Areas, Lots and Development Parcels necessary to maintain and repair the Common Areas and to perform all other tasks in accordance with the provisions of this Declaration. There are specifically reserved for the benefit of the Owners easements for the utility services and the repair, replacement and maintenance of the same over all of the Common Areas. Such easements must be established and used so as not to unreasonably interfere with the use and enjoyment by the Owners of their Lots, Development Parcels and the Common Areas. All such easements will be appurtenant to and will pass with the title to every Lot and Development Parcel conveyed.

(c) Utility Easements. Various easements are reserved on the Property, as provided by individual Plats, other recorded instruments, applicable laws, ordinances and other governmental rules and regulations for utility installation and maintenance, including but not limited to, underground electric power, telephone, cable television, digital information, water, sewer, gas and drainage and accessory equipment, together with the right to enter upon any Lot or Development Parcel at all times for said purposes. Within these easements, no structure, planting, or other material may be placed or permitted to remain, that may damage, interfere with the installation and maintenance of utilities, which may change the direction of flow of drainage channels in the easements, or that may obstruct the flow of water through drainage channels in the easements. Each Owner hereby agrees not to place locks on structures enclosing utility meters or interfere with the access of utility representatives to said meters or easements. The easement areas on each Lot and Development Parcel, and all improvements thereon, must be maintained continuously by the Owner of each Lot and Development Parcel, except for those improvements for which a public authority, utility company or the Association is responsible within the easement areas. The Owner must maintain the portion of any utility on the Owner's Lot or Development Parcel, or within a private easement for the Owner's Lot or Development Parcel that serves only the Owner's Lot or Development Parcel to the point of connection to the portion of the system that serves more than one Lot or Development Parcel. The Association has an easement for the maintenance, repair, replacement, and restoration of the portions of the easements that serve more than one Lot or Development Parcel up to the point of connection to the public system.

(d) Walkways and Driveways. There may be no obstruction, including, but not limited to obstruction by basketball hoops or other similar sporting equipment, of any Streets, walkways, or driveways on or located within the Property which would interfere with the free circulation of foot, bicycle or automotive traffic, except such obstruction as may be reasonably required in connection with repairs of such Streets, walkways, and driveways. Use of all Streets, walkways, and driveways within the Property will be subject to the reasonable rules and regulations adopted by the Association. The Association may, but is not obligated to, take

4906-8558-6734.1

such action as may be necessary to abate or enjoin any interference with or obstruction of Streets, walkways, and driveways, and will have the right of entry to Lots or Development Parcels for purposes of removing said interference or obstruction including towing of vehicles that are parked on Streets, driveways or walkways for extended periods or in violation of rules and regulations adopted by the Association or set forth in this Declaration. Any costs incurred by the Association in connection with such abatement, injunction, or corrective work will be deemed to be a Special Assessment of the Owner or Sub Association responsible for the interference or obstruction. Free use of the Streets, walkways, and driveways and free circulation of foot, bicycle and vehicular traffic are essential elements of Declarant's plan for development of the Property.

(e) Landscaping Maintenance Easement. Declarant expressly reserves for the benefit of the Association and all agents, officers and employees of the Association non-exclusive easements over the Common Areas, Lots and Development Parcels to perform maintenance of landscaping, including the trimming, watering and fertilization of all grass, ground cover, shrubs or trees, removal of dead or waste materials, or replacement of any dead or diseased grass, ground cover, shrubs or trees, and also including any yard maintenance. Notwithstanding the foregoing, each Owner will be primarily responsible for maintaining the landscaping and yard areas on their respective Lot and Development Parcel, as provided in this Declaration, and as determined by a Sub Association's Governing Documents.

ARTICLE 7. REPAIR AND MAINTENANCE

7.1 Repair and Maintenance Duties of the Association. Following their initial installation, the Association must maintain, repair, replace, resurface and make necessary improvements to the Common Areas, or may contract for such maintenance, repair, replacement, resurfacing, and improvements, to keep the Common Areas, including without limitation all Improvements thereon, in a good, sanitary, and attractive condition. Such maintenance, repairs, replacement, resurfacing, and improvements include, without limitation, maintenance and replacement of lighting, shrubs, trees, vegetation, irrigation systems (if any), Signs, play structures, benches, picnic facilities, playfields and appurtenances and any other improvements located on the Common Areas, repair of and payment for all centrally metered utilities, mechanical and electrical equipment in the Common Areas, to include care and upkeep of any median within the public street rights-of way, repair and maintenance of storm water facilities and equipment (to the extent such maintenance is not performed by the municipality or any utility service provider), and repair and maintenance of all parking areas, walks, and other means of ingress and egress within the Common Areas. All such maintenance, repairs and improvements to the Common Areas must be paid for as a Common Expense. The Association must pay all real and personal property taxes and Assessments which will constitute a lien upon any portion of the Common Areas.

ARTICLE 8. COMMON AREA PROTECTION

8.1 **Association Control.** The Association owns fee title to the Common Areas, except as expressly stated in this Declaration or other Recorded document. The Association's appurtenant rights and duties with respect to the Common Areas include, without limitation, the following:

(a) Limits. The right of the Association to reasonably limit the number of guests, patrons and invitees of Owners using the Common Areas.

(b) Rules. The right of the Association to establish uniform rules and regulations pertaining to the use of the Common Areas.

(c) Borrowings. The right of the Association in accordance with the Articles, Bylaws and this Declaration, with a Majority Vote of the Owners, to borrow money for the purpose of maintaining and preserving the Common Areas, and in aid thereof to mortgage any or all of its real or personal property as security for money borrowed or debts incurred, provided that the right of any such Mortgagee of the Association will be subordinated to the rights of the Owners.

(d) Voting Rights. The right of the Association to suspend the voting rights and right to use the Common Areas by an Owner for any period during which any Assessment against the Owner's Lot or Development Parcel remains unpaid and delinquent for a period not to exceed 30 days for any single infraction of the published rules and regulations of the Association, provided that any suspension of such voting rights or rights to use the Common Areas may be made only by the Board, after notice and an opportunity for a hearing, if any, as provided in the Bylaws.

8.2 **Reserved Rights.** Declarant has a Development Right for the nonexclusive use of the Common Areas without charge, for sales and marketing purposes, display, advertising, access, ingress, egress, and exhibit purposes, which right Declarant hereby expressly reserves for itself and its sales agents and representatives.

8.3 **Easements for City and County Use.** Declarant hereby reserves and covenants for itself and all future Owners within the Property, the right to grant easements for public services and utilities, including without limitation, the right of the governmental and municipal entities or utility purveyors to install, maintain and repair public Streets, Street lights, curbs, gutters and sidewalks, sanitary sewer, storm water facilities and water systems, and allow the police and other emergency and public safety personnel to enter upon any part of the Common Areas for the purpose of enforcing the law.

8.4 **Waiver of Use.** No Owner or Sub Association may exempt themselves from personal liability for Assessments duly levied by the Association, nor release the Lot, Development Parcel or other property owned by them from the liens and charges hereof, by

waiver of the use and enjoyment of the Common Areas or by abandonment of a Lot, Development Parcel or any other property in the Property.

8.5 Trash and Other Debris. No trash, debris, waste, grass clippings, or hazardous waste may be dumped, deposited, or placed in any Common Areas by any Sub Association, Owner or Occupant.

8.6 Taxes. Each Owner must execute such instruments and take such action as may reasonably be specified by the Association to obtain a separate real estate tax assessment of each Lot or Development Parcel. If any such taxes or assessments may, in the opinion of the Association, nevertheless be a lien on the Common Areas, or any part thereof, they must be paid by the Association and each Owner will be obligated to pay or to reimburse the Association for, as the case may be, the taxes and assessments assessed by the County Assessor or other taxing authority against the Common Areas and attributable to such Owner's Lot or Development Parcel and interest in the Common Areas.

8.7 Permissive Use. Any Owner may permit an Occupant to use the Common Areas in the same manner as an Owner. All Owners are responsible for informing any Occupants of the contents of this Declaration and the rules regarding the Common Areas, and will be responsible for requiring its Occupants to comply with this ARTICLE 8. No Owner, guest, Occupant, invitee, or licensee may conduct or allow others to conduct any offensive or obnoxious activities within the Common Areas.

8.8 Wetland and Habitat Conservation Covenants. The Association and all Owners are subject to all provisions, restrictions, and conditions contained in any permit, approved mitigation plan, or separately recorded conservation covenant applicable to any wetland and habitat conservation areas on the Property as shown on the Master Plan or any Plat of the Property.

ARTICLE 9. ARCHITECTURAL CONTROL COMMITTEE

9.1 Committee. Each Sub Association may establish an Architectural Review Committee in its Governing Documents.

ARTICLE 10. SUB ASSOCIATIONS

10.1 Sub Association Requirements. The Declarant has the Development Right to create Sub Associations and approve and execute Sub Association's Governing Documents in its sole discretion during the Development Period.

ARTICLE 11. DAMAGE OR LOSS TO IMPROVEMENTS

11.1 Restoration of Common Areas. Except as otherwise provided in this Declaration, in the event of any destruction of any portion of the Common Areas or any other Improvements insured by the Association, the Association must restore and repair the same to

its former condition, as promptly as practical. The proceeds of any insurance must be used for such purpose. The Board is authorized to have the necessary documents prepared and executed, and to take such other action so as to effect such reconstruction as promptly as practical. The Common Areas and all other Improvements must be constructed or rebuilt substantially in accordance with the original construction plans available, if deemed practicable by the Board. In the event that the amount available from the proceeds of such insurance policies for such restoration and repair is less than the estimated cost of restoration and repair, a Reconstruction Assessment may be levied by the Board upon the Owners and their Lots and Development Parcels in order to provide the necessary funds for such reconstruction over and above the amount of any insurance proceeds available for such purpose. Reconstruction Assessments will be borne by the Owners in the same proportions as their Prorata Share of General Assessments. If, prior to the end of the Development Period, the Common Areas or Improvements thereon are destroyed and the insurance proceeds are less than the estimated cost of repair or reconstruction, the Declarant may elect not to restore or rebuild some or all of the Improvements or Common Areas or may elect to restore or rebuild only those for which the Declarant has received insurance proceeds sufficient to pay all costs associated therewith. Reconstruction Assessments must be approved and levied in the same manner as Capital Improvement Assessments as set forth in Section 4.5.

11.2 Restoration Obligations of Owners. In the event of the damage or destruction of any portion of a Lot or Development Parcel or the Improvements thereon, it is the duty of the Owner of such Lot or Development Parcel, as soon as may be practical, to repair or replace the damage or destruction or such portion thereof as will render such damage or destruction indiscernible from the exterior of the Lot or Development Parcel. Any reconstruction, replacement or repair required by this section must be in accordance with the original plans and specifications of the Lot or Development Parcel or plans and specifications approved by both any architectural control committee and the holders of Mortgage(s) of Record which encumber(s) the Lot or Development Parcel.

11.3 Condemnation. In the event that all or any portion of the Common Areas are taken or condemned by any authority exercising the power of eminent domain, the condemnation award must be used to restore the remaining Common Areas, and any balance must be turned over to the Association. The Board has the exclusive right to prosecute any such proceedings; provided, however, that nothing contained herein to the contrary may prevent an Owner from joining in the proceeding for purposes of claiming that the condemnation action has materially affected said Owner's property. The entire award must be paid to the Association in trust for the benefit of the Owners. The Board must distribute the portion of the award not used to restore the Common Areas to the Owners in proportion to their Prorata Share of General Assessments; provided, however, that if a Lot or Development Parcel is encumbered by a Mortgage or Mortgages which has or have a provision relating to condemnation, then in-lieu-of distributing the award to the Owner of said Lot or Development Parcel, the Board must distribute the award directly to the Mortgagee of the Mortgage with the highest priority and seniority for distribution or payment in accordance with the terms and conditions of said Mortgagee's Mortgage.

ARTICLE 12. PROTECTION OF MORTGAGEES

12.1 Mortgage Provisions. A breach of any of the provisions, covenants, restrictions or limitations hereof or the Recordation of any Association Lien or the pursuit of any remedy hereunder will not defeat or render invalid the lien of any Mortgage of Record. The Owners and their Mortgagees may examine the books and records of the Association during all normal business hours, upon serving written notice of such examination on the Board. All of the provisions herein will be binding upon and effective against any Owner whose title to said Lot or Development Parcel is hereafter acquired through foreclosure or trustee's sale. The Mortgagee of any Mortgage of Record on any Lot or Development Parcel may file with the Board a written request for written notification from the Association of any default by the Mortgagor of such Lot or Development Parcel in the performance of such Mortgagor's obligations under this Declaration which is not cured within 30 days, and the Board must give notice thereof to each such Mortgagee. Each Institutional Lender which holds a Mortgage encumbering any Lot or Development Parcel in the Property which obtains title to such Lot or Development Parcel pursuant to the remedies provided in such Mortgage, by judicial or non-judicial foreclosure or by deed in lieu of foreclosure, will take title to such Lot or Development Parcel free and clear of any claims for unpaid Assessments or charges against such Lot or Development Parcel unless the Assessments have priority under this Declaration.

ARTICLE 13. DURATION AND AMENDMENT

13.1 Duration. This Declaration will continue in full force until 50 years from the date hereof unless a Declaration of Termination or Declaration of Renewal is Recorded meeting the requirements of an amendment to this Declaration as set forth in Section 13.2. There will be no severance by sale, conveyance, encumbrance or hypothecation of an interest in any Lot or Development Parcel from the appurtenant Membership as long as this Declaration continues in full force and effect.

13.2 Amendment. Notice of the subject matter of a proposed amendment to this Declaration in reasonably detailed form must be included in the notice of any meeting of the Association at which a proposed amendment is to be considered. The amendment will be adopted if approved by the vote, in person or by proxy, or written consent, of 67% or more of the Total Voting Power of the Association; provided, however, that until the Turnover Date no termination or other amendment will be effective without the written approval of Declarant, in Declarant's sole discretion; and provided further, that no amendment to Section 16.2 below may be made at any time without the written approval of Declarant, in Declarant's sole discretion while Declarant owns any Lot or Development Parcel. A copy of each amendment which has been properly adopted must be certified by at least 2 officers of the Association and the amendment will be effective when the Certificate of Amendment is Recorded. Notwithstanding the foregoing, any of the following amendments, to be effective, must be approved in writing by the record holders of 100% of the aggregate value of Mortgages encumbering the Property at the time of such amendment (provided that any Mortgage holder that fails to submit written notice of

approval or disapproval of any such amendment within 30 days of notice from the Association regarding such amendment will be deemed to have consented to such amendment):

(a) Lien Rights. Any amendment which affects or purports to affect the validity or priority of encumbrances or the rights or protections granted to Mortgagees as provided in ARTICLE 12 or which seeks to modify Section 13.2 hereof.

(b) Assessments. Any amendment which would necessitate a Mortgagee after it has acquired a Lot or Development Parcel through foreclosure to pay more than its Prorata Share of any Assessments accruing after such foreclosure.

(c) Cancellation. Any amendment which would or could result in a Mortgage being cancelled by forfeiture.

(d) Mortgagees. Any amendment which would have a material, adverse effect on any Mortgagee.

13.3 Amendments and Modifications by Declarant. For so long as Declarant owns a Lot, Declarant acting alone will have the right to modify or amend this Declaration unilaterally without any other Owner approval. Within 30 days after any such modification or amendment by Declarant, Declarant must deliver a written notice of such modification or amendment to each Owner, which notice must include a copy of the executed, acknowledged and recorded modification or amendment.

ARTICLE 14. LIMITATION OF LIABILITY

14.1 Limitation of Liability. So long as a member of the Board, or any of the Board's committees, Declarant or any agent of the foregoing has acted in good faith, without willful or intentional misconduct, upon the basis of information possessed by such person, then that person will not be personally liable to any Owner, the Association, or to any other person for any damage, loss, or claim on account of any, omission, error, or negligence of such person, except this article will not apply to the extent such acts, omissions or errors are covered by the Association's insurance. In connection with all reviews, acceptances, inspections, permissions, consents or approvals required or permitted by or from either the Declarant, the Association or a committee under this Declaration, neither Declarant, the Association, nor a committee will be liable to any Owner or to any other person on account of any claim, liability, damage or expense suffered or incurred by or threatened against any Owner or such other person and arising out of or in any way relating to the subject matter of any such review, acceptance, inspection, permission, consent or approval, whether given, granted, withheld or denied.

ARTICLE 15. INSURANCE; LOSSES.

15.1 Insurance. The Board must procure for the Association, and continuously maintain, as a Common Expense, one or more policies of insurance as follows: (a) insurance against property loss or damage by fire or other hazards covered by the standard extended

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coverage endorsement in an amount as near as practicable to the full insurable replacement value (without deduction for depreciation) of the Common Areas, or such other fire and casualty insurance as the Board determines will give substantially equal or greater protection, (b) commercial general liability insurance for the use and ownership of the Common Areas, (c) worker's compensation insurance to the extent required by applicable law, (d) insurance against loss of personal property of the Association by fire, theft, and other losses with deductible provisions as the Association deems advisable, and (e) any other insurance the Board deems advisable. Such insurance policies must meet the insurance and fidelity bond requirements for similar projects established by Federal National Mortgage Association, Government National Mortgage Association, Federal Home Loan Mortgage Corporation, Federal Housing Authority, and Veterans Administration, so long as any of them is a Mortgagee or Owner, except to the extent such coverage is not available or has been waived by any of the foregoing. All policies must include an endorsement providing coverage for Directors and Officers of the Association. Any deductible will be a Common Expense of the Association.

15.2 Casualty Losses. In the event of substantial damage or destruction of any Common Area, all applicable insurance proceeds for such damage or destruction must be paid to the Association for repair, replacement, or other disbursement as determined by the Board.

ARTICLE 16. GENERAL PROVISIONS

16.1 Legal Proceedings. Failure to comply with any of the terms of this Declaration, the Articles, the Bylaws, or any regulations by an Owner or Occupant, their guests, employees, invitees or tenants, will be grounds for relief which may include, without limitation, an action to recover sums due for damages, injunctive relief, foreclosure of lien, lien, or any combination thereof, which relief may be sought by Declarant, the Association, the Board, or, if appropriate, by an aggrieved Owner. Failure to enforce any provision thereof will not constitute a waiver of the right to enforce said provision, or any other provision thereof. The Association, the Board, any Owner (so long as such Owner is not at that time in default hereunder), or Declarant will be entitled to bring an action for damages against any defaulting Owner, and in addition may enjoin any violation of this Declaration by any Owner. Any judgment rendered in any action or proceeding pursuant thereto must include a sum for attorneys' fees, including attorneys' fees incurred on appeal, in such amount as the Court may deem reasonable in favor of the prevailing party, as well as the amount of any delinquent payment, together with interest thereon at the rate established by the Board therefore from time to time, costs of collection and court costs. Each remedy provided for in this Declaration will be cumulative and not exclusive or exhaustive.

16.2 Special Declarant Provisions. In addition to the right reserved to Declarant in this Declaration, no amendment to this Declaration will be effective without the Declarant's prior written consent if the effect of the amendment would be to increase any obligation or liability of Declarant to the Owners, Occupants, Members, the Association, or the Board; or to lessen or decrease the Development Rights or any other rights of the Declarant under this

Declaration; or revoke, reduce, amend or modify any waivers or releases given in favor of the Declarant under this Declaration.

16.3 Severability. The provisions hereof must be deemed independent or severable, and a determination of invalidity or partial invalidity or enforceability of any one provision or portion hereof by a court of competent jurisdiction will not affect the validity or enforceability of any other provision hereof.

16.4 Interpretation. The provisions of this Declaration must be liberally construed to effectuate its purpose of creating a uniform plan for the creation and operation of the Master Community and for the maintenance of the Common Areas, and any violation of this Declaration will be deemed to be a nuisance. The article and section headings, titles and captions have been inserted for convenience only and may not be considered or referred to in resolving questions of interpretation or construction. Unless the context otherwise requires, as used herein, the singular and the plural each include the other and the masculine, feminine or neuter each include the masculine, feminine and neuter. All pronouns and any variations thereof must be deemed to refer to the masculine, feminine, neuter, singular or plural as the identity of the Person or Persons may require.

16.5 Construction and Sales by Declarant. Nothing in this Declaration may limit, and no Owner may do anything which will interfere with, the right of Declarant to reasonably subdivide or re-subdivide any portion of the Property owned by Declarant, or to complete any construction of Improvements on the Lots and Development Parcels owned by Declarant and the Common Areas, or to alter the foregoing and its construction plans and designs, or to construct such additional Improvements on such Lots, Development Parcels and Common Areas as Declarant deems advisable prior to completion and sale of the last Lot and Development Parcel owned by Declarant. Each Owner, by accepting a deed of a Lot or Development Parcel from Declarant, hereby acknowledges that the activities of Declarant may constitute a temporary inconvenience or nuisance to the Owners but nonetheless are permitted. Such rights include, but are not limited to, erecting, constructing and maintaining on the Property such structures and displays as may be reasonably necessary for the conduct of Declarant's business or completing the work of disposing of the Lots and Development Parcels by sale, lease or otherwise. Declarant may at any time use any Lots and Development Parcels owned by Declarant as models or real estate sales or leasing and renting offices. This Declaration does not limit the right of Declarant at any time prior to conveyance of title by deed to the last Lot and Development Parcel owned by Declarant to establish on the Lots and Development Parcels owned by Declarant and the Common Areas additional easements, reservations and rights-of-way to itself, to utility companies, or to other Persons as may from time to time be reasonably necessary to the property development and disposal of the Lots and Development Parcels owned by Declarant. Such easements may be created for the construction, installation, maintenance, removal, replacement, operation and use of utilities, including without limitation sewers, water and gas pipes and systems, drainage lines and systems, electric power and conduit lines and wiring, television, internet, telecommunication, and telephone conduits, lines and wires, and other utilities, public or private, beneath the ground surface (except vaults, vents, access structures

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and other facilities required to be above ground surface by good engineering practice), including the right to dedicate, grant or otherwise convey easements for rights-of-way to any public utility or governmental entity for such purposes. In the performance of any work in connection with such utilities, Declarant may not unreasonably interfere with or disrupt the use of the Common Areas or the facilities located thereon and must replace and restore the areas and facilities as nearly as possible to the condition in which they were prior to the performance of such work. All or any portion of the rights of Declarant hereunder, including but not limited to the Development Rights, may be assigned to any successor or successors to all or part of Declarant's respective interest in the Property, by an express written Recorded assignment or deed.

16.6 Owner Liability and Duty. Each Owner must indemnify and hold harmless the Association for any injury to any person or damage to the Common Areas or any equipment thereon which may be sustained by reason of the negligence of said Owner or of his guests, employees, invitees or tenants. The damage and costs incurred by the Association as a result thereof will become a Special Assessment against such Owner and their Lot or Development Parcel, and will be subject to levy, enforcement and collection in accordance with the Association Lien procedure provided for in this Declaration. The Association reserves the right to charge a Special Assessment to such Owner equal to the increase, if any, in the insurance premium directly attributable to the damage or injury caused by such Owner or by the use of the Lot or Development Parcel of such Owner. The Association will hold each Owner harmless from liability for loss or injuries that are covered by insurance then maintained by the Association.

16.7 Association Waiver. Notwithstanding anything herein to the contrary, to the extent that any Owner waives any claims against Declarant, or releases the Declarant from any claim with respect to a Lot, Development Parcel, the Common Areas, the Improvements, and/or the Community, then the Association must be deemed to have likewise released Declarant (and its officers, directors, shareholders, members, partners, employees, agents and representatives) from any claim with respect to such Lot or Development Parcel, the Common Areas, the Improvements, and/or the Master Community on a Prorata basis applicable to each such Lot and Development Parcel.

16.8 No Public Right or Dedication. Nothing contained in this Declaration may be deemed to be a gift or dedication of all or any part of the Property to the public, or for any public use.

16.9 Indemnification. Each officer of the Association, and each member of the Board or a committee, and any agents thereof, must be indemnified by the Association against all expenses and liabilities (including attorneys' fees and costs) reasonably incurred by or imposed in connection with any litigation or other proceeding by reason of such individual holding a position or office, whether or not such person holds that position at the time the expense or liability is incurred, except to the extent such expenses or liabilities are covered by insurance and except as specified in the Articles of Incorporation. However, in the event of a settlement, the indemnification will apply only when the Board approves such settlement and reimbursement as being in the best interests of the Association.

16.10 Access to Lots and Development Parcels. The Declarant, the Board, and the Association (and, as applicable, any of their officers, directors, shareholders, members, partners, employees, agents and representatives) may enter upon any Lot or Development Parcel, which entry will not be deemed a trespass, and take whatever steps are necessary to correct a violation of the provisions of this Declaration.

16.11 No Third-Party Rights. This Declaration is made for the exclusive benefit of the Association, the Board, the Owners, the Members, any Sub Associations, the Declarant and their successors. This Declaration is not intended for the benefit of any other Person besides the Association, the Board, the Owners, the Members, any Sub Associations, the Declarant and their successors. No third party has any rights under this Declaration against any of the Association, the Board, the Owners, the Members, any Sub Associations, the Declarant and their successors.

16.12 Notices. Except as otherwise provided in this Declaration, in each instance in which notice is to be given to an Owner, the same must be in writing and may be delivered personally to the Owner, in which case personal delivery of such notice to one or more Co-Owners of a Lot or Development Parcel or to any general partner of a partnership owning a Lot or Development Parcel will be deemed delivery to all Co-Owners or to the partnership, as the case may be. Personal delivery of such notice to any officer or agent for the service of process on a corporation will be deemed delivery to the corporation. In lieu of the foregoing, such notice may be delivered by regular United States mail, postage prepaid, addressed to the Owner at the most recent address furnished by such Owner to the Association or, if no such address will have been furnished, to the street address of such Lot or Development Parcel. Such notice will be deemed delivered 48 hours after the time of such mailing, except for notice of a meeting of Members or of the Board in which case the notice provisions of the Bylaws will control. Any notice to be given to the Association may be delivered personally to any member of the Board, or sent by United States mail, postage prepaid, addressed to the Association at such address as may be fixed from time to time and circulated to all Owners. Any notice to be given to the Declarant may be delivered personally to Declarant, or sent by United States mail, postage prepaid, addressed to the Declarant at such address as may be fixed from time to time and circulated to all Owners.

Signature block on following page

CT6, LLC

By: _____

Date: _____

State of Washington)
) ss.
County of Clark)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Manager of CT6, LLC to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: _____, 2025.

Notary Seal

Notary Public for Washington

Name of Notary

My appointment expires: _____

EXHIBIT A
LEGAL DESCRIPTION

DRAFT

EXHIBIT A-1
MASTER PLAN
See following page

DRAFT



LANDING ON THE COWLITZ

EXHIBIT B
COMMON AREAS AND FACILITIES

DRAFT

SUBDIVISION

Issued By:



CHICAGO TITLE INSURANCE COMPANY

Guarantee/Certificate Number:

622-173054

CHICAGO TITLE INSURANCE COMPANY a corporation, herein called the Company

GUARANTEES

Castle Rock

herein called the Assured, against actual loss not exceeding the liability amount stated in Schedule A which the Assured shall sustain by reason of any incorrectness in the assurances set forth in Schedule A.

LIABILITY EXCLUSIONS AND LIMITATIONS

1. No guarantee is given nor liability assumed with respect to the identity of any party named or referred to in Schedule A or with respect to the validity, legal effect or priority of any matter shown therein.
2. The Company's liability hereunder shall be limited to the amount of actual loss sustained by the Assured because of reliance upon the assurance herein set forth, but in no event shall the Company's liability exceed the liability amount set forth in Schedule A.

Please note carefully the liability exclusions and limitations and the specific assurances afforded by this guarantee. If you wish additional liability, or assurances other than as contained herein, please contact the Company for further information as to the availability and cost.

Chicago Title Company of Washington
655 W. Columbia Way, Suite 200
Vancouver, WA 98660

Countersigned By:

Phil Archer
Authorized Officer or Agent



Chicago Title Insurance Company

By:

Michael J. Nolan, President

Attest:

Marjorie Nemzura, Secretary

ISSUING OFFICE:

Title Officer: James R. Copeland
 Chicago Title Company of Washington
 655 W. Columbia Way, Suite 200
 Vancouver, WA 98660
 Phone: 360-601-4370 Fax: 877-334-2993
 Main Phone: (360)696-0551
 Email: James.Copeland@ctt.com

SCHEDULE A

Liability	Premium	Tax
\$1,000.00	\$350.00	\$30.10

Effective Date: January 22, 2025 at 08:00 AM

The assurances referred to on the face page are:

That, according to those public records which, under the recording laws, impart constructive notice of matter relative to the following described property:

For APN/Parcel ID(s): 308120300

A PARCEL OF PROPERTY LOCATED IN A PORTION OF THE BENJAMIN HUNTINGTON D.L.C. AND THE SOUTH HALF OF SECTION 14, AND THE NORTH HALF OF SECTION 23, TOWNSHIP 9 NORTH, RANGE 2 WEST OF THE WILLAMETTE MERIDIAN IN THE CITY OF CASTLE ROCK, COWLITZ COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CORNER COMMON TO SECTION 13, 14, 23 AND 24, TOWNSHIP 9 NORTH, RANGE 2 WEST, AS SHOWN ON RECORD-OF-SURVEY RECORDED IN VOLUME 43, PAGES 120-121 OF THE WILLAMETTE MERIDIAN, COWLITZ COUNTY, WASHINGTON;

THENCE NORTH 01°42'22" EAST, ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SAID SECTION 14, A DISTANCE OF 742.50 FEET TO THE NORTH LINE OF THE SOUTH HALF OF THE BENJAMIN HUNTINGTON DONATION LAND CLAIM;

THENCE NORTH 88°18'14" WEST, ALONG SAID NORTH LINE, 1915.35 FEET;

THENCE SOUTH 01°33'06" WEST 26.70 FEET TO THE NORTHWEST CORNER OF "PARCEL I" AS CONVEYED TO CT6, LLC BY DEED RECORDED UNDER AUDITOR'S FILE NUMBER 3682681, COWLITZ COUNTY RECORDS AND THE TRUE POINT OF BEGINNING;

THENCE SOUTH 88°09'15" EAST ALONG THE NORTH LINE OF SAID PARCEL I, A DISTANCE OF 88.61 FEET;

THENCE NORTH 68°26'31" EAST ALONG THE NORTH LINE OF SAID PARCEL I, A DISTANCE OF 93.90 FEET TO A NON-TANGENT 530.00 FOOT RADIUS CURVE TO THE LEFT, FROM WHICH THE RADIUS POINT BEARS NORTH 67°48'33" EAST;

THENCE ALONG SAID 530.00 FOOT NON-TANGENT CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 22°53'04" (LONG CHORD BEARS SOUTH 38°40'15" WEST 210.28 FEET) AN ARC DISTANCE OF 211.69 FEET;

THENCE SOUTH 50°06'47" EAST 328.61 FEET TO A 35.00 FOOT RADIUS CURVE TO THE RIGHT;

THENCE ALONG SAID 35.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 88°23'02" AN ARC DISTANCE OF 53.99 FEET;

SCHEDULE A

(continued)

THENCE SOUTH 38°16'16" WEST 604.48 FEET TO A 30.00 FOOT RADIUS CURVE TO THE RIGHT;

THENCE ALONG SAID 30.00 FOOT RADIUS CURVE TO THE RIGHT THROUGH A CENTRAL ANGLE OF 82°46'20" AN ARC DISTANCE OF 43.34 FEET TO A POINT 30.00 FEET NORTHERLY OF, WHEN MEASURED RADially TO, THE CENTERLINE OF LARSEN LANE AS SHOWN ON SAID RECORD OF SURVEY, VOLUME 43, PAGES 120-121 AND A 313.53 FOOT RADIUS COMPOUND CURVE TO THE RIGHT;

THENCE PARALLEL WITH SAID LARSEN LANE CENTERLINE AND ALONG SAID 313.53 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 19°31'25", AN ARC DISTANCE OF 106.94 FEET:

THENCE NORTH 39°25'59" WEST, PARALLEL WITH SAID CENTERLINE 82.70 FEET;
THENCE NORTH 41°01'19" WEST, PARALLEL WITH SAID CENTERLINE 22.20 FEET;
THENCE SOUTH 48°56'17" WEST 17.50 FEET TO THE NORTH RIGHT-OF-WAY LINE OF SAID LARSEN LANE, SAID NORTH RIGHT OF WAY LINE BEING 12.50 FEET NORTHERLY OF, WHEN MEASURED PERPENDICULAR TO, SAID CENTERLINE;

THENCE NORTH 41°01'19" WEST, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE 337.54 FEET TO THE WEST LINE OF "PARCEL I" AS CONVEYED TO CT6, LLC BY DEED RECORDED UNDER AUDITOR'S FILE NUMBER 3682681, COWLITZ COUNTY RECORDS;

THENCE NORTH 53°08'46" EAST, LEAVING SAID NORTHERLY RIGHT-OF-WAY LINE AND ALONG THE WEST LINE OF SAID "PARCEL I" A DISTANCE OF 165.33 FEET;

THENCE NORTH 14°33'38" EAST, ALONG SAID WEST LINE 393.71 FEET TO THE TRUE POINT OF BEGINNING.

Title to said real property is [vested in:](#)

CT6, LLC, a Washington limited liability company

subject to the matters shown below under Exceptions, which Exceptions are not necessarily shown in the order of their priority.

END OF SCHEDULE A

SCHEDULE B

SCHEDULE B
(continued)**SPECIAL EXCEPTIONS**

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records. Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown in the public records.
3. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the year 2025.

General and special taxes and charges, payable February 15, delinquent if first half unpaid on May 1, second half delinquent if unpaid on November 1 of the tax year:

Year:	2024
Tax Account No.:	30813 (parent parcel)
School District/Levy Code:	600
Assessed Total:	\$113,170.00
Millage Rate:	8.145370

General and Special Taxes:

First Half Billed:	\$471.09
Second Half Billed:	\$471.01
Unpaid:	\$0.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

General and special taxes and charges, payable February 15, delinquent if first half unpaid on May 1, second half delinquent if unpaid on November 1 of the tax year:

Year:	2024
Tax Account No.:	30812 (parent parcel)
School District/Levy Code:	600
Assessed Total:	\$236,140.00
Millage Rate:	8.145370

General and Special Taxes:

First Half Billed:	\$977.14
Second Half Billed:	\$977.09
Unpaid:	\$0.00

Prior to close of escrow, please contact the Tax Collector's Office to confirm all amounts owing, including current fiscal year taxes, supplemental taxes, escaped assessments and any delinquencies.

SCHEDULE B

(continued)

4. Assessments, if any, levied by the city of Castle Rock.

5. Boundary Line Agreement, and the terms and conditions thereof:

Recording Date: July 27, 2018

[Recording No.:](#) [3597924](#)

6. Boundary Adjustment Agreement, and the terms and conditions thereof:

Recording Date: May 3, 2024

[Recording No.:](#) [3751157](#)

7. Memorandum of Development Agreement, and the terms and conditions thereof:

Recording Date: May 3, 2024

[Recording No.:](#) [3751162](#)

8. Boundary Line Agreement and Deed, and the terms and conditions thereof:

Recording Date: December 31, 2024

[Recording No.:](#) [3763318](#)

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

Granted to: Northwestern Long Distance Telephone Co.

Purpose: telephone and telegraph lines

Recording Date: September 22, 1908

[Recording No.:](#) [Volume 27, Page 489](#)

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

Granted to: Puget Sound Power & Light Co.

Purpose: Transmission of electric energy

Recording Date: November 7, 1934

[Recording No.:](#) [126951](#)

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

Granted to: Puget Sound Power & Light Co.

Purpose: Electric transmission line

Recording Date: November 7, 1934

[Recording No.:](#) [126952](#)

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

Granted to: State of Washington Department of Game

Purpose: to permit and allow the free and unrestricted passage over and use of said stream bank property by sport fishermen in order to fish in the Cowlitz River

Recording Date: December 23, 1958

[Recording No.:](#) [497370](#)

SCHEDULE B

(continued)

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

Granted to: PUBLIC UTILITY DISTRICT NO. 1 OF COWLITZ COUNTY, WASHINGTON
Purpose: Electric transmission line
Recording Date: March 30, 1964
[Recording No.:](#) [582564](#)

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

Granted to: Cowlitz County
Purpose: to replace the channel
Recording Date: June 18, 1980
[Recording No.:](#) [800618012](#)

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

Granted to: Cowlitz County
Purpose: replace the channel
Recording Date: September 3, 1980
[Recording No.:](#) [800903017](#)

16. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

In favor of: Cowlitz County
Purpose: school bus turnaround
Recording Date: December 29, 1965
[Recording No.:](#) [620999](#)
Affects: said premises and other property

17. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

In favor of: Sprint Communications Company L.P. or Level 3 Communications, LLC
Purpose: telecommunications easement
Recording Date: October 24, 2013
[Recording No.:](#) [3491199](#)
Affects: exact location cannot be ascertained of record

18. Reservations contained in the Deed:

Grantor: Ivy M. Larsen, a single woman
Recording Date: July 11, 1957
[Recording No.:](#) [474558](#)

19. Easements and Encroachments as disclosed on record of survey

Recording Date: September 5, 1996
Recording No.: [Volume 15, Pages 163](#) and 164

SCHEDULE B

(continued)

20. Lease Option to Purchase, and the terms and conditions thereof:

Recording Date: May 25, 2021

[Recording No.:](#) [3683200](#)

21. Covenants, conditions, restrictions, recitals, reservations, easements, easement provisions, encroachments, dedications, building setback lines, notes, statements, and other matters, if any, but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth on Survey:

[Recording No.:](#) [3732400](#), Volume 43, Page 120

22. Any rights, interests, or claims which may exist or arise by reason of the following matters disclosed by survey,

Recording Date: October 23, 2023

[Recording No.:](#) [3742475](#)

Matters shown: Boundary lines

23. Covenants, conditions, restrictions, recitals, reservations, easements, easement provisions, encroachments, dedications, building setback lines, notes, statements, and other matters, if any, but omitting any covenants or restrictions, if any, including but not limited to those based upon race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law, as set forth on Survey:

Recording No: 3762029, [Volume 45, Page 110](#)

24. Any unrecorded leaseholds, right of vendors and holders of security interests on personal property installed upon the Land and rights of tenants to remove trade fixtures at the expiration of the terms.

END OF EXCEPTIONS**NOTES**

The following matters will not be listed as Special Exceptions in Schedule B of the policy. There will be no coverage for loss arising by reason of the matters listed below because these matters are either excepted or excluded from coverage or are not matters covered under the insuring provisions of the policy.

Note A: Your application for title insurance was placed by reference to only a street address or tax identification number. Based on our records, we believe that the legal description in this report covers the parcel(s) of Land that you requested. If the legal description is incorrect, the seller/borrower must notify the Company and/or the settlement company in order to prevent errors and to be certain that the correct parcel(s) of Land will appear on any documents to be recorded in connection with this transaction and on the policy of title insurance.

Note B: Note: The Public Records indicate that the address of the improvement located on said Land is as follows:

Vacant land

SCHEDULE B

(continued)

Note C: Notice: Please be advised that our search disclosed that the Land is vacant. The Company reserves the right to require further evidence to establish and verify the identity of the seller. The Company further reserves the right to make additional requirements or add additional items or exceptions upon receipt of the requested evidence.

Note D: Note: FOR INFORMATIONAL PURPOSES ONLY:

The following may be used as an abbreviated legal description on the documents to be recorded, per Amended RCW 65.04.045. Said abbreviated legal description is not a substitute for a complete legal description within the body of the document:

Tract 1 of Boundary Line Adjustment Survey, [Book 45, Page 110](#)
[Tax Account No.: 308120300](#)

Note E: Note: This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances or acreage shown thereon.

Note F: The recording fee (per document) is currently:
Deed \$303.50 plus \$1.00 for each additional page
Deed of Trust \$304.50 plus \$1.00 for each additional page

Note: When possible, the company will record electronically, and an additional \$15.00 fee will apply.

Note: A multiple transaction document incurs an additional fee for each additional title.

Note: A document which fails to conform to certain formatting and page one requirements incurs an additional \$50.00 fee.

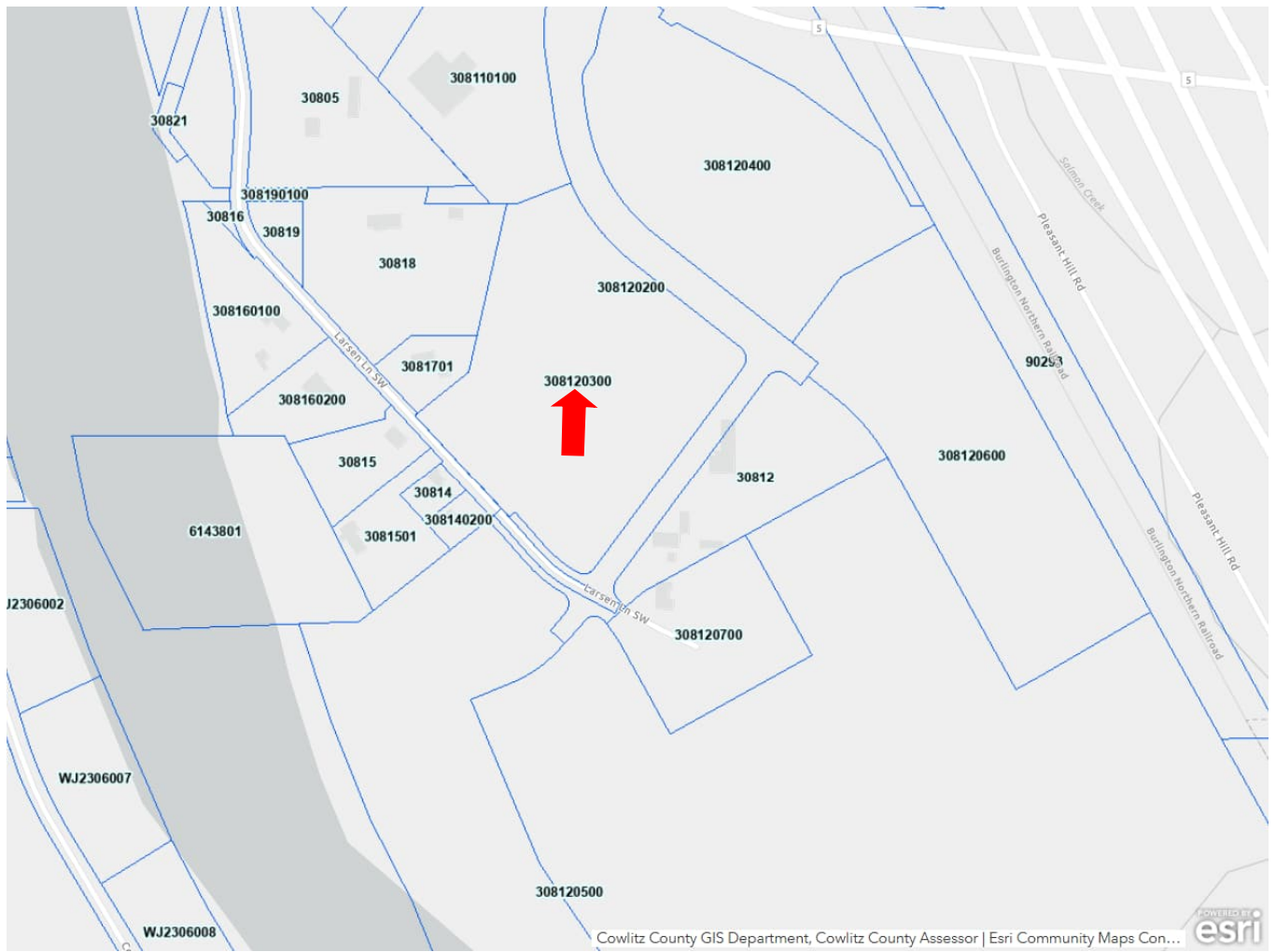
RECORDING FEES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Please send all recording packages to:
Recording Department
655 W. Columbia Way, Suite 200
Vancouver, WA 98660

Please email all releases to:
ClarkWArecordings@fnf.com

END OF NOTES

END OF SCHEDULE B



This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.



AFFIDVAIT OF NEIGHBORHOOD MEEITNG NOTICE MAILING

AFFIDAVIT OF NEIGHBORHOOD MEETING NOTICE MAILING

I, Ingrid Friedberg, on behalf of CT6, LLC, hereby certify that on November 12, 2024, mailed a neighborhood meeting invitation for the River's Edge at the Landing Subdivision project to neighboring property owners within three- (300) hundred feet of the subject site, in accordance with the requirements of the City of Castle Rock Municipal Code Section 16.12.013.A.

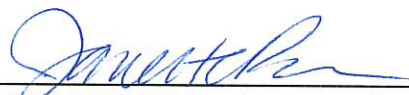

Ingrid Friedberg

3/13/25
Date

STATE OF WASHINGTON)
) ss.
County of Clark)

This record was acknowledged before me on March 13, 2025, by Ingrid Friedberg.




NOTARY PUBLIC for the State of washington
My Commission Expires: 12/09/2025



NEIGHBORHOOD MEETING NOTICE LETTER



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Larsen Lane LLC:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. on Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOT) Master Plan. The LOTC Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering permitting process.

The purpose of the upcoming neighborhood meeting is to discuss two (2) separate proposed site-specific developments with surrounding property owners and residents involving:

- The River's Edge at the Landing includes a 61-detached single family residential subdivision within about nine (9) acres within the LOTC residential land use area. Please see the attached *Conceptual River's Edge at the Landing Subdivision Layout*. The approved LOTC allows for up to two hundred (200) dwelling units.
- The River's Edge RV Park includes a 173-stall recreational RV park within an approximately fifteen- (15) acre area of the parks and open space land use area of the LOTC. For more information, please see the attached *Conceptual River's Edge RV Layout*. The approved LOTC allows for up to two hundred (200) recreational RV stalls.

CT6, LLC and its engineering consultant are working on preparing necessary applications for review and approval by the City of Castle Rock. Please note that this will be an informational meeting with the developer and is not intended to take the place of a public hearing before the Planning Commission. You will have an opportunity to present testimony to the Planning Commission after applications are submitted to the City for review.

Headquarters

PO Box 1900, 1904 SE 6th Place
Battle Ground, WA 98604
(360) 687-1148

Tri-Cities Office

2213 Henderson Loop
Richland, WA 99354
(509) 590-1184

Tualatin Office

18500 SW Pacific Hwy
Tualatin, OR 97062
(503) 883-3169

Website

tapani.com

Email

info@tapani.com

We look forward to seeing you at the meeting and hearing your thoughts on the proposed subdivision and recreational RV park. Should you have any questions beforehand, please do not hesitate to reach out.

Sincerely,



Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Sherri:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOT) Master Plan. The LOT Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering approval process.

The purpose of the upcoming neighborhood meeting is to discuss two (2) separate proposed site-specific developments with surrounding property owners and residents involving:

- The River's Edge at the Landing includes a 61-detached single family residential subdivision within about nine (9) acres within the LOT residential land use area. Please see the attached *Conceptual River's Edge at the Landing Subdivision Layout*. The approved LOT allows for up to two hundred (200) dwelling units.
- The River's Edge RV Park includes a 173-stall recreational RV park within an approximately fifteen- (15) acre area of the parks and open space land use area of the LOT. For more information, please see the attached *Conceptual River's Edge RV Layout*. The approved LOT allows for up to two hundred (200) recreational RV stalls.

CT6, LLC and its engineering consultant are working on preparing a subdivision, site plan and shoreline permit application for review and approval by the City of Castle Rock. Please note that this will be an informational meeting with the developer and is not intended to take the place of a public hearing before the Planning Commission. You will have an opportunity to present testimony to the Planning Commission after applications are submitted to the City for review.

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We look forward to seeing you at the meeting and hearing your thoughts on the proposed subdivision and recreational RV park. Should you have any questions beforehand, please do not hesitate to reach out.

Sincerely,

Ingrid Friedberg

Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Bounmy:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOTC) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOTC) Master Plan. The LOTC Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering permitting process.

The purpose of the upcoming neighborhood meeting is to discuss two (2) separate proposed site-specific developments with surrounding property owners and residents involving:

- The River's Edge at the Landing includes a 61-detached single family residential subdivision within about nine (9) acres within the LOTC residential land use area. Please see the attached *Conceptual River's Edge at the Landing Subdivision Layout*. The approved LOTC allows for up to two hundred (200) dwelling units.
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Sincerely,



Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Roy:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

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Sincerely,



Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Cowlitz County:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

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Sincerely,



Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear City of Castle Rock:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOT) Master Plan. The LOT Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering permitting process.

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Sincerely,

Ingrid Friedberg

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Special Projects Manager
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Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Timberlake Christian Fellowship:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

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We look forward to seeing you at the meeting and hearing your thoughts on the proposed subdivision and recreational RV park. Should you have any questions beforehand, please do not hesitate to reach out.

Sincerely,

Ingrid Friedberg

Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Matthew:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOT) Master Plan. The LOT Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering permitting process.

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We look forward to seeing you at the meeting and hearing your thoughts on the proposed subdivision and recreational RV park. Should you have any questions beforehand, please do not hesitate to reach out.

Sincerely,

Ingrid Friedberg

Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
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Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Terry:

On behalf of, CT6, LLC, an affiliate of Tapani Inc., you are cordially invited to attend a neighborhood meeting to discuss proposed development within the approved Landing on the Cowlitz (LOT) Master Plan, from **5:00-6:30 p.m. Monday, November 25 at the Castle Rock Senior Center, 222 2nd Avenue SW in Castle Rock.**

CT6, LLC is currently considering two (2) separate developments within the approved Landing on the Cowlitz (LOT) Master Plan. The LOT Master Plan was approved in 2021 and includes several different land use area types. Please see the attached *Approved Master Plan* for more information. The Master Plan did not include site-specific plan approvals and requires that all future development go through a land use and engineering permitting process.

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CT6, LLC and its engineering consultant are working on preparing a subdivision, site plan and shoreline permit application for review and approval by the City of Castle Rock. Please note that this will be an informational meeting with the developer and is not intended to take the place of a public hearing before the Planning Commission. You will have an opportunity to present testimony to the Planning Commission after applications are submitted to the City for review.

Headquarters

PO Box 1900, 1904 SE 6th Place
Battle Ground, WA 98604
(360) 687-1148

Tri-Cities Office

2213 Henderson Loop
Richland, WA 99354
(509) 590-1184

Tualatin Office

18500 SW Pacific Hwy
Tualatin, OR 97062
(503) 883-3169

Website

tapani.com
Email
info@tapani.com

We look forward to seeing you at the meeting and hearing your thoughts on the proposed subdivision and recreational RV park. Should you have any questions beforehand, please do not hesitate to reach out.

Sincerely,



Ingrid Friedberg
Special Projects Manager
ingridf@tapani.com
360.553.9144

Attachments: Approved Landing on the Cowlitz Master Plan
 Conceptual River's Edge at the Landing Subdivision Layout
 Conceptual River's Edge RV Layout



November 12, 2024

**RE: Neighborhood Meeting Notice for the Proposed Development in the Approved
Landing on the Cowlitz Master Plan
Located South of Huntington Avenue South in Castle Rock**

Dear Andrew:

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 Conceptual River's Edge RV Layout



November 12, 2024

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Dear Roy:

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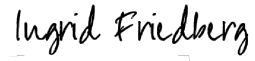
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 Conceptual River's Edge RV Layout



November 12, 2024

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Dear Ray:

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 Conceptual River's Edge RV Layout



November 12, 2024

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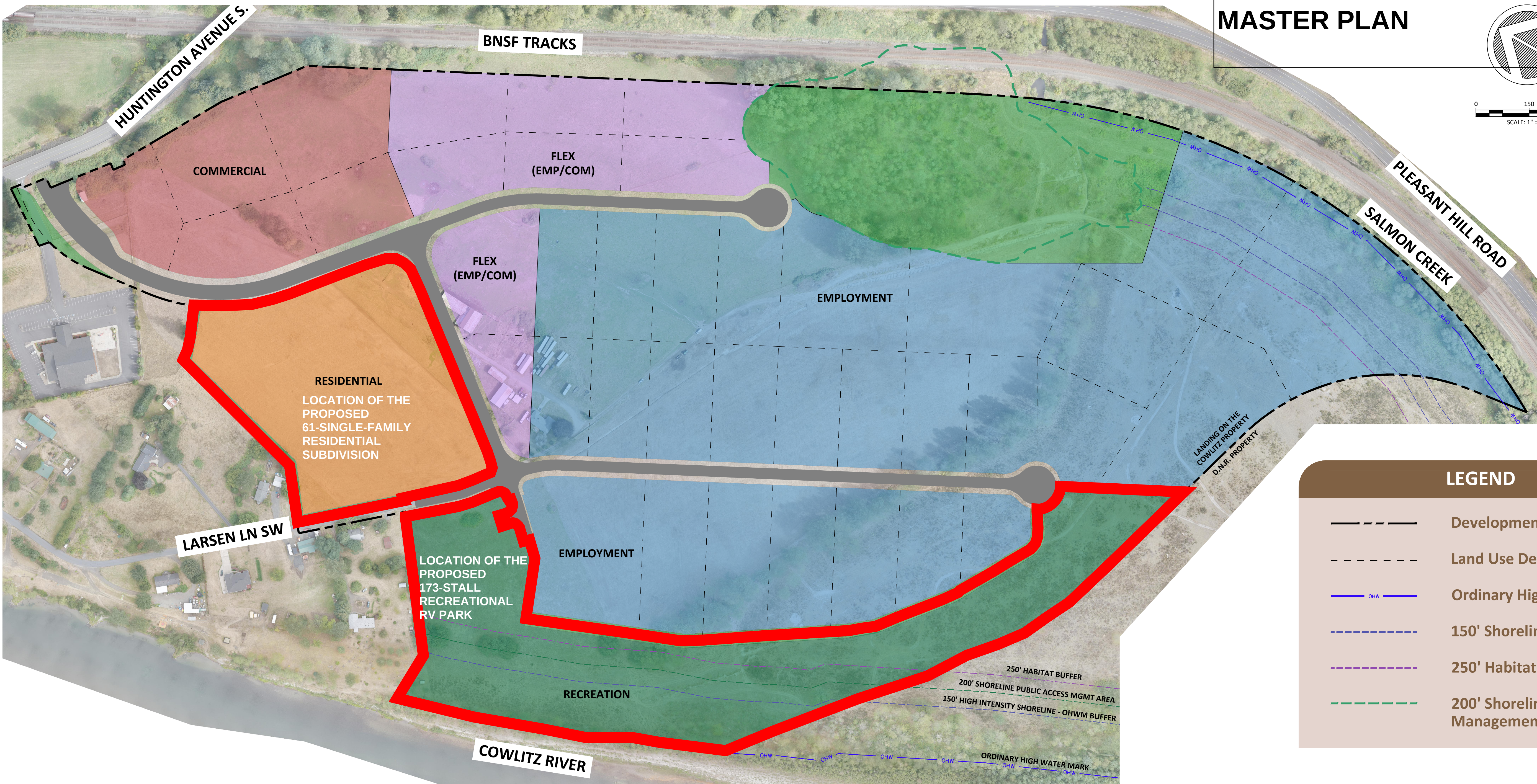
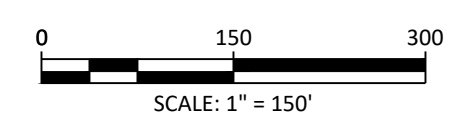
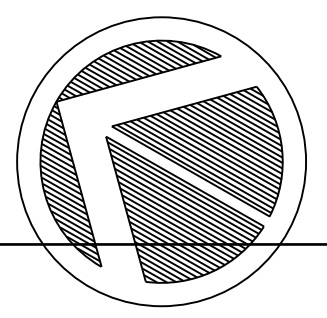
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 Conceptual River's Edge at the Landing Subdivision Layout
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NEIGHBORHOOD MEETING NOTICE LETTER - ATTACHMENTS

APPROVED LANDING ON THE COWLITZ
MASTER PLAN



LEGEND

Development Boundary

Land Use Delineation

OHWM

Ordinary High Water Mark

150' Shoreline - OHWM Area

250' Habitat Buffer

200' Shoreline Public Access Management Area

EMPLOYMENT (50.9 AC)

1

Light Industrial and accessory uses

2

624,000 square feet of building usage complying with the Industrial (I) zoning district as conditioned in Ord. 2021-10

COMMERCIAL (8.6 AC)

1

Neighborhood retail

2

Commercial and professional services

3

98,000 square feet of building usage complying with the Highway Business (C-2) zoning district as conditioned in Ord. 2021-10.

FLEX (10.9 AC)

1

Employment or commercial use

2

Allows flexibility and adaptability to future market conditions

3

Development area maximums complying with Ord. 2021-10 for commercial and employment

RECREATIONAL (14.6 AC)

1

Maximum 200 RV spaces

2

Public access to Cowlitz River for fishing, rustic boat launch, and other recreational uses

3

Potential tourist attraction for Castle Rock town center

RESIDENTIAL (9.1 AC)

1

Medium-density residential presence adjacent to commercial and employment uses lends to a live/work environment

2

Maximum of 200 dwelling units

OPEN SPACE (13.3 AC)

1

Landscape buffering

2

Open space

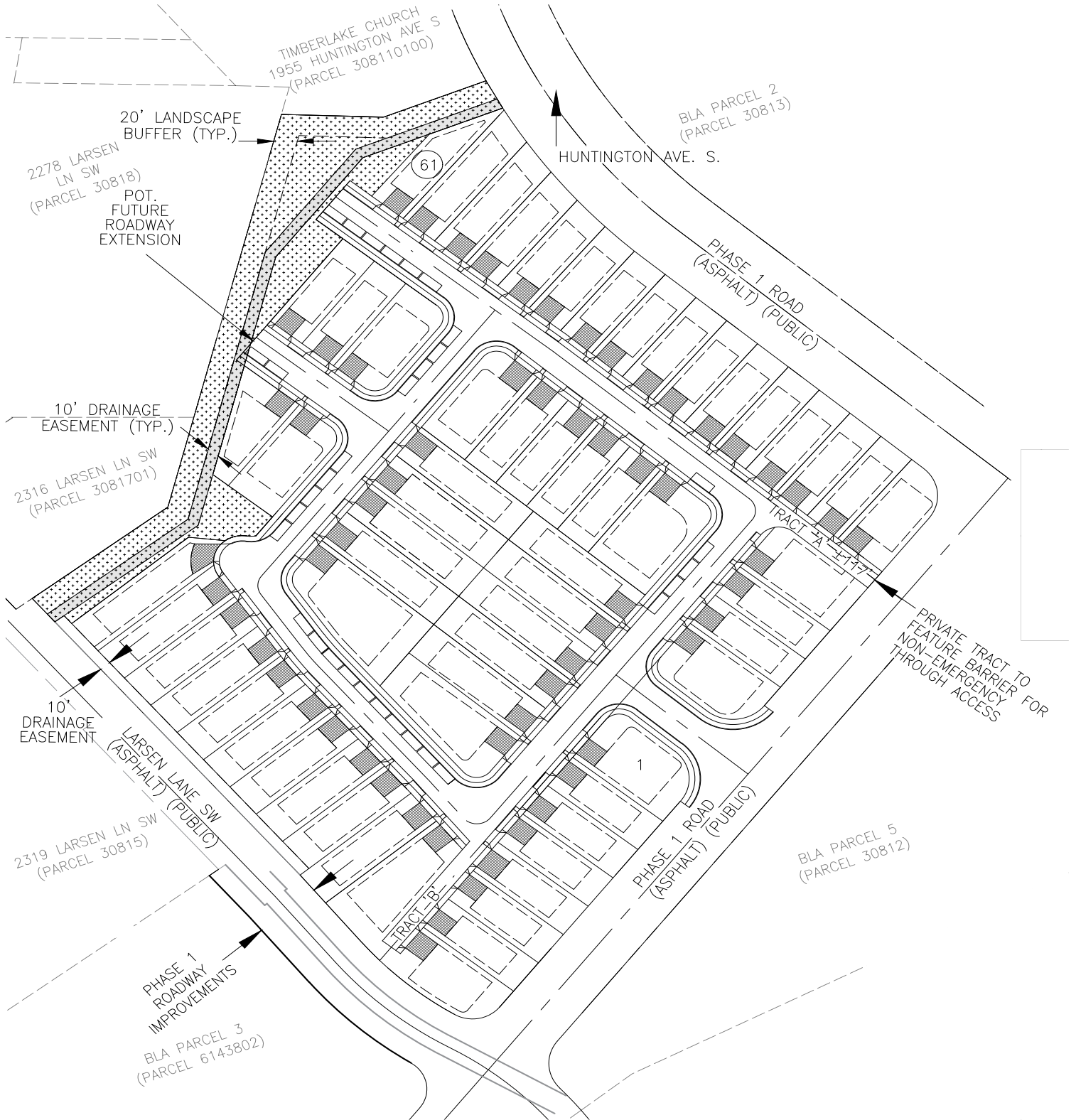
3

Potential critical areas protection (pending final delineation)

Note: Refer to Circulation and Access Plan for cross-circulation requirements and conceptual pedestrian easement locations.

LANDING ON THE COWLITZ

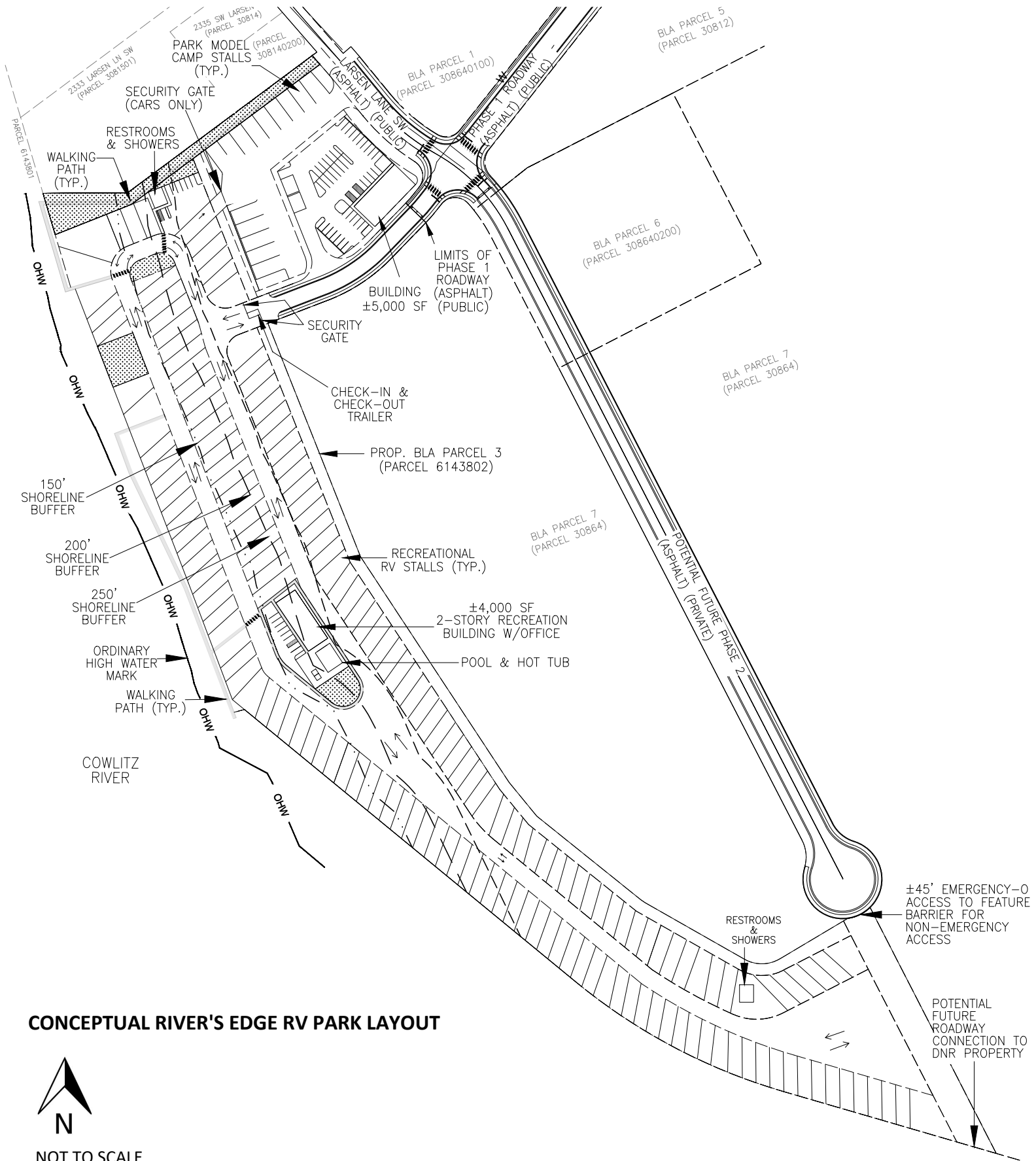




CONCEPTUAL RIVER'S EDGE AT THE LANDING SUBDIVISION LAYOUT



NOT TO SCALE



NOT TO SCALE



**ADDRESSES FOR PROPERTY OWNERS WITHIN
300-FEET OF THE PROPOSED DEVELOPMENT**



1159 14th Avenue
Longview, WA 98632
360.423.5330
www.cowlitztitle.com

300 Foot Radius Search

Certification

Parcel: 30813

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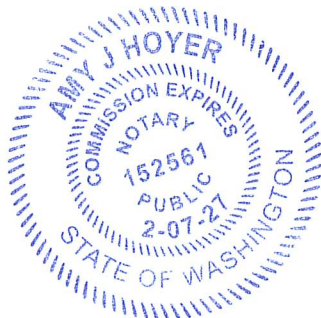
11-8-2024

Steve Quaife: VP/Manager

State of Washington

County of Cowlitz

I certify that I know or have satisfactory evidence that Steve Quaife is the person who appeared before me and said person acknowledged that he signed this instrument and acknowledged it to be free and voluntary act for the uses and purposes mentioned in the instrument.

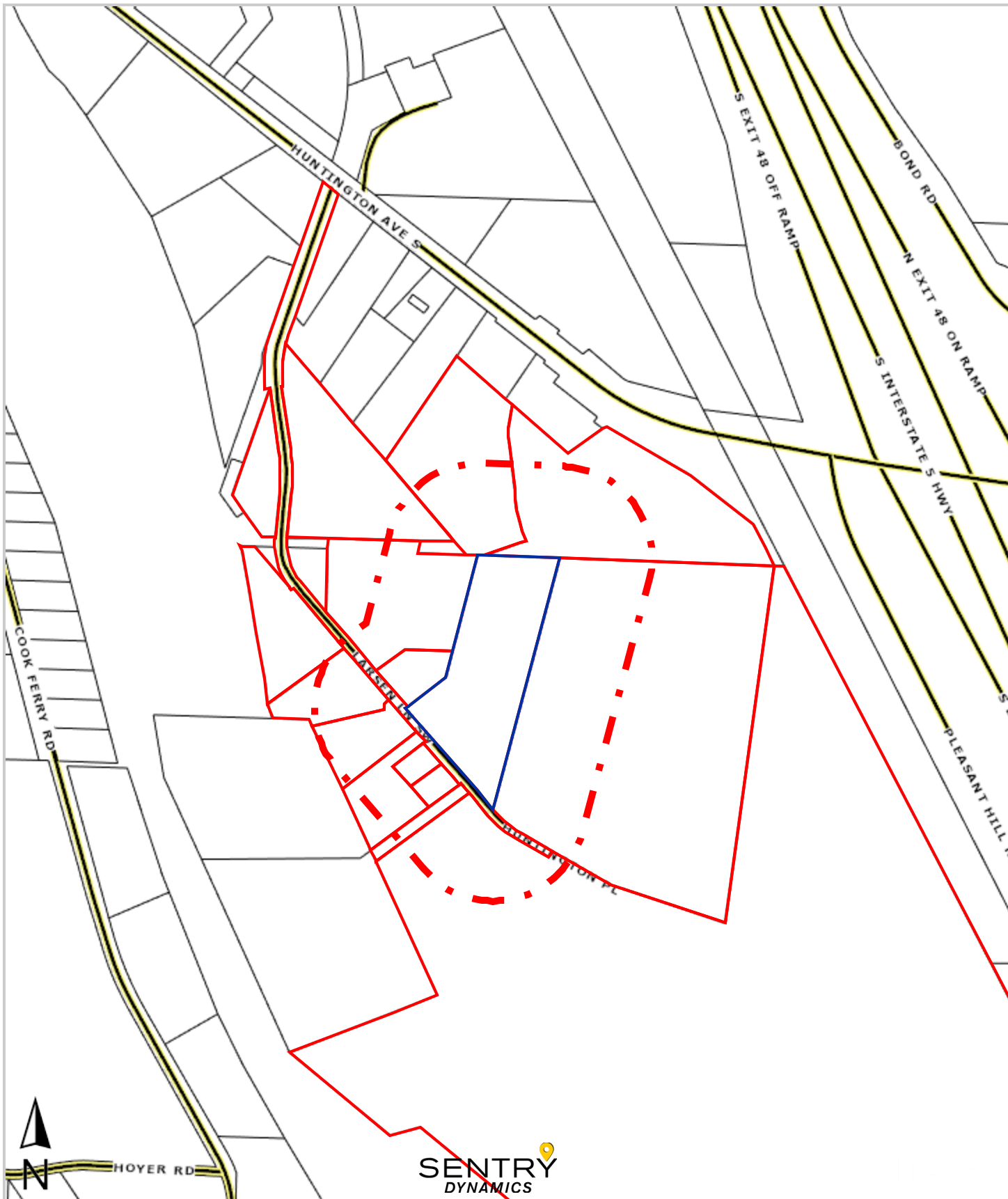


Notary Public in and for the State of Washington,

Residing in Kelso

Exp. Date 2/7/2027

Today's Date: 11/8/2024



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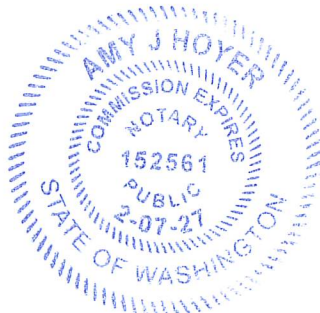
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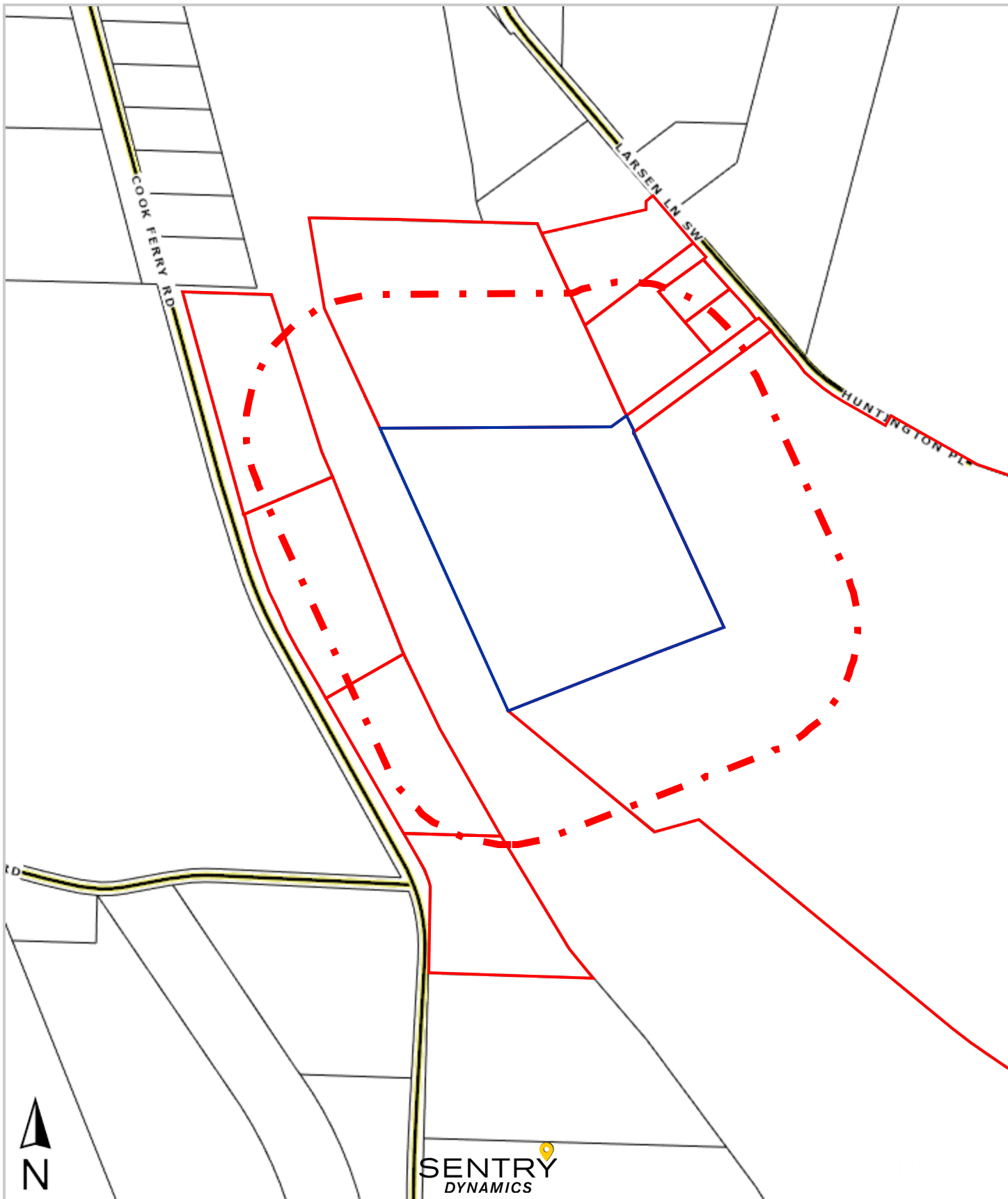
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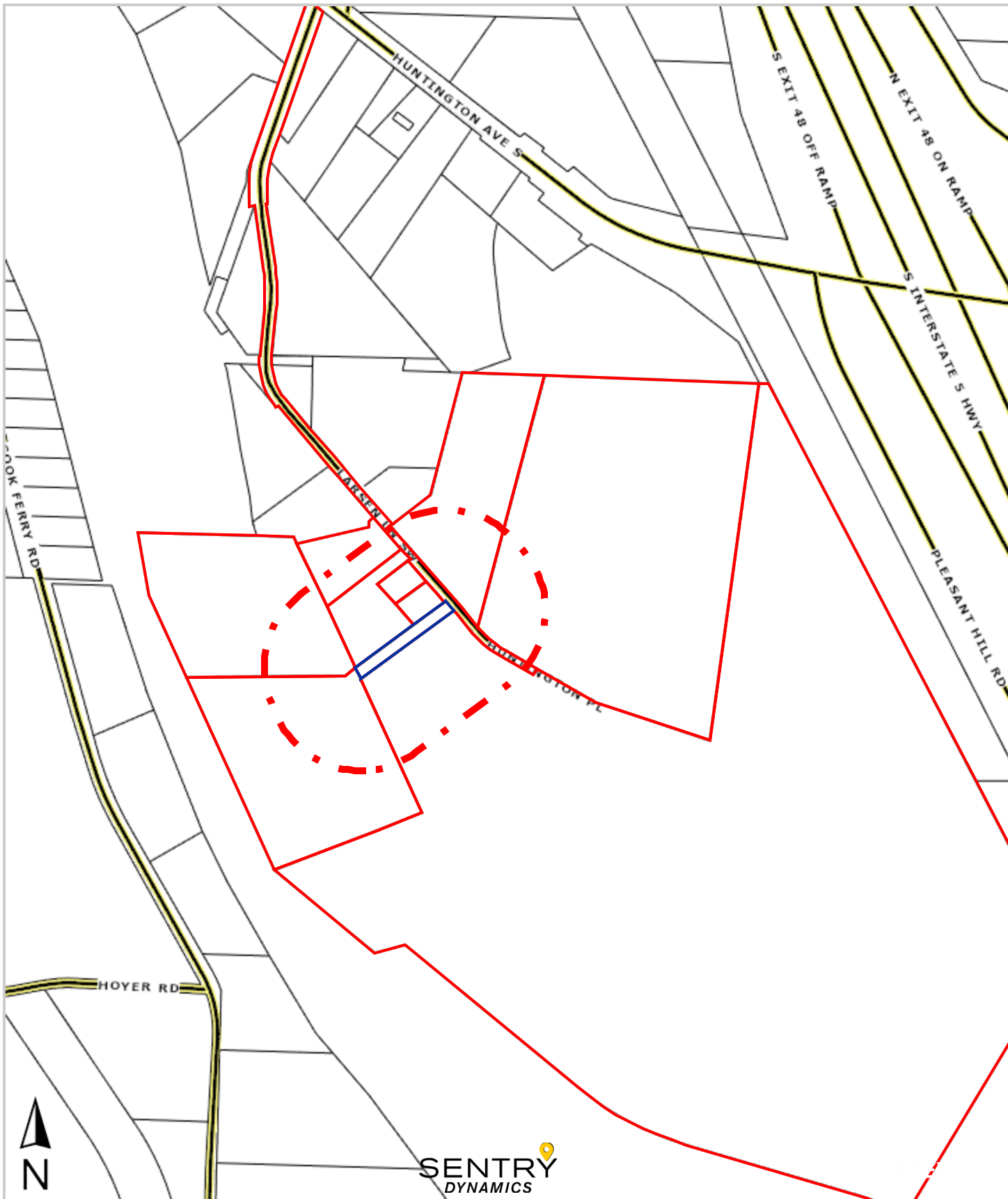


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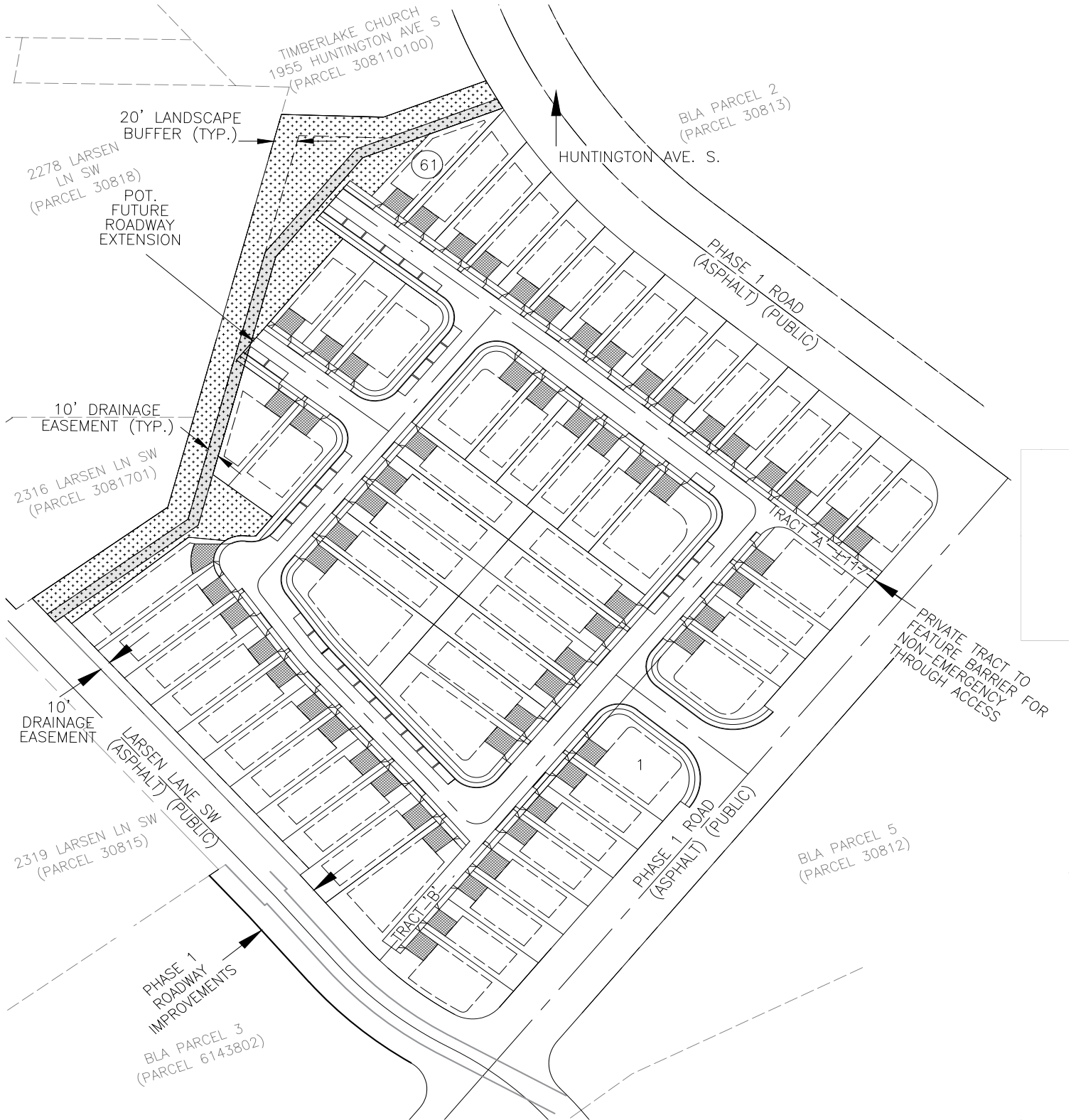
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Sherri Luster
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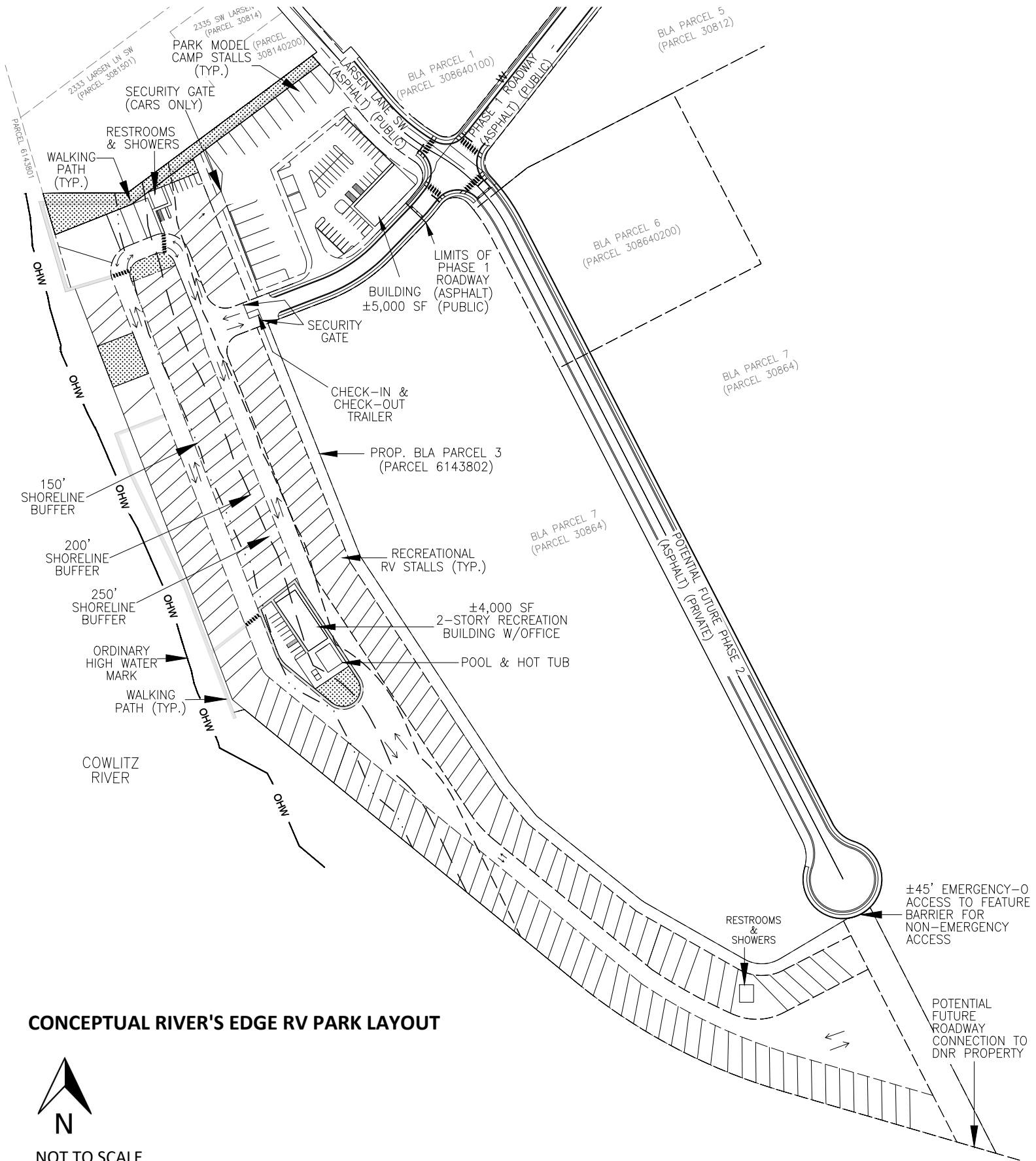
Cowlitz County
207 N 4th Avenue, Room 308
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CONCEPTUAL RIVER'S EDGE AT THE LANDING SUBDIVISION LAYOUT



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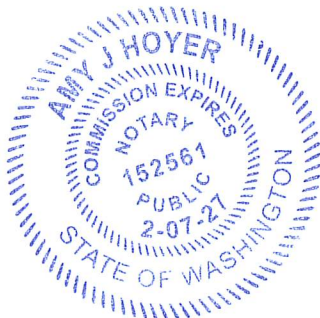
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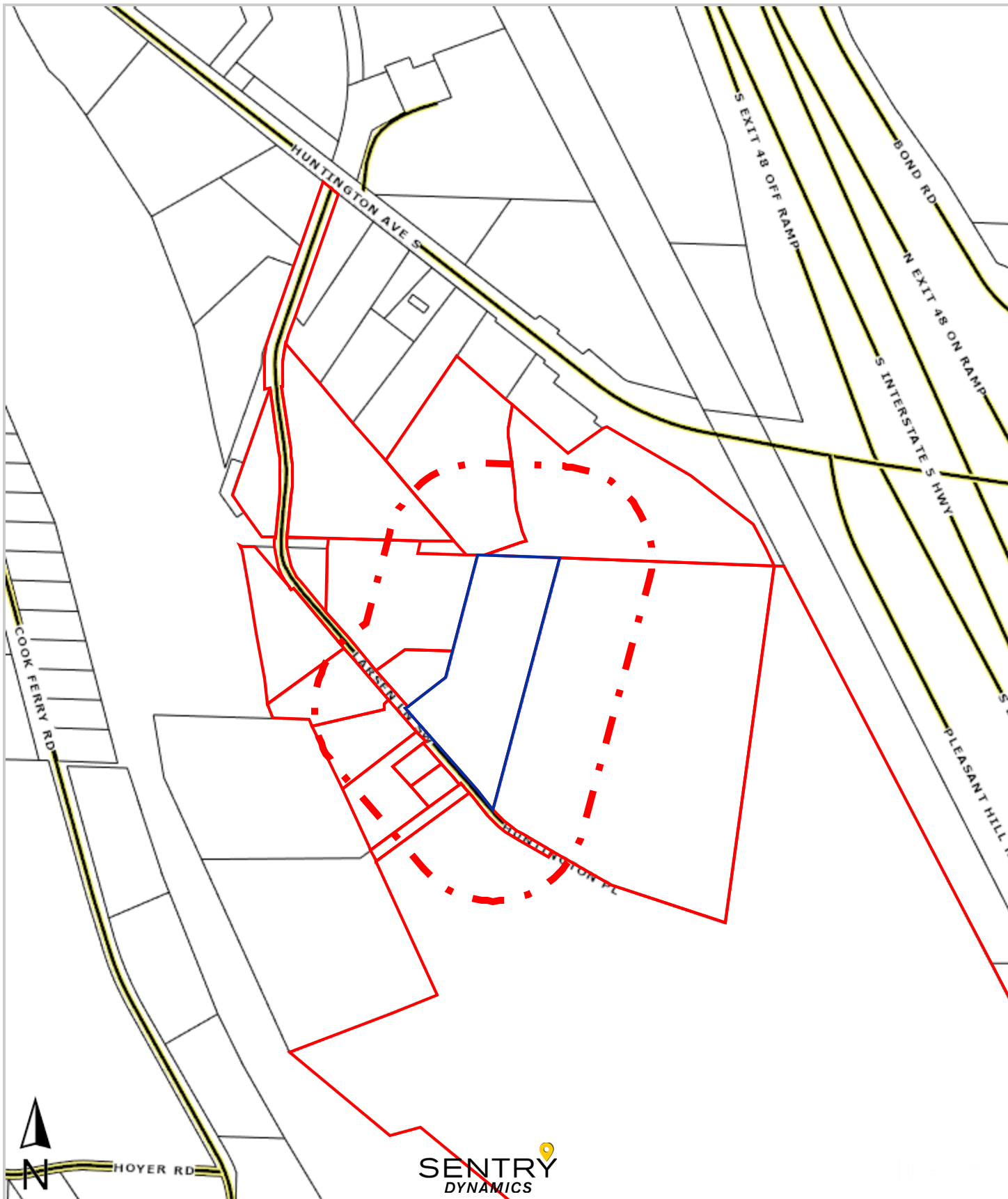


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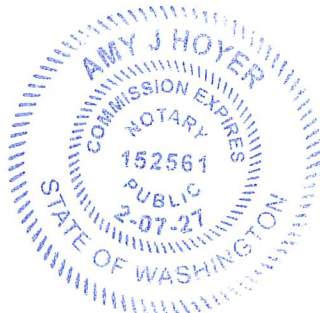
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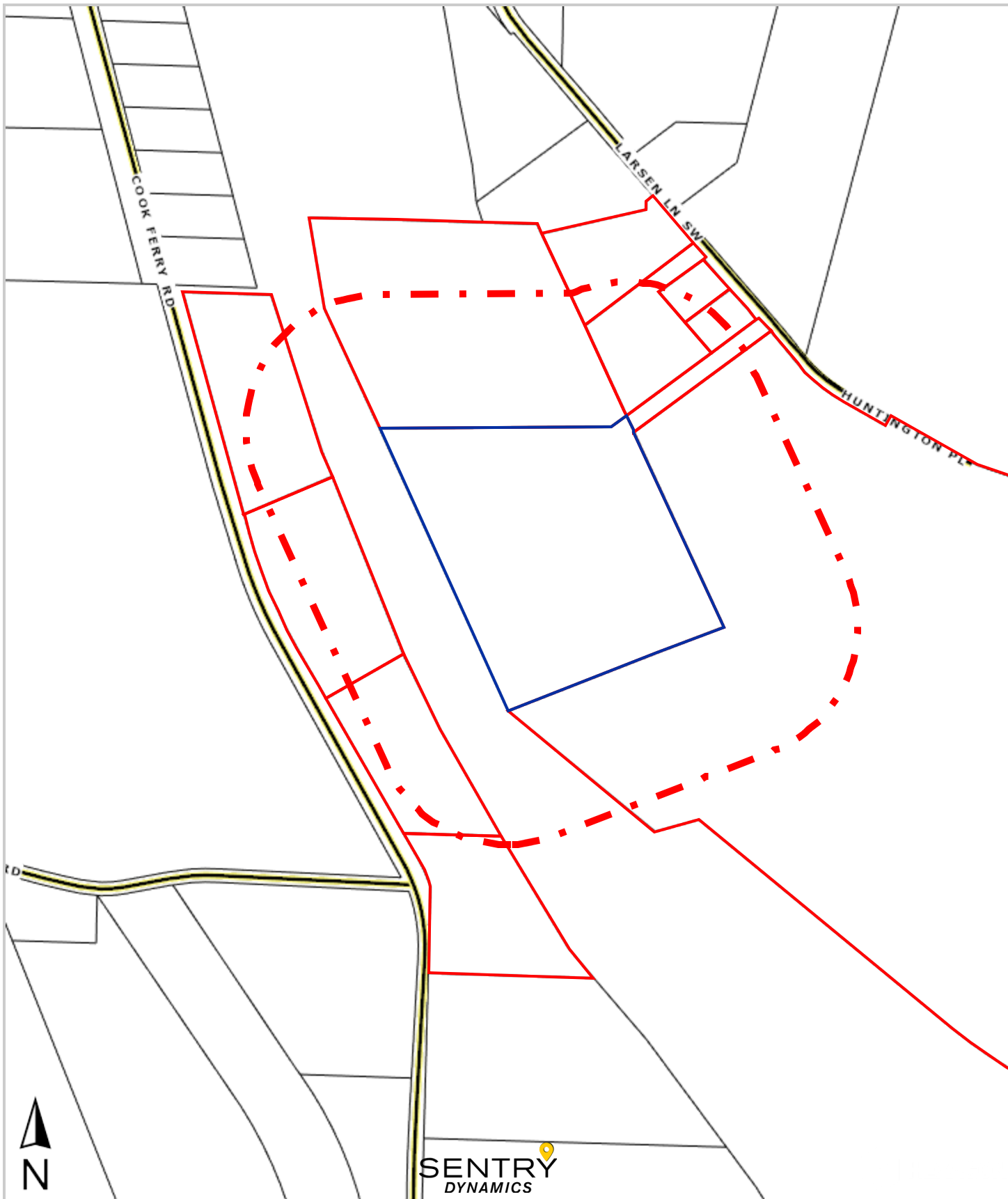
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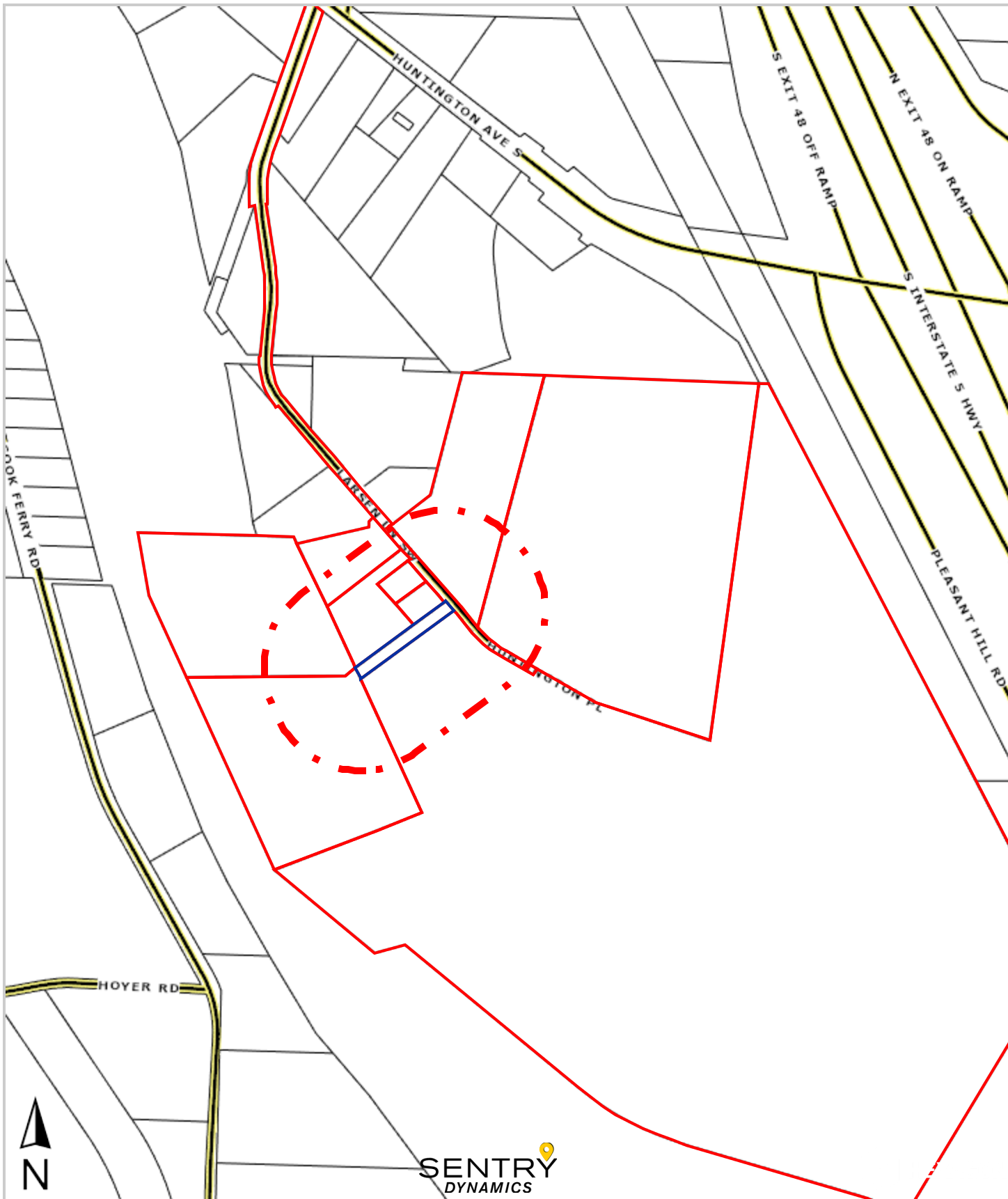


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NEIGHBORHOOD MEETING SIGN IN SHEET

NEIGHBORHOOD MEETING SIGN-IN SHEET

LANDING ON THE COWLITZ MASTER PLAN

NOVEMBER 25, 2024 | 5PM | CITY OF CASTLE ROCK SENIOR CENTER

First and Last Name	Phone No.	Email Address
Kingston Chirwa		kchirwa@mackaysposito.com
JADA RUPLEY		jadarupley@gmail.com
Renelle Smith	360-669-9549	Renelle.smith@dnr.wa.gov
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NEIGHBORHOOD MEETING SIGN-IN SHEET		
First and Last Name	Phone No.	Email Address
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Ed Orcutt		Ed.Orcutt@leg.wa.gov

City of Castle Rock

PO Box 370
Castle Rock, WA 98611



LOTIC Pre-Application Conference Notes River's Edge at the Landing Subdivision CR-PA-24-06

CRMC 17.77.040 Development Permit Review Procedures

A. Preapplication. Prior to applying for a development permit, a developer may present to the city clerk-treasurer a preliminary or conceptual floor plan, plot plan, drawing, site plan, or narrative which shall contain (in a rough and approximate manner) as much of the permit application requirements as is known, together with the forms provided by the city. The purpose of the pre-application meeting is to enable the developer presenting the proposal to obtain the assessment of the development review committee as to the proposal's compliance with the adopted plans, policies and ordinances of the city and obtain information of a general nature regarding such issues as city services, access, and other factors as appropriate. This consultation should include obtaining preliminary facts and data pertaining to the proposed site, as well as the types of concerns that might be anticipated for the proposed use at the proposed site. Information obtained from city staff at this stage shall not be considered binding upon the city.

On November 6, 2024, members of the Development Review Committee met with the Landing on the Cowlitz (LOTIC) Team to discuss preliminary plans for a sixty-one (61) single-family residential detached lot subdivide subdivision.

Attendees:

- Shane Tapani – Tapani Inc.
- Ingrid Friedberg – Tapani Inc.
- Abram Jenks - Tapani Inc.
- Taylor Wilson – MacKay Sposito
- James Heyen – West Consultants
- Daniel Stumpf – Lancaster Mobley
- Elizabeth Vaughn – Ecological Land Services, Inc. (ELS)
- Lacey Hoffmann – Ecological Land Services, Inc. (ELS)

- Kirsten Peterson – SCJ Alliance, Castle Rock Consulting Planner
- Malissa Paulsen - SCJ Alliance, Castle Rock Consulting Planner
- Cindy Gower - Gibbs & Olson, Castle Rock Consulting Engineer
- Tom Gower – Gibbs & Olson, Castle Rock Consulting Engineer
- Paul Helenberg – Mayor, City of Castle Rock
- Dave Vorse – Public Works Director, City of Castle Rock
- Tyler Stone – Public Works Senior Operator, City of Castle Rock
- Carie Cuttonaro – Clerk-Treasurer, City of Castle Rock
- Karlene Akesson – Deputy Clerk, City of Castle Rock

Building Department Notes/Fire Marshall Notes

1) Building Heights

- This development exceeds 30 lots therefore, two access points are required per the fire code.
- One of the access points can be for emergency use only but must be a minimum of 217 feet from the primary access. The code requires that when a second access is required, it must be separated by a distance of not less than ½ the diagonal distance of the proposed area.
- Planning: If any proposed 3-story residence is below the maximum height allowance of 40 feet or less within the “Residential land use area” (and meets all other bulk standards as required) then it would be permitted.
- Planning: All bulk and development standards as laid out in all documents related to the development, including the approved Development Agreement, and within the Castle Rock Municipal Code (as applicable) must be adhered to.

Planning Department Notes

1) SEPA Checklist

- A SEPA Checklist must be completed and submitted with the application for each implementing phase (per the Modified MDNS dated September 8, 2021- Exhibit C. of the DA and Item No. 22 of the Castle Rock Landing on the Cowlitz Conditions of Master Site Plan Approval document dated October 22, 2021 – Exhibit D. of the DA).
- If the proposed subdivision meets the mitigating measures as outlined in the Modified MDNS dated September 8, 2021, it is requested that the applicant provide a Memorandum that references the Modified MDNS and states that the proposed subdivision meets those requirements and does not increase the environmental impacts.
- If it is determined by staff or the applicant that there is any increase in environmental impact, then an additional SEPA review including public and agency comment period shall be required.
- Stormwater Plan – A modified/new Stormwater plan may trigger a new SEPA review. If the proposed subdivision does not meet the modified mitigating measures as

outlined in the Modified MDNS dated September 8, 2021, please outline the proposed changes (such as the Stormwater Plan). Per the Modified MDNS dated September 8, 2021, 1.a. *The City may require additional mitigation and/or conditions for approval based on the analysis of these subsequent environmental documents.*

2) Cultural and Archaeological Consultation

- Should a cultural or archeological finding occur, the developer is to follow the procedures set forth in the Modified MDNS dated September 8, 2021, Section 13.

3) Approvals pending the FEMA Letter of Map Amendment-Fill (CLOMR-F)

- ~~Generally, construction~~Development within a floodplain ~~is not~~is required to meet the City Flood Damage Prevention or receive a ~~permitted before receiving~~ a Letter of Map Revision Based on Fill (LOMR-F) approval from FEMA, as it is required to officially remove a property from the floodplain designation and allow construction to proceed. ~~As such, an applicant must first obtain the LOMR-F, as it confirms that the placed fill raised a property above the base flood elevation before starting construction in the area previously considered a floodplain.~~ In some cases, a "Conditional Letter of Map Revision" (CLOMR) may be issued, which means that construction can proceed based on proposed plans, but the final LOMR-F approval is only granted once the project is completed according to the specified design.
 - If the CLOMR-F is not already ~~issued reviewed and approved~~ by FEMA by the time the Preliminary Plat Application is submitted, the development will need to be reviewed based on existing conditions, as though it does not have a CLOMR-F and will need to meet the requirements set forth in Castle Rock Municipal Code Chapter (CRMC) Title 15 – Flood Damage Prevention.
- Per the DA – Section 6.2 – The City will review any preliminary plat consistent with CRMC 16.12.
- CRMC 16.12.005 C. – General Provisions. 16.12.090 B. – Preliminary plat – Approval criteria for planning commission – provides information regarding the review of a subdivision application in a flood zone.
- ~~Notwithstanding the aforementioned, if~~ If the applicant should choose to submit a preliminary plat subdivision application that has been designed to meet the Flood Damage Prevention requirements of CMCR Title 15, prior to receiving FEMA approval, the City ~~would likely be~~is willing to review the subdivision concurrently with FEMA's review of the LOMR-F.
- It would be beneficial to submit with the subdivision application materials, a memorandum and a site plan that states/depicts how the subdivision would meet the provision of CRMC Chapter 16.12 Subdivisions and CRMC 15.24 – Flood Damage Prevention, should the LOMR-F be approved.
- Be very clear with elevations/fill and documentation on elevations/fill and how you will comply with the various floodplain measures.

- When designing the infrastructure improvements, it will be necessary to demonstrate compliance with all measures of the September 8, 2021 Modified MDNS, with special attention paid to Item #5, which states:

5. Prior to the initiation of any clearing and grading activities the Project Sponsor shall submit for City review and approval of a Master Clearing, Fill, and Grading Plan that is integrated with a Master Stormwater Management Plan **that includes an analysis of the impacts of the development to the adjacent properties and measure to ensure that stormwater or flood waters will not adversely affect neighboring properties.**

- While Certificates of Occupancy are not issued until after approval of a Final Subdivision, the structures that are proposed for future constructions will need to comply with Measure #4 of the Modified MDNS:

4. All development activities shall comply with the City Flood Hazard Prevention regulations including the elevation of buildings at least one foot above base flood elevation.

As such, the placement of fill, the design of infrastructure improvements, and proposed locations of future structures will all need to be taken into consideration when compiling a subdivision application that is intended to be placed on fill on property that is considered floodplain by FEMA.

- Should it be demonstrated by the applicant that the local city flood ordinance requirements have been met, then the City will proceed with review and issuance of building permits in a manner consistent with standard building permit review procedures.
- The city is tasked with ensuring compliance with both local ordinances and federal regulations. Issuing building permits prior to FEMA's approval and/or compliance with CRMC would violate these regulations and could expose the city to liability in the event of a flood. The City's willingness to review the preliminary plat application should not be construed as approval of the LOMR-F or CLOMR-F, or approval of the preliminary plat itself.
- Various conditions of approval for the preliminary plat application may be considered during the review process.
- The City will follow the processes in place within the timelines that are set and outlined by the State, the City, and the Development Agreement. Section 5 of the Development Agreement specifies that the project is vested to the Castle Rock Municipal Code in effect on November 8, 2021, including CRMC 15.24.
- Please refer to previous notes regarding the SEPA checklist. As previously indicated, if a new SEPA checklist is warranted due to substantial changes that could increase the environmental impacts, then it will be necessary to submit a new checklist and pay the associated fees. If it is determined that only a memo is warranted, then the SEPA **checklist** application fee will not apply.

4) Critical Areas/[Shoreline Jurisdiction](#)

- As described in vesting sections of the Development Agreement, this development will be subject to the existing critical area requirements of the November 8, 2021 CRMC. Exceptions to this requirements would be considered if and when they become applicable. FEMA minimum standards are required to be met at the time of development. Please also refer to above response regarding flood plain permitting requirements.
- [The proposal and all submittal materials must show compliance with the current Shoreline Master Plan Regulations](#)

5) Neighborhood Meeting

- The layout presented in the neighborhood meeting must be substantially similar but does not have to be exactly what will be included in the submitted subdivision application.

6) Permitted Density/Lot Sizing

- The LOTC DA (Section 6.1.1) specifies a minimum lot size of 3,500 square feet
- There are no minimum lot width lot sizes identified in the DA
- The proposed subdivision layout shows Rear Loaded Lots (Lots 46-61)
 - There was no opposition to the rear loaded lot configuration
 - Driveways should not be served off of the collector road and minor arterial road

7) Setbacks and Landscape Buffers

- The landscape buffer will not count towards the required park/open space area.
- If there is a trail or similar use located within the landscape buffer area, it may be indicated on the plan and be identified as being within the landscape buffer.
- In the instance there is a future phase 2 addition: If a written agreement to modify the twenty (20) foot landscape buffer with abutting property owners not included in the LOTC Master Plan is obtained from private property owners abutting the approved LOTC Master Plan, the City does not see an immediate issue with an agreed upon modified landscape buffer.
- Maintenance of the landscape buffer may require more discussion. The Landscape Buffer may be a relevant item to address at the neighborhood meeting.

8) Building Types/Building heights

- As long as the building does not exceed the 40' height limit in the residential district, then the buildings would be permitted as long as all other bulk standards are met.
- Exhibit B of the D.A. includes the Conditions of Master Site Plan approval. Condition 2(c) states the following:
 - Development activities in the Residential Land Use Area shall comply with the provisions of the High Density Residential (R-2) zoning district except as modified by these conditions of approval.
- Condition 4(c) then goes on to outline ten (10) permitted uses in the R-2 zone, which does not include office type uses.
- This does not, however preclude a homeowner from applying for a Home Occupation permit if they want to run a business out of the residence, in accordance with CRMC [17.48.120](#) through [17.48.150](#)
- If the desire is to allow for other types of uses within the residential designated areas, Development Agreement provides for opportunities to request modifications to the D.A, and conditions of approval.

9) Parking/Driveways

- Public Works commented: 18' is narrow for a two-car driveway, maybe consider the driveway entrance be 18' and widen out to 20' – 24'. The goal is to maintain four (4) off-street parking spaces per residence while maximizing on-street parking for visitors.
- If the applicant is requesting a change to the standard that is not within the range (i.e. smaller than the minimum or larger than the maximum) then a variance would be required unless explicitly stated otherwise in any of the development documents.

10) Master Plan Signage

- Exhibit B, Conditions of Master Site Plan Approval, includes language regarding signage. Conditions #17 states the following:
17. The project sponsor shall prepare and submit with the first implementing application a Master Signage Plan to guide the design and location of signs throughout the site.
 - a. The standards in this plan shall meet or exceed the standards in Castle Rock Municipal Code.
 - b. All subsequent implementing applications shall include signs consistent with the approved Master Signage Plan.

Signage is regulated by CMCR 17.82. Signage is required to meet the standards of the zone that it is proposed to be located in. Given that this is a mixed-use development, the City will apply the requirements based on the land use designation assigned in the master plan.

Public Works/Engineering

- 1) Approvals pending the FEMA Letter of Map Amendment-Fill (CLOMR-F) - See item number 2 of the Planning notes above.
- 2) Plat Recordation prior to completion of full site improvements
 - The City is willing to work with the developer and have an agreement in place that may “allow the plat recordation prior to completion of full site improvements whereby the Applicant may bond for the outstanding required site improvements provided that substantial completion of the required site development improvements have been demonstrated. This may involve, for example, bonding for sidewalk improvements and the installation of streetlights and street trees after site grading and public utilities have been completed for each lot.” (Discussion item IV. Preliminary Plat Review Process 1.) A suggested timeline that came up during the meeting was completion of infrastructure within five (5) years.
- 3) Parking/Driveways
 - Parking Study Requirement – A parking plot plan along with a narrative. The parking plan shall show parking locations, accessible path of travel to public sidewalk and a parking table summary.
 - The City had agreed to the reduced street width and the required 4 off-street parking. It must be stated on the plat and with each lot that the garage cannot be turned into a living space but must be kept as a garage for vehicles.
 - If the applicant is requesting a change to the standard that is not within the range (i.e. smaller than the minimum or larger than the maximum) then a variance would be required unless explicitly stated otherwise in any of the development documents.
 - 2-car driveway width – The City believes 18’ is narrow for a two-car driveway, maybe consider the driveway entrance be 18’ and widen out to 20’. The goal is to maintain four (4) off-street parking spaces per residence while maximizing on-street parking for visitors.
 - On-street parking between driveways – The on-street parking should follow the City Standard as much as possible, though it may be acceptable to have a few compact spaces in some areas. The City is willing to work with the Developer to identify where compact parking spaces might work.
 - In the areas where compact parking may be allowed, 17’ may be an adequate length if there are no more than 2 sequential stalls (15’ in length is not adequate).

- ADA Parking – To meet ADA parking requirements, the developer may utilize the planter strip between the curb and the sidewalk, the planter strip, and possibly press into the sidewalk if necessary.
- The City would like to see where the ADA parking spaces are proposed to be located.

4) Street Lighting

- The street lighting requirement is a maximum of a 200-foot spacing. For the private driveway access Tracts 'A' and 'B' lighting, the developer may be able to place one light at the Phase 1 standard collector intersection and one off the interior road, possibly negating the need for additional street lighting.

5) Parks, Recreation, and Open Space

- The first implementing action for the conceptual parks, recreation, and open space would be in relation to the single-family residential subdivision and would not require detailed depiction of the overall 118-acre Master area.
- The residential park area for the subdivision should be located in a central location within the residential development.
- With the possibility of a future phase 2 residential development, a current odd-shaped property line, and the possibility of expansion, it may be helpful to have a couple options for the park area so if one does not work, it may be easily relocated to a different lot and the City prefers to have only one park site within the residential area.
- Reimbursement for the Public Park – Typically there is not a reimbursement for the Public Park however, the City is willing to work with the developer and seek out grants to try to maximize the developer's contribution. The City cannot commit any funds.
- It may be beneficial to the developer to establish an HOA to help recover costs for the park.

6) Stormwater

- A revised Stormwater Master Plan and for the entire LOTC site, not just the subdivision, is expected to be submitted prior to the subdivision application. Must show the proposed stormwater system can pass the 100-year storm, hold the 100-year storm when the Cowlitz River is high and provide pumping facility if needed.
- A preliminary Technical Information Report (TIR) must be prepared and included in the Preliminary Subdivision Plat Application for the River's Edge at the Landing Subdivision.
- Stormwater Connection Easement - Without seeing the preliminary conceptual design planned for the stormwater easement it is difficult to provide feedback as the stormwater easement is dependent on depth. A ten (10) foot easement likely not adequate to provide access and maintenance for a buried pipe and likely not adequate for ditch maintenance.

7) Connections to City Water and Sewer

- Please address the comments submitted by Gibbs & Olson regarding the Sanitary Sewer – Basis of Design memo.
- The residential water service lines will be 1-inch municipex
- The sewer lateral size – for a single family dwelling in the residential area, is a 4-inch schedule 3034 pvc minimum.
- PVC meeting the requirements of AWWA C-900 is sufficient for the water mains. Ductile iron may need to be used if there are any concerns with minimum pipe cover, which would be reviewed on a case-by-case basis.
- Pipe Bedding - Per the City of Castle Rock Development Policies and Public Works Procedures (July 2020 Edition) pipe bedding shall be crushed surfacing top coarse per WSDOT Standard Specification Section 9-03.9(3).
- Trench Backfill - Per the City of Castle Rock Development Policies and Public Works Procedures (July 2020 Edition) *All granular backfill material will conform to Section 9-03.9 of the WSDOT/APWA Standard Specifications: Bank Run Gravel for Trench Backfill: (Trench backfill material shall consist of aggregate for gravel base, as specified in Section 9-03.10, excepting however, that 100 percent of the material shall pass a 2- ½-inch screen.)* If the onsite sand material meets this specification, it could be used as trench backfill. Compaction requirements must be met which can be difficult to obtain with this material.

8) Roadway design, Access, and Connectivity

- Intersection Spacing – Other than for Tracts A & B which will be covered in the Building Official/Fire Marshall Notes section, the proposed intersection spacing presented does appear to meet the City of Castle Rock Public Works Engineering Standards.
- PUD easement in the Public Right-of-Way – Per the modified Residential Local Access roadway standard. The PUD easement needs to be located on the opposite side of the water main, in the grass strip or underneath the sidewalk. The watermain is to be constructed under the sidewalk on the opposite side.
- Site distance triangle – City of Castle Rock Engineering Street Standards Section 4.03 – Sight Obstruction Detail Drawing No. CR011ST – The purpose of the drawing is to demonstrate the geometry of the standard, the distances shown in the images are examples only, they do not indicate the actual distance. Please reference the City of Castle Rock Public Works Engineering Standards - Section 4 - Street and Asphalt Concrete Paths and/or Bikeways Standards – it references the AASHTO “Green Book” tables 9.3 and 9.6. The AASHTO “Green Book” controls sight distance.

9) Larsen Lane SW

- Per the Castle Rock Landing on the Cowlitz Conditions of Master Site Plan Approval, Item #13: *The City may install reasonable measures to prevent the use of Larsen Lane SW in its existing condition to access the Master Planer Development. This may include, but is not limited to, signage, a gate or bollards with a lockbox, and a cul-de-sac or turnaround for vehicles attempting to enter the Master Planned Development.* Once the design layout of the proposed development is known, the City will have a better idea of what will need to be implemented.
- It is difficult for the City to determine what frontage improvements to Larsen Lane SW would be required without seeing a layout of what a future proposed second phase of development with a connection to Larsen Lane SW looks like.
- Larsen Lane SW is within an existing public right of way and the City does not intend or have a desire to designate Larsen Lane SW as a private road.

10) Traffic Analysis

- Lancaster Mobley, Gibbs & Olson and SCJ will coordinate to provide guidance regarding the scope of work for the required Traffic Study.

General Notes

Large Lot Subdivisions – The City is currently working toward getting the draft ordinance regarding Large Lot Non-Residential Subdivision Exemptions to the Planning Commission, Public Hearing, and then to City Council.

Summary of Anticipated Permits/Applications Required and Other General Requirements Per the Developer Agreement (DA), CRMC 16.12, and CRMC 17.77

Technical Studies and reports that will be required as part of the preliminary subdivision application submittal

- 1) Technical Information Report (TIR) for stormwater analysis and design.
- 2) Traffic Study
- 3) Construction Stormwater General Permit (CSWGP)

Permits/Applications Required/General Requirements Per the Developer Agreement (DA), CRMC 16.12, and CRMC 17.77

- 1) Pre-application Meeting (held on 11/06/2024)
- 2) Neighborhood Meeting (Tentatively set for November 25, 2024)
 - The proponent shall make available a sign-in sheet at the meeting
 - The following items must be submitted to the City with the subdivision application:
 1. A copy of the invitation
 2. A copy of the mailing labels
 3. A notarized affidavit declaring that the invitations were mailed

- 3) Master Application
- 4) Request for Variance (when/if applicable)
- 5) Floodplain Permit (when/if applicable)
- 6) Shoreline Permit (when/if applicable)
- 7) General Land Use Application
- 8) Preliminary Plat Map
- 9) Vicinity sketch
- 10) Title Report
- 11) Per Item 22 of the Castle Rock Landing on the Cowlitz Conditions of Approval dated October 22, 2021:
 - An updated SEPA Environmental Checklist (or a memo describing that there are no substantial changes with the subdivision application).
 - An updated traffic report that identifies the number of trips to be generated, assesses existing conditions, identifies proposed mitigation measures to meet City standards, and that identifies when the mitigation is required. Lancaster Mobley, Gibbs & Olson and SCJ will coordinate to provide guidance regarding the scope of work for the required Traffic Study.
 - Other technical studies and reports that may be required by the City to fully evaluate and mitigate potential adverse impacts.
 - A Landscaping Plan prepared in accordance with the provisions of the Castle Rock Municipal Code and as modified by these by these Conditions of Approval.
 - A Parking Plan prepared in accordance with the provisions of Castle Rock Municipal Code and modified by these Conditions of Approval.
 - An updated Parks, Recreation, and Open Space Master Plan.
 - The applications shall also address the status of applicable conditions of approval of previous phases.
 - An updated Phasing Plan.
- 12) Any other permits as deemed necessary.
- 13) All Applicable Fees associated with permit application submittal, pursuant to the adopted fee schedules.

This information is meant to be helpful but not all inclusive. Other approval, codes, permits, and fees may apply. If you have any questions or concerns, please feel free to contact Karlene Akesson - Building & Planning Clerk at 360-274-8181 ext. 302 or by email at kakesson@ci.castle-rockwa.us

November 14, 2024

Daniel Stumpf, PE
Lancaster Mobley
300 W 15th Street, Suite 206
Vancouver, WA 98660

Re: Landing on the Cowlitz Master Plan Developer Agreement Traffic Analysis Clarification

A developer agreement was reached in 2024 for the Landing on the Cowlitz development. Included in this DA was the process for tracking vehicle trips as development occurred and the various off-site mitigation measures that would be required over time. The River's Edge at the Landing Subdivision project held a pre-app with the city on November 6, 2024, to discuss how the DA would be applied to the project. This project is adjacent to the Landing on the Cowlitz study area and was not explicitly included. However, the city has agreed that this area can be incorporated into the DA. Given the circumstances, the question was raised regarding how traffic for The River's Edge at the Landing Subdivision would be handled.

The River's Edge at the Landing Subdivision project was not included in the analysis that supported the Landing on the Cowlitz Master Plan, which could result in the eventual off-site mitigation needs changing. Based on the analysis provided for the Landing on the Cowlitz Master Plan, no off-site mitigation is expected to be needed in the short term. As such, it is not anticipated that the River's Edge at the Landing Subdivision project will require any specific off-site mitigation to accommodate its vehicle traffic.

Additionally, the DA includes periodic analysis updates as development occurs. This recurring analysis refresh would be an appropriate time to reevaluate the full build out of the Landing on the Cowlitz, with the addition of traffic associated with the River's Edge at the Landing Subdivision.

Given the conditions in the DA related to traffic, the River's Edge at the Landing Subdivision can proceed with only providing a trip accounting analysis. This presumes that the trips will count toward all identified thresholds described in the Landing on the Cowlitz Master Plan DA and that when the first periodic analysis update of traffic is triggered, that the full build out of the Landing on the Cowlitz will be re-evaluated to include the River's Edge at the Landing Subdivision.

If you have any questions, please contact me at (360) 352-1465

Sincerely,



Ryan Shea, PTP, Senior Transportation Planner

Exhibit C: Noticing Materials

AFFIDAVIT OF PUBLICATION

Longview Daily News
770 11th Ave
(360) 577-2525

State of Florida, County of Broward, ss:

Edmar Corachia, being first duly sworn, deposes and says: That (s)he is a duly authorized signatory of Column Software, PBC, duly authorized agent of Longview Daily News, published in Cowlitz county, has been approved as a Legal newspaper by order of the Superior court of the State of Washington of Cowlitz County, and that the Annexed printed copy is a true copy of the notice in the above entitled matter as it was printed in the regular entire issue of said paper and online at www.tdn.com, for publication dates as listed below, and that said newspaper was regularly distributed to its subscribers during all of said period, and that said notice was published in said paper and not in a supplement form. That the full amount of the fee charged for said forgoing publication is as listed below, and is \$3.50 per line for the first insertion and \$3.00 per line for each subsequent insertion. There is also an additional charge of \$10.00 for every additional affidavit copy over two copies.

PUBLICATION DATES: June. 3 2025

NOTICE ID: fL6wpY7ZzbN9dnwMN27F

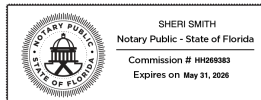
PUBLISHER ID: COL-WA-100953

NOTICE NAME: Notices & MDNS for River's Edge Subdivision

Publication Fee: \$375.18

Edmar Corachia

(Signed) _____

**VERIFICATION**

State of Florida
County of Broward

Subscribed in my presence and sworn to before me on this: 06/05/2025

S. Smith

Notary Public

Notarized remotely online using communication technology via Proof.

PUBLIC NOTICE

Notice of Preliminary Plat, SEPA
MDNS and Public Hearing
River's Edge at the Landing
Subdivision

Lead Agency: City of Castle
Rock, WA

Proponent: CT6, LLC

Project Name: River's Edge at
the Landing

Location: 0 Larsen Lane
SW (Parcel 308120300) ad-
justed per Boundary Line Ad-
justment (CR-BLA-24-01
- AFN#3762029), focused on
approximately 8.93 acres of the
residential designated portion
of the approved Landing on the
Cowlitz Master Plan.

Description of proposal: The
applicant has submitted a Pre-
liminary Plat for a 45 single fam-
ily residential unit subdivision
located in the 8.93 acres resi-
dential designated portion of the
Landing on the Cowlitz (LOT C)
Master Plan. The development
will be accessed by a single
residential local access roadway
connecting to the Standard Col-
lector Road, potential for a future
connection to Larsen Lane SW
may be obtained depending on
agreements with neighboring
property owners and feasibility
but also could not be extended.

**Mitigated Determination of
Non-Significance (MDNS):**

The City of Castle Rock has de-
termined that this proposal will
not have a probable significant
adverse impact on the environ-
ment. Pursuant to WAC 197-11-
350(3), the proposal has been
clarified, changed, and condi-
tioned to include necessary miti-
gation measures to avoid, mini-
mize or compensate for probable
significant impacts. Materials are
available at the City's website
www.ci.castle-rock.wa.us or
available to the public on request
at: 141 "A" Street SW, Castle
Rock, WA 98611.

**Notice of Public Hearing of the
Planning Commission:**

Date: June 17, 2025

Time : 6:00 pm

Location : Castle Rock Senior
Center 222 2nd Ave SW, Castle
Rock, WA 98611

Purpose: To review the pro-
posed preliminary plat and
SEPA MDNS.

This MDNS is issued under WAC
197-11-350 and the comment
period will end on June 17, 2025.
Agency Contact: City Contract
Planner Rachel Granrath,
Submit written comments to:
Karlene Akesson, Deputy Clerk,
City of Castle Rock, PO Box
370, Castle Rock, WA 98611
or to kakesson@ci.castle-rock.wa.us

Signature: Rachel Granrath,
May 27, 2025

Appeal: Castle Rock Municipal
Code (CRMC) 18.04.210 and
18.04.220 (E)
6/3 COL-WA-100953

Notice of Preliminary Plat, SEPA MDNS and Public Hearing

1 message

Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Tue, Jun 3, 2025 at 3:16 PM

To: Carie Cuttonaro <ccuttonaro@ci.castle-rock.wa.us>, Jason Lugo <jason.lugo@wsdot.wa.gov>, "Mendoza,Jennifer" <mendozaj@cowlitzwa.gov>, sepaunit@ecy.wa.gov, Chris Fritsch <cfritsch@crschools.org>, Taylor Aalvik <taylor.a@cowlitz.org>, sepa@dahp.wa.gov, Mike Moss <mossm@co.cowlitz.wa.us>, Kessina Lee <TeamRidgefield@dfw.wa.gov>, David Vorse <crpwd@ci.castle-rock.wa.us>, TDN Front Door <frontdoor@tdn.com>, Bill Fashing <bfashing@cwccog.org>, Laurie Lebowsky <laurie.lebowsky@wsdot.wa.gov>, pacific-cascade.region@dnr.wa.gov, Andrea Yoho <yohoa@cowlitzwa.gov>, NRD-Cowlitz Indian Tribe <NRDpermit@cowlitz.org>, Christina Hallock <Tina@swcleanair.org>, sepacenter@dnr.wa.gov, Christian Cordova <Christian.Cordova@wsdot.wa.gov>, Bill LeMonds <chief@cowlitz6fire.org>, Rudy Salakory <Rsalakory@cowlitz.org>, Lorie Clark <lclark@lcfrb.gen.wa.us>, Rachel Granrath <Rachel.Granrath@kimley-horn.com>, Charles Worley <cworley@crpolice.org>, Department of Fish and Wildlife Southwest - Region 5 <R5.planning@dfw.wa.gov>, Duane Johnson <Duane@swcleanair.org>, Jeff Barsness <jeff.barsness@wsdot.wa.gov>, newservice <newservice@cowlitzpud.org>, ECY RE SEPA REGISTER <separegister@ecy.wa.gov>

Cc: Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Good afternoon,

Please see the attached Notice of Preliminary Plat, SEPA MDNS and Public Hearing for the proposed River's Edge at the Landing Subdivision located on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz (LOT) Master Plan. (SEPA Record No. 202502295)

Materials will be available for viewing online at:
<https://ci.castle-rock.wa.us/notices.htm>

--

Karlene Akesson
Deputy Clerk
City of Castle Rock
PO Box 370
Castle Rock, WA 98611
Phone: 360-274-8181

City Hall Hours Effective January 2, 2024:**Monday through Thursday, 7:30 AM – 5:00 PM****CLOSED Friday and legal holidays**

 **01. Public Notice_Rivers Edge Subdivision with Map.pdf**

260K

City of Castle Rock

PO Box 370
Castle Rock, WA 98611
(360) 274-7478



PUBLIC NOTICE

Notice of Preliminary Plat, SEPA MDNS and Public Hearing

River's Edge at the Landing Subdivision

Lead Agency: City of Castle Rock, WA

Proponent: CT6, LLC

Project Name: River's Edge at the Landing

Location: 0 Larsen Lane SW (Parcel 308120300) adjusted per Boundary Line Adjustment (CR-BLA-24-01 – AFN#3762029), focused on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz Master Plan.

Description of proposal: The applicant has submitted a Preliminary Plat for a 45 single family residential unit subdivision located in the 8.93 acres residential designated portion of the Landing on the Cowlitz (LOTIC) Master Plan. The development will be accessed by a single residential local access roadway connecting to the Standard Collector Road, potential for a future connection to Larsen Lane SW may be obtained depending on agreements with neighboring property owners and feasibility but also could not be extended.

Mitigated Determination of Non-Significance (MDNS): The City of Castle Rock has determined that this proposal will not have a probable significant adverse impact on the environment. Pursuant to WAC 197-11-350(3), the proposal has been clarified, changed, and conditioned to include necessary mitigation measures to avoid, minimize or compensate for probable significant impacts. Materials are available at the City's website www.ci.castle-rock.wa.us or available to the public on request at: 141 "A" Street SW, Castle Rock, WA 98611.

Notice of Public Hearing of the Planning Commission:

Date: June 17, 2025

Time: 6:00 pm

Location: Castle Rock Senior Center 222 2nd Ave SW, Castle Rock, WA 98611

Purpose: To review the proposed preliminary plat and SEPA MDNS.

This MDNS is issued under WAC 197-11-350 and the comment period will end on June 17, 2025.

Agency Contact: City Contract Planner Rachel Granrath,
Submit written comments to: Karlene Akesson, Deputy Clerk, City of Castle Rock, PO Box 370, Castle Rock, WA 98611 or to kakesson@ci.castle-rock.wa.us

Signature: Rachel Granrath, May 27, 2025

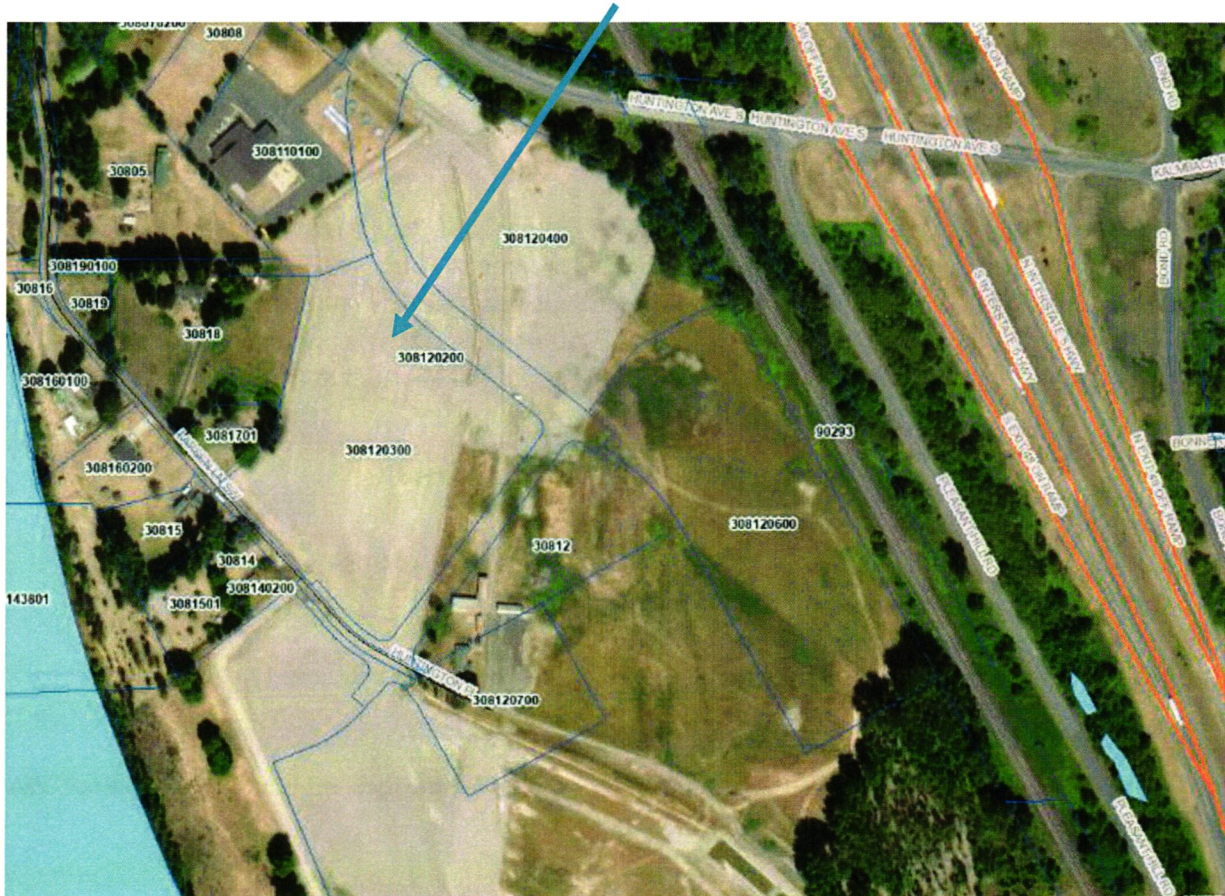
Appeal: Castle Rock Municipal Code (CRMC) 18.04.210 and 18.04.220 (E)

River's Edge at the Landing



VICINITY MAP
N.T.S.

Parcel #308120300



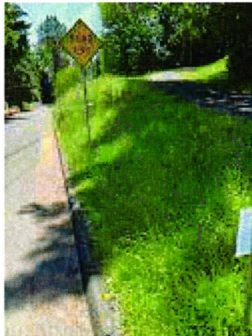
Posted at: City Hall, CR Post Office, CR Library on 06/03/2025
Mailed on: 05/29/2025
Notice + Materials Posted on Website: 06/03/2025

(no subject)

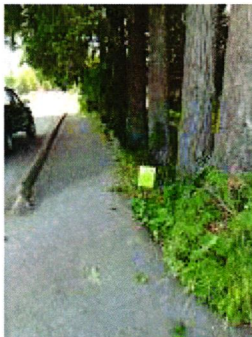
2 messages

Mike Smith <msmith@ci.castle-rock.wa.us>
To: Karlene Akesson <kakesson@ci.castle-rock.wa.us>

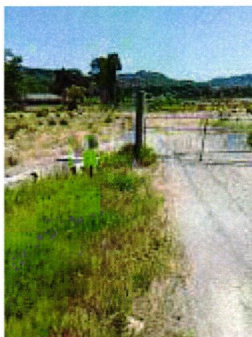
Tue, Jun 3, 2025 at 2:15 PM

3 attachments

20250603_140435.jpg
6561K



20250603_141109.jpg
5826K



20250603_140706.jpg
7890K

Karlene Akesson <kakesson@ci.castle-rock.wa.us>
To: Mike Smith <msmith@ci.castle-rock.wa.us>

Tue, Jun 3, 2025 at 3:09 PM

Is there 1 more?

On Tue, Jun 3, 2025 at 2:15 PM Mike Smith <msmith@ci.castle-rock.wa.us> wrote:

--

Karlene Akesson
Deputy Clerk
City of Castle Rock

**PO Box 370
Castle Rock, WA 98611
Phone: 360-274-8181**

City Hall Hours Effective January 2, 2024:

Monday through Thursday, 7:30 AM – 5:00 PM

CLOSED Friday and legal holidays



Public Notice Sign

From: Louise Richardson <louise@cityofcastlerock.us>
To: Katherine Morrison <katherine@cityofcastlerock.us>
Here is the 4th sign as you have requested already.

Katherine Morrison <katherine@cityofcastlerock.us>

Tue, Jun 3, 2025 at 4:10 PM



Look! 10/10/2025
City of Castle Rock
Public Notice Sign
See 10/10/2025

Exhibit D: SEPA MDNS

City of Castle Rock

PO Box 370
Castle Rock, WA 98611
(360) 274-7478



STATE ENVIRONMENTAL POLICY ACT Mitigated Determination of NonSignificance River's Edge at the Landing - Preliminary Plat

June 3, 2025

Lead Agency: City of Castle Rock, Washington

Agency Contact: City Contract Planner Rachel Granrath,

Comments submitted to Karlene Akesson, Deputy Clerk, City of Castle Rock, PO Box 370, Castle Rock, WA 98611 or to kakesson@ci.castle-rock.wa.us

Project Description: The applicant has submitted a Preliminary Plat for 45 single family residential unit subdivision (River's Edge at the Landing) located in the 8.93 acres residential designated portion of the Landing on the Cowlitz (LOT) Master Plan. The development will be accessed by a single residential local access roadway connecting to the Standard Collector Road, potential for a future connection to Larsen Lane SW may be obtained depending on agreements with neighboring property owners and feasibility but also could not be extended.

Project Location: 0 Larsen Lane SW - Parcel 308120300 adjusted per Boundary Line Adjustment (CR-BLA-24-01 – AFN#3762029), focused on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz Master Plan.

Proponent: CT6, LLC

Project Representative: Ingrid Friedberg, Special Projects Manager

Mailing Address: PO Box 1419, Battle Ground, WA 98604

Telephone: (360) 553-9144

Email: ingridf@tapani.com

The City of Castle Rock has determined that this proposal will not have a probable significant adverse impact on the environment. Pursuant to WAC 197-11-350(3), the proposal has been clarified, changed, and conditioned to include necessary mitigation measures to avoid, minimize or compensate for probable significant impacts. An environmental impact statement (EIS) is not required under RCW 43.21C.030. The necessary mitigation measures are listed below, the Environmental Checklist is attached and associated materials are available at the City's website www.ci.castle-rock.wa.us

This determination is based on the following mitigation measures, findings and conclusions:

- **SR-411 Intersection Mitigation:** At 70% build-out of the Landing Master Plan Development, the intersection of SR-411 and Larson Lane is projected to fall below the designated Level of Service (LOS) "C". To address the impacts of this and other incremental development on the site, the applicant shall be responsible for funding and implementing mitigation improvements—either at 70% build-out or when LOS falls below "C," whichever occurs first. All mitigation measures must be approved by the City of Castle Rock and WSDOT.
- **Dedication of Improvements:** Public improvements associated with right of way and site improvements outside of Homeowner Association (HOA) and Covenants, Conditions, Restrictions and Easements (CC&Rs) owned and maintained areas shall be dedicated to the City. All HOA common areas and facilities shall be maintained in perpetuity.
- **Connection to Larsen Lane:** Road stub connecting to Larsen Lane shall not be extended or connected unless agreements are formally made with neighboring property owners on Larsen Lane.
- In the event of inadvertent discovery of archaeological resources during site disturbance, all work shall cease in the vicinity of the find and the City shall be notified immediately for further direction.
- The applicant will remain compliant with the Master Planned Development Agreement and conditions associated.

This MDNS is issued under WAC 197-11-350 and the comment period will end on June 17, 2025.

Responsible Official:

Agency Contact: City Contract Planner Rachel Granrath,

Submit written comments to: Karlene Akesson, Deputy Clerk, City of Castle Rock, PO Box 370, Castle Rock, WA 98611 or to kakesson@ci.castle-rock.wa.us

Telephone: (360) 274-7478.



Signature

June 3, 2025

Appeal process: Castle Rock Municipal Code (CRMC) 18.04.210 and 18.04.220 (E)

Exhibit E: Comments Received



Gmail

COPY

Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Larsen lane -CT6, LLC Tapani, 6 brothers!, hidden 6.

2 messages

sheryl adams <sheryladams2012@yahoo.com>
To: kakesson@ci.castle-rock.wa.us

Sun, Jun 1, 2025 at 9:02 PM

Well , sounds like I was right about Larsen lane 3 years ago ! No one wants to be sold out to tapani and there lies about our road. We were promised no outlet or public access to river , we were promised from the city of castle rock, not to be used!!! City said and tapani said Larsen lane we not be allowed for traffic and be opened for access to development! Also we want our eagles to nest and our beavers not to be bothered also we have geese out with there babies. The wildlife will be impacted on this despicable act done by you the city of castle rock! I was told that our road wasn't going to be touched! See if you keep your word or you sold us out for a pile of cement. And the tax payers are paying for the new water project! . Has the city checked the levels of lead in town at school's pipes! I think that's more important than a development . Don't sell Larsen lane out for tapani and there pile of concrete! It's not right!!! Also the road sign says comments by 10 of June ! Letters are different than what you send . You need to post all letters on road!!!

sheryl adams <sheryladams2012@yahoo.com>
To: kakesson@ci.castle-rock.wa.us

Sun, Jun 1, 2025 at 9:24 PM

Sent from my

> On Jun 1, 2025, at 9:02 PM, sheryl adams <sheryladams2012@yahoo.com> wrote:

>

> Well , sounds like I was right about Larsen lane 3 years ago ! No one wants to be sold out to tapani and there lies about our road. We were promised no outlet or public access to river , we were promised from the city of castle rock, not to be used!!! City said and tapani said Larsen lane we not be allowed for traffic and be opened for access to development! Also we want our eagles to nest and our beavers not to be bothered also we have geese out with there babies. The wildlife will be impacted on this despicable act done by you the city of castle rock! I was told that our road wasn't going to be touched! See if you keep your word or you sold us out for a pile of cement. And the tax payers are paying for the new water project! . Has the city checked the levels of lead in town at school's pipes! I think that's more important than a development . Don't sell Larsen lane out for tapani and there pile of concrete! It's not right!!! Also the road sign says comments by 10 of June ! Letters are different than what you send . You need to post all letters on road!!!

>

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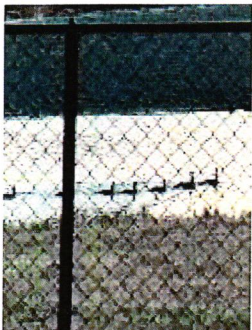
5 attachments

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image1.jpeg
3748K

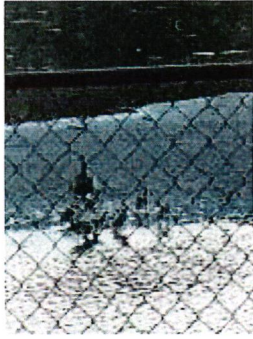


image2.jpeg
2512K



image3.jpeg
2567K



image4.jpeg
3047K



Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Castle rock , tapani construction are back yard to Cowlitz. Babies geese

1 message

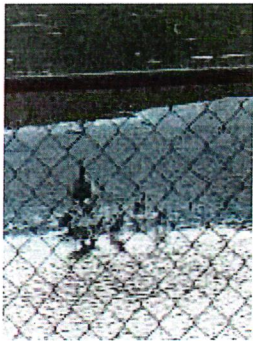
sheryl adams <sheryladams2012@yahoo.com>
To: kakesson@ci.castle-rock.wa.us

Mon, Jun 2, 2025 at 7:04 PM

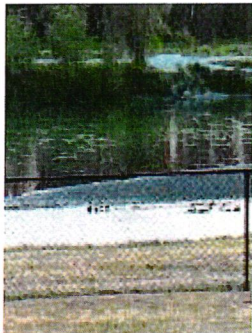
COPY

Sent from my iPhone

5 attachments



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2512K



IMG_0533.jpg
3748K

SEPA Record # 20250292 / 202502295
CR-24-051-CRP-25-007/008 / CRP-25-009



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2925K



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IMG_0527.jpg
2992K

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This proposed outflow is the harbinger of issues to come and so must bear this present scrutiny not only in design but in its overall purpose. The construction of this outfall raises questions that must begin to be answered at this point in development since an outfall is pointless unless it is attached to some body of water.

1) WOTUS and Setbacks

There is a lack of consensus among the courts as to whether drainage ditches can be considered WOTUS. Please see included documentation from Somach Simmons & Dunn, attorneys at law.

Courts Apply New WOTUS Rule to Ditches and Canal

In the face of this uncertainty it is incumbent upon the applicant to provide for any neighboring property the maximum EPA/governmental agencies setbacks required now or in a future caused by this development. The applicant has created "new drainage features" with the creation of their drainage ditch and should be required to insure that said ditch will NEVER encroach on neighboring property's ability to build or develop, ie setbacks from waterways or other environmental requirements. To fail to do so would constitute the unlawful use of eminent domain by a corporation.

2) Using the "new drainage ditch" to drain stormwater from Timberlake Church and the properties surrounding them, opens the issue of a previously closed infiltration system (that was totally contained on those properties and did not overflow onto the Hornstra, now Tappan property) to the uncertainties of a WOTUS declaration by the EPA or other agencies and potential loss of development use to the properties it drains. (Please see historical data and brief explanation included.)

It is incumbent upon the developers to a) create a closed infiltration system for these properties similar to the closed system in use before the applicant's destruction of that system so they could hookup to their "new ditch" or b) insure in perpetuity that their mitigations include all properties that drain stormwater into the "new drainage ditch" and are free from future stormwater related encumbrances to development.

The above stated concerns are relevant at this stage of planning because the applicant is proposing an outflow that directly discharges in a WOTUS River, the Cowlitz, thus forcing a discussion and decision by EPA and other agencies as to whether "the new ditch" including all waters discharged by this outfall and the ditch supplying the outfall will be declared WOTUS and subject to setback and environmental requirements of WOTUS.

Additionally: at present there are no apparent wetlands or environmentally sensitive areas that "the new ditch" drains, but as the ditch ages, wetlands grasses ie wire grass, cattails, and other determinate plants will grow as well as it providing homes for wetland birds and animals. This will create the potential for future EPA and other agencies designation of "the new ditch" (which is drained by this proposed outflow) as an environmentally sensitive area, requiring setbacks and mitigation to development on adjacent properties.

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6/2/2025

SEA Record No 202502295
CRP-25-009

CR-24-051 - CRP-25-007/008
CRP-25-009

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Finally, I am adamantly opposed to transferring responsibility for maintenance of the infiltration/overflow system to the church. It must remain Tappani's or the city's responsibility to avoid the same scenario as is presently the case where the city approved, privately engineered design, fails to eliminate the stormwater successfully and leaves the landowners holding the bag for remediation. At minimum a 20 year performance bond must guarantee the proper functioning of this system.

This outflow consequently becomes the harbinger of issues to come and so must bear this present scrutiny as part of this decision making process.

Roy Henson
2278 LARSEN LN SW
1933 HUNTINGTON AVE S
2335 LARSEN LN SW

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6/2/2025

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October 15, 2024 | Written by Ellen M. Moskal

Lack of Consensus Emerges as Courts Apply New WOTUS Rule to Ditches and Canals

The limits to federal jurisdiction over “waters of the United States” (WOTUS) have continued to develop following the Supreme Court’s landmark decision in *Sackett v. Environmental Protection Agency*, as federal district courts begin to vary in determining federal Clean Water Act jurisdiction over manmade ditches and canals.

A critical question, subject to extensive rulemaking and litigation over past decades, involves the extent to which manmade ditches and canals qualify as waters of the United States subject to federal regulation. In 2001, in *Headwaters Inc. v. Talent Irrigation District*, the Ninth Circuit Court of Appeal recognized manmade irrigation canals as WOTUS if water flowed, at least occasionally, through such features into natural streams. The United States Environmental Protection Agency (EPA) took a consistent view, defining WOTUS to include drainage ditches, even with only intermittent flow, provided that they were tributary to a water of the United States and had perceptible ordinary high water marks.

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The landscape changed with the Supreme Court's 2006 decision in *Rapanos v. United States* and *Carabell v. United States* (collectively referred to as *Rapanos*), in which the plurality opinion instituted the "relatively permanent" test ("relatively permanent, standing or continuously flowing bodies of water" that are connected to traditional navigable waters, plus wetlands with a "continuous surface connection" to such relatively permanent water bodies, are WOTUS) while a concurrence relied on the "significant nexus" test (WOTUS include wetlands that possess a "significant nexus" to waters that are or were navigable in fact or that could reasonably be so made). The EPA and Army Corps of Engineers issued guidance in 2008, advising that waters that satisfied either test qualified as WOTUS. The Trump and Biden Administrations subsequently adopted competing definitions of WOTUS within the confines of the *Rapanos* decision.

Then, in May 2023, the Supreme Court decided *Sackett*. The court upheld the "relatively permanent" test to the exclusion of the "significant nexus" test, finding that WOTUS include "only those relatively permanent, standing or continuously flowing bodies of water 'forming geographic[al] features' that are described in ordinary parlance as 'streams, oceans, rivers, and lakes.'" Some interpreted this holding as supporting the position that canals and ditches would not qualify as WOTUS because they are not ordinarily described as streams, oceans, rivers, or lakes. The EPA subsequently adopted a revised definition of WOTUS to comport with the *Sackett* decision, expressly excluding, in relevant part, "Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water." The revised definition became effective in September 2023. Notably, this definition does not clearly align with *Sackett*, as it does not address the Supreme Court's expression of the limitation to relatively permanent bodies of water that are ordinarily described as streams, oceans, rivers, and lakes.

Over the last year, United States district courts have begun to apply *Sackett* to determine whether canals and ditches qualify as WOTUS. While a consensus has begun to emerge, it has not been consistently interpreted. In the first case decided after *Sackett*, *San Francisco Baykeeper v. City of Sunnyvale (Baykeeper)*, the District Court for the Northern District of California reconsidered and upheld its pre-*Sackett* holding that a manmade channel qualified as WOTUS. The channel at issue conveys stormwater, irrigation water runoff, and groundwater to traditional WOTUS. The court held that it qualified under *Sackett* because, though it flowed seasonally, "it flows continuously during certain times of the year" and "more than in direct response to precipitation." The court also rejected the "argument that *Sackett* calls into question whether manmade channels with continuous seasonal flows such as this can be [WOTUS] merely because they are manmade." It did not, however, explain why its holding is consistent with *Sackett*'s language limiting WOTUS to those "described in ordinary parlance as 'streams, oceans, rivers, and lakes.'" Similarly, the District Court for the Western District of Washington indicated, in *Waste Action Project v. Girard Res. and Recycling, LLC*, that a ditch flowing into a creek could be grounds for qualification as WOTUS, but did not decide the issue.

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In contrast, other district courts have recognized or applied stricter limitations on manmade ditches. Following *Sackett*, the plaintiff in *Ragsdale v. JLM Construction Services, Inc.* (*Ragsdale*), which was decided in the District Court for the Western District of Texas, abandoned his claims that the defendant violated the Clean Water Act by discharging into manmade features, conceding “that the stock pond, drainage ditches, culverts, and trenches are not covered under the [Clean Water Act].” Similarly, in *United States v. Sharfi* (*Sharfi*), the District Court for the Southern District of Florida in 2024 held that seasonal drainage ditches with varying flow throughout the year were not WOTUS under *Sackett*, focusing on the fact that ditches are not ordinarily described as streams, oceans, rivers, or lakes, and that flow was intermittent. Notably, the *Ragsdale* and *Sharfi* courts both cited *Baykeeper* for the general history of the WOTUS rule leading up to *Sackett*, but did not explain or otherwise acknowledge the inconsistencies between their respective analyses.

The developing split among district courts warrants caution in determining whether manmade canals and ditches qualify as WOTUS under the current regulatory regime, particularly within the Northern District of California, which covers Alameda, Contra Costa, Del Norte, Humboldt, Lake, Marin, Mendocino, Monterey, Napa and San Benito, San Francisco, San Mateo, Sunnyvale, and Santa Cruz counties. Moreover, there is a potential for litigation challenging the regulatory exemption for ditches given its inconsistency with the *Sackett* decision. Pursuant to the Supreme Court’s recent decision in *Loper Bright Enterprises, et al. v. Raimondo, Secretary of Commerce, et al.*, courts must review the definition of WOTUS using their independent judgment, rather than deferring to the EPA’s interpretation of its statutory authority, increasing the chances for successful challenges to the regulation in light of *Sackett*’s definition of WOTUS.

For inquiries or additional information, please contact:

- Ellen M. Moskal, emoskal@somachlaw.com
- Kelley M. Taber, ktaber@somachlaw.com

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Historical Recap:

The permit for me to short plat and sell the property in 1995 to Cowlitz Valley Christian Center now Timberlake Church, was conditioned by city attorney, city engineer, and city council on the fact that no water would flow across the property line of the Sam Hornstra property per a letter from Odine Husemoen, Sam's attorney. The as built stormwater retention system used 3 French drain/ drywells on my property (1933 and 1955 Huntington, 1955 was subsequently sold for this development) The drywell system functioned successfully as designed. With the construction of the church, the city approved a new stormwater system that included the 3 drywells, berm, and the current bioswale system on the former Timberlake property, now belonging to Tappani. ALL water was contained and perked on site and no stormwater crossed into the Hornstra, now Tappani property. It was a closed system with NO WOTUS potential. Although the berm prevented water from flowing onto the Hornstra property, the churches newly engineered bioswale system backed water onto my property because of what I believe was insufficient sizing for the church runoff.

Currently Tappani destroyed and filled in the third drywell and French drain on my former property and connected the stormwater from Lowe's, now Partridge property, and other northern properties that flows across my property (1933 Huntington) to their drainage system that crosses over the old Hornstra property line. This direct connection of stormwater to their ditch creates a potential WOTUS situation and requires an answer to the original WOTUS question.

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6/2/2025

CR-24-051 -CRP-25-007/008
CRP-25-009

**Walstead, Mertsching
Husemoen, Donaldson & Barlow P.S.**

Attorneys at Law

FOUNDING PARTNERS
Howard J. Atwell 1880-1962
Ronald Moore 1897-1968
Jerome Walstead 1913-1981

Michael J. Baldwin
John A. Barlow
Mark S. Brumbaugh
Barry J. Dahl
Norman C. Dick
D.L. Donaldson
Timothy J. Hayes
Odine H. Husemoen
Scott M. Kilpatrick
Charles T. Mertsching
Stephen L. Wanderer
Craig W. Weston

COPY
January 13, 1995

City Engineer
City of Castle Rock
141 A Street, SW
Castle Rock, WA 98611

RE: South Castle Rock Drainage

Dear Sir or Madam:

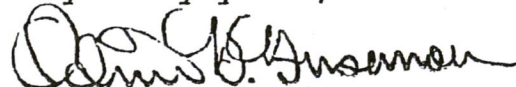
Some time ago I wrote you on behalf of Sam Hornstra and his wife about a concern he had over potential drainage problems near his property in south Castle Rock. The purpose of this letter is again to alert you to that concern.

Mr. and Mrs. Hornstra want you to be assured that they have no particular problem with any development or growth in Castle Rock. Their concern centers around a potential problem which seems obvious to him. The area around his home has surface water drainage problems now, and any new construction will add to that particular problem. Therefore, it is suggested that your attention to be addressed to storm and surface water drainage.

If there is to be construction in the area of the Hornstra property, we believe that all those problems could be resolved if sufficient drainage is installed at the time of any new construction. If you are already alerted to this problem, then you may disregard this letter, but if not, please take into consideration this problem as any development could have an adverse affect on the Hornstra property.

Thank you in advance for your courtesy and attention to this letter.

Very truly yours,



Odine H. Husemoen

OHH:clm

cc: Mr. and Mrs. Hornstra

COPY

June 9, 1995

Mayor Gene Frymire
City of Castle Rock
P.O. Box 370
Castle Rock, WA 98611

Dear Mayor Frymire:

I wish to inform you that Mr. Roy Henson has agreed to put a berm around his improved property, adequate enough to retain any water runoff from coming onto my property. This is in addition to the drainage system he has already proposed to the council.

If these two measures are done, and the systems are maintained in working order, my concerns regarding the runoff problem from this property will be satisfied.

It is my hope that any further development in the Larsen lane area will be approved with similar conditions to keep any water runoff from draining onto my property.

Sincerely,



Sam Hornstra, Owner
Larsen Lane SW

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6/2/2025

COPY

Description of Project: A portion of the subject property is an old river channel of centuries past. During the eruption of Mt. St. Helens in 1980, this channel was filled by the mud flow. This mud flow hardened forming a less permeable surface which now stands water until it slowly percolates and evaporates. (See cross section)

Scope of Project: The plan is two fold. (1) Drain the existing standing water estimated at 4000 cubic feet. (2) Provide a permanent solution in the form of access from the mud flow to the original sandy loam soil. This is accomplished by a series of trenches and dry-wells. (See plan) Since all property in this area drains in a Southerly direction, this property owner was required to provide drainage for all neighboring property lying to the North of the subject property. This is the purpose of dry-well #1. Dry-wells #2 and #3 provide drainage for the subject property.

Details and Specifications: Dry-wells; 3 @ 800 cubic feet each
capable of draining 50 cu.ft\ hr each
total capability is 1200 cu.ft\ day

Trenches; 2 ft. width, tapered depth to 2ft.

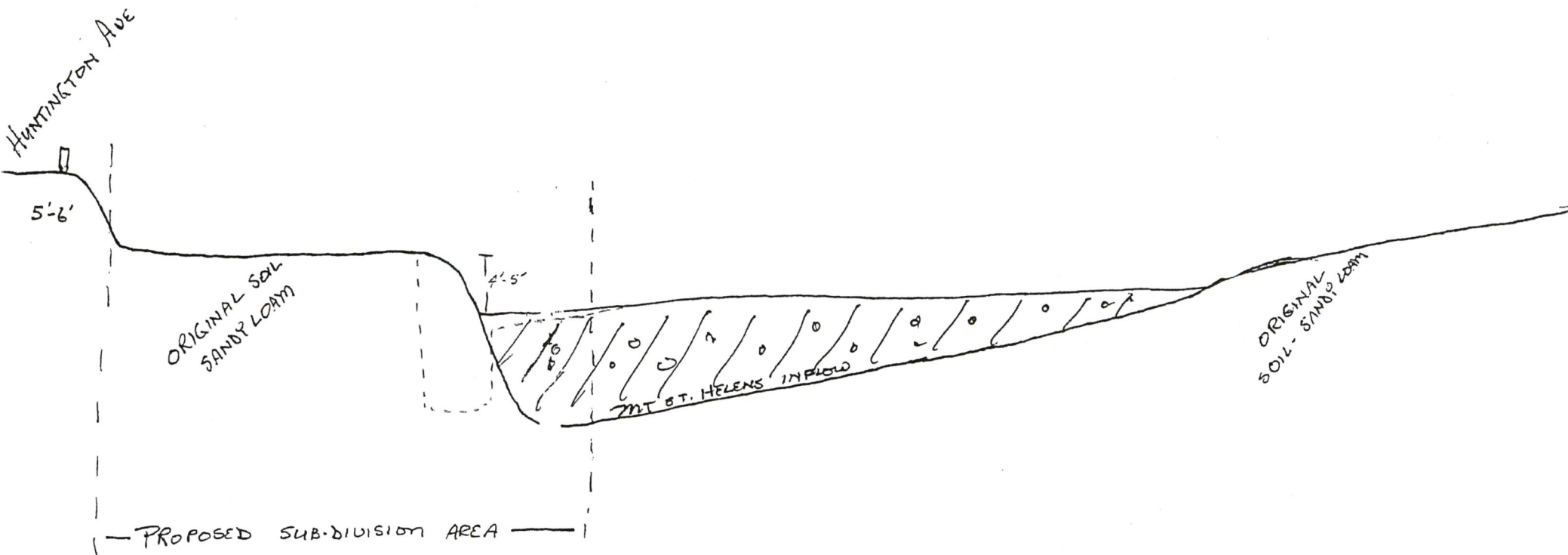
Natural Vegetation; trees planted every 4 ft. along perimeter of property. Young trees will respire 12 gal. water per day. Mature trees 100 gals \day

Rainfall; 1 inch of rain on subject area equals 200 cu.ft

Conclusion: Even in the severest of weather the system has worked. No surface water is flowing onto neighboring properties. Water no longer stands on mud flow area. It is immediately drained away to appropriate dry-well. Video tape of before and after is available as evidence.

RECEIVED
6/2/2025

COPY



CROSS SECTION LOOKING SOUTH

NOT TO SCALE

RECEIVED
6/2/2025

A pc
in th
SE
TO
CC

553°37'36"E 3456.02

①

0.85 Acres

②

1.06 Acres

SAM HORNSTR
Fee No. 82582

Tax Lot O L 298

ROY HENSEN PROPERTY

(COWLITZ VALLEY CHRISTIAN CENTER)

Fee No. 94/230003

$$50' = 1''$$

PLAN VIEW

DRAIN & DRY WELL SYSTEM

RECEIVED
6/2/2025

DESCRIPTION

DESCRIPTION
Beginning at the Southeast corner of Section 14, T
W.M., in Cowlitz County, Washington and running th
feet, thence NORTH 804.60 (801.4) feet to an lrc
of a tract of land described under Auditor's
N53°12'30"E 472.62 feet along the Northwesterly
Hornstra under Auditor's fee number 825832 to ;
N51°09'W 482.83 feet.

Page 495 of 515

RE: Notice of Preliminary Plat, SEPA MDNS and Public Hearing (DAHP 2025-06-03886)

Stone, Jessica (DAHP) <jessica.stone@dahp.wa.gov>

Mon, Jun 16, 2025 at 9:35 AM

To: Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Cc: "permitreview@cowlitz.org" <permitreview@cowlitz.org>, James Gordon <jgordon@cowlitz.org>, Shana Lombard <slombard@cowlitz.org>, "sdinubilo@squaxin.us" <sdinubilo@squaxin.us>, "106review@ctwsbnr.org" <106review@ctwsbnr.org>, "THPO@grandronde.org (THPO@grandronde.org)" <thpo@grandronde.org>, Casey Barney <casey_barney@yakama.com>, "Jerry Meninick (Yakama)" <jerry_meninick@yakama.com>

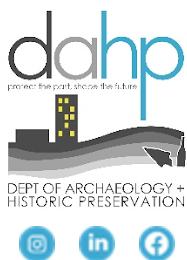
Dear Karlene,

Thank you for contacting the DAHP regarding the above-referenced project. Although a negative cultural resources survey was completed in the project location, it is still within an area marked "Very High Risk" for encountering archaeology by our Archaeological Risk Assessment Model. Therefore, we recommend that an Inadvertent Discovery Plan (IDP) be created and kept on site.

Please also note that I have assigned DAHP Project Tracking Number 2025-06-03886 to this project. Please include this number with any future related correspondence.

Thanks, and please let me know if you have any questions,

Jessica



Jessica Stone, Ph.D (she/her)

Assistant State Archaeologist

Email: jessica.stone@dahp.wa.gov | www.dahp.wa.gov

Cell: (360) 890-2633 | Main Office: (360) 586-3065

Hours: 7:30-4:00 PST Monday-Friday

Physical Address: [1110 S. Capitol Way, Suite 30](#), Olympia, WA 98501

Mailing Address: PO Box 48343, Olympia, WA 98504-8343

From: Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Sent: Tuesday, June 3, 2025 3:17 PM

To: Carrie Cuttonaro <ccuttonaro@ci.castle-rock.wa.us>; Lugo, Jason <jason.lugo@wsdot.wa.gov>; Mendoza, Jennifer <mendozaj@cowlitzwa.gov>; ECY RE SEPA REGISTER <separegister@ecy.wa.gov>; Chris Fritsch <cfritsch@crschools.org>; Taylor Aalvik <taylor.a@cowlitz.org>; DAHP SEPA <sepa@dahp.wa.gov>; Mike Moss <mossm@co.cowlitz.wa.us>; Team Ridgefield (DFW) <TeamRidgefield@dfw.wa.gov>; David Vorse <crpwd@ci.castle-rock.wa.us>; TDN Front Door <frontdoor@tdn.com>; Bill Fashing <bfashing@cwccog.org>; Lebowsky, Laurie <laurie.lebowsky@wsdot.wa.gov>; DNR RE PACIFIC CASCADE REGION <pacific-cascade.region@dnr.wa.gov>; Andrea Yoho <yohoa@cowlitzwa.gov>; NRD-Cowlitz Indian Tribe <NRDpermit@cowlitz.org>; Christina Hallock <Tina@swcleanair.org>; DNR RE SEPACENTER <SEPACENTER@dnr.wa.gov>; Cordova, Christian <christian.cordova@wsdot.wa.gov>; Bill LeMonds <chief@cowlitz6fire.org>; Rudy Salakory <Rsalakory@cowlitz.org>; Lorie Clark <lclark@lcfwb.gen.wa.us>; Rachel Granrath <Rachel.Granrath@kimley-horn.com>; Charles Worley <cworley@crpolice.org>; R5 Planning (DFW) <R5.Planning@dfw.wa.gov>; Duane Johnson <Duane@swcleanair.org>; Barsness, Jeff <jeff.barsness@wsdot.wa.gov>; newservice <newservice@cowlitzpud.org>; ECY RE SEPA REGISTER <separegister@ecy.wa.gov>

Cc: Karlene Akesson <kakesson@ci.castle-rock.wa.us>

Subject: Notice of Preliminary Plat, SEPA MDNS and Public Hearing

External Email

Good afternoon,

Please see the attached Notice of Preliminary Plat, SEPA MDNS and Public Hearing for the proposed River's Edge at the Landing Subdivision located on approximately 8.93 acres of the residential designated portion of the approved Landing on the Cowlitz (LOT) Master Plan. (SEPA Record No. 202502295)

Materials will be available for viewing online at:

<https://ci.castle-rock.wa.us/notices.htm>

--

Karlene Akesson

Deputy Clerk

City of Castle Rock

PO Box 370

Castle Rock, WA 98611

Phone: 360-274-8181

City Hall Hours Effective January 2, 2024:

Monday through Thursday, 7:30 AM – 5:00 PM

CLOSED Friday and legal holidays



**STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY**

Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

June 16, 2025

Karlene Akesson, Deputy Clerk
City of Castle Rock
PO BOX 370
Castle Rock, WA 98611

Dear Karlene Akesson:

Thank you for the opportunity to comment on the mitigated determination of non-significance for the River's Edge at the Landing Subdivision Project as proposed by CT6, LLC. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Garret Peck (564) 669-0836

The applicant proposes to demolish an existing structure(s). In addition to any required asbestos abatement procedures, the applicant should ensure that any other potentially dangerous or hazardous materials present, such as PCB-containing lamp ballasts, fluorescent lamps, and wall thermostats containing mercury, are removed prior to demolition. It is important that these materials and wastes are removed and appropriately managed prior to demolition. It is equally important that demolition debris is also safely managed, especially if it contains painted wood or concrete, treated wood, or other possibly dangerous materials.

Please review the "Dangerous Waste Rules for Demolition, Construction, and Renovation Wastes," posted at Ecology's website, <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition>. The applicant may also contact Katy Harvey of Ecology's Hazardous Waste and Toxics Reduction Program at katy.harvey@ecy.wa.gov for more information about safely handling dangerous wastes and demolition debris.

SHORELANDS & ENVIRONMENTAL ASSISTANCE: Matt Gerlach, (360) 584-2804

Thank you for the opportunity to review this proposal. Ecology notes that filling a parcel so that the new grade is at or above the base flood elevation doesn't remove the parcel from the special flood hazard area. The only way to remove a parcel from the special flood hazard area is to go through the Letter of Map Change process with FEMA. Any future development will require a floodplain development permit and be subject to applicable conditions (including elevating and/or floodproofing any structures) following the flood damage prevention regulations found in Ch. 15.24 Castle Rock Municipal Code.

Karlene Akesson

June 16, 2025

Page 2

SOLID WASTE MANAGEMENT: Derek Rockett (360) 995-3176

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:202502295)

cc: Garret Peck, HWTR
Matt Gerlach, SEA
Derek Rockett, SWM

Exhibit F: Parks Board Recommendation

City of Castle Rock

PUBLIC WORKS DEPARTMENT

PO Box 370

Castle Rock, WA 98611

(360) 274-7478



July 10, 2025

To: Castle Rock City Council

From: Castle Rock Park Board

Subject: Park Board Recommendations on LOTC Development – Rivers Edge Subdivision

At its recent meeting on July 9, 2025, the Castle Rock Park Board reviewed the park elements proposed as part of the LOTC development in the Rivers Edge at the Landing Subdivision and has adopted the following recommendations for City Council consideration:

The Park Board voted to recommend approval of the planned park's location at Lot E within the Rivers Edge subdivision as shown in the developers plans.

Other proposed considerations discussed include:

The Park Board voted to request that the developer include a 6-foot-wide compacted gravel path along the west property line, utilizing the public stormwater easement area. This path would provide a pedestrian and bicycle connection from the minor arterial sidewalk on the north side of the development to the sidewalk segment near Larsen Lane SW.

The Park Board recommends that the neighborhood be involved in selecting the playground equipment for the proposed park. This could be achieved either by the developer soliciting and incorporating feedback from development residents, or the park development funds being turned over to the City, which would then select equipment that aligns with neighborhood preferences.

The Park Board voted to recommend that the City Council restrict residential improvements in Phase 2 of the subdivision until the proposed park has been completed.



July 1, 2025

Mr. David Vorse
City of Castle Rock
360 "A" Street SW
Castle Rock, WA 98611

RE: 2025 ADA Improvements TIB C-W-952(002)-1
Construction Contract Award Recommendation

Dear Mr. Vorse:

On July 1, 2025, at 10:00 am, eleven (11) bids were opened and publicly read for the above referenced project. The low bid was submitted by Slateco LLC of Woodland, WA in the amount of \$291,500.00. The bids ranged from \$291,500 to \$752,080.00. The Engineer's estimate for the project was \$435,000. Please see the attached bidder's tabulation.

Gibbs & Olson reviewed the bid and found that Slateco LLC correctly completed the required forms included in the Bid Package. Gibbs & Olson has verified that Slateco LLC has an active contractor's license and has no summons or complaints against them. In addition, Gibbs & Olson has contacted several references provided by Slateco, LLC and all references were favorable and indicated Slateco performed the work well.

Gibbs & Olson recommends that the City of Castle Rock award a contract in the amount of \$291,500.00 to Slateco LLC of Woodland, Washington for the 2025 ADA Improvements project pending concurrence from the Transportation Improvement Board. We also recommend that you consult with your attorney to verify that they agree with the contract award.

If you have any questions regarding the above information, please contact me at your convenience.

Sincerely,

Gerald Mickelsen, PE
Project Engineer

Attachment:
Bid Tabulation

File: 0130.5032

City of Castle Rock
2025 ADA Improvements
Bidder's Tabulation
Bid Opening Date: July, 1, 2025 10:00am
0130.5032



Item No.	Item	Qty	Unit	Engineer's Estimate		Slateco		Grade Werks Excavating		Halme Excavating	
				Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1	SPCC Plan	1	LS	\$ 1,000	\$ 1,000	\$ 500	\$ 500	\$ 550	\$ 550	\$ 750	\$ 750
2	Mobilization	1	LS	\$ 37,000	\$ 37,000	\$ 33,000	\$ 33,000	\$ 18,000	\$ 18,000	\$ 30,000	\$ 30,000
3	Project Temporary Traffic Control	1	LS	\$ 32,000	\$ 32,000	\$ 9,000	\$ 9,000	\$ 5,000	\$ 5,000	\$ 31,000	\$ 31,000
4	Roadway Excavation Incl. Haul	310	CY	\$ 150	\$ 46,500	\$ 38	\$ 11,780	\$ 95	\$ 29,450	\$ 48	\$ 14,880
5	Crushed Surfacing Top Course	170	TN	\$ 80	\$ 13,600	\$ 56	\$ 9,520	\$ 110	\$ 18,700	\$ 42	\$ 7,140
6	Crushed Surfacing Base Course	190	TN	\$ 80	\$ 15,200	\$ 58	\$ 11,020	\$ 105	\$ 19,950	\$ 42	\$ 7,980
7	HMA Cl. 1/2 IN. PG 58H-22	100	TN	\$ 350	\$ 35,000	\$ 240	\$ 24,000	\$ 295	\$ 29,500	\$ 325	\$ 32,500
8	Corrugated Polyethylene Storm Sewer Pipe 8 IN. Diam.	70	LF	\$ 100	\$ 7,000	\$ 90	\$ 6,300	\$ 120	\$ 8,400	\$ 85	\$ 5,950
9	Adjust Catch Basin	8	EA	\$ 1,000	\$ 8,000	\$ 380	\$ 3,040	\$ 1,250	\$ 10,000	\$ 250	\$ 2,000
10	Connection to Drainage Structure	2	EA	\$ 3,500	\$ 7,000	\$ 1,200	\$ 2,400	\$ 650	\$ 1,300	\$ 750	\$ 1,500
11	Catch Basin Type 1	2	EA	\$ 5,000	\$ 10,000	\$ 4,000	\$ 8,000	\$ 3,450	\$ 6,900	\$ 4,200	\$ 8,400
12	Shoring or Excavation Class B	1	LS	\$ 1,000	\$ 1,000	\$ 500	\$ 500	\$ 100	\$ 100	\$ 500	\$ 500
13	Erosion Control and Water Pollution Prevention	1	LS	\$ 5,000	\$ 5,000	\$ 2,500	\$ 2,500	\$ 1,550	\$ 1,550	\$ 3,500	\$ 3,500
14	Roadside Restoration	1	LS	\$ 15,000	\$ 15,000	\$ 7,000	\$ 7,000	\$ 9,500	\$ 9,500	\$ 6,000	\$ 6,000
15	Cement Conc. Traffic Curb and Gutter	1,000	LF	\$ 65	\$ 65,000	\$ 41	\$ 41,000	\$ 42	\$ 42,000	\$ 48	\$ 48,000
16	Cement Conc. Pedestrian Curb	650	LF	\$ 40	\$ 26,000	\$ 36	\$ 23,400	\$ 31	\$ 20,150	\$ 32	\$ 20,800
17	Cement Conc. Driveway Entrance	140	SY	\$ 130	\$ 18,200	\$ 103	\$ 14,420	\$ 118	\$ 16,520	\$ 120	\$ 16,800
18	Cement Conc. Sidewalk	240	SY	\$ 120	\$ 28,800	\$ 88	\$ 21,120	\$ 80	\$ 19,200	\$ 80	\$ 19,200
19	Cement Conc. Curb Ramp	280	SY	\$ 200	\$ 56,000	\$ 200	\$ 56,000	\$ 135	\$ 37,800	\$ 133	\$ 37,240
20	Mailbox Support, Type 2	1	EA	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 950	\$ 950	\$ 900	\$ 900
21	Permanent Signing	1	LS	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 2,650	\$ 2,650	\$ 5,500	\$ 5,500
Total Opinion of Cost					\$ 435,000		\$ 291,500.00		\$ 298,170.00		\$ 300,540.00

City of Castle Rock
2025 ADA Improvements
Bidder's Tabulation
Bid Opening Date: July, 1, 2025 10:00am
0130.5032



Item No.	Item	Qty	Unit	Advanced Excavating Specialists		Clark & Sons Excavating		Western United Civil Group		Lee Contractors	
				Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1	SPCC Plan	1	LS	\$ 500	\$ 500	\$ 250	\$ 250	\$ 500	\$ 500	\$ 250	\$ 250
2	Mobilization	1	LS	\$ 31,000	\$ 31,000	\$ 32,000	\$ 32,000	\$ 39,000	\$ 39,000	\$ 40,000	\$ 40,000
3	Project Temporary Traffic Control	1	LS	\$ 27,500	\$ 27,500	\$ 30,000	\$ 30,000	\$ 12,000	\$ 12,000	\$ 25,000	\$ 25,000
4	Roadway Excavation Incl. Haul	310	CY	\$ 120	\$ 37,200	\$ 196	\$ 60,760	\$ 126	\$ 39,060	\$ 120	\$ 37,200
5	Crushed Surfacing Top Course	170	TN	\$ 56	\$ 9,520	\$ 95	\$ 16,150	\$ 46	\$ 7,820	\$ 140	\$ 23,800
6	Crushed Surfacing Base Course	190	TN	\$ 66	\$ 12,540	\$ 95	\$ 18,050	\$ 63	\$ 11,970	\$ 140	\$ 26,600
7	HMA Cl. 1/2 IN. PG 58H-22	100	TN	\$ 290	\$ 29,000	\$ 216	\$ 21,600	\$ 260	\$ 26,000	\$ 250	\$ 25,000
8	Corrugated Polyethylene Storm Sewer Pipe 8 IN. Diam.	70	LF	\$ 115	\$ 8,050	\$ 200	\$ 14,000	\$ 108	\$ 7,560	\$ 150	\$ 10,500
9	Adjust Catch Basin	8	EA	\$ 1,350	\$ 10,800	\$ 785	\$ 6,280	\$ 620	\$ 4,960	\$ 750	\$ 6,000
10	Connection to Drainage Structure	2	EA	\$ 1,200	\$ 2,400	\$ 1,500	\$ 3,000	\$ 2,000	\$ 4,000	\$ 1,500	\$ 3,000
11	Catch Basin Type 1	2	EA	\$ 2,600	\$ 5,200	\$ 6,200	\$ 12,400	\$ 4,000	\$ 8,000	\$ 4,000	\$ 8,000
12	Shoring or Excavation Class B	1	LS	\$ 2,000	\$ 2,000	\$ 1,700	\$ 1,700	\$ 2,000	\$ 2,000	\$ 1,000	\$ 1,000
13	Erosion Control and Water Pollution Prevention	1	LS	\$ 5,200	\$ 5,200	\$ 1,440	\$ 1,440	\$ 2,000	\$ 2,000	\$ 5,000	\$ 5,000
14	Roadside Restoration	1	LS	\$ 7,700	\$ 7,700	\$ 14,500	\$ 14,500	\$ 10,000	\$ 10,000	\$ 3,000	\$ 3,000
15	Cement Conc. Traffic Curb and Gutter	1,000	LF	\$ 45	\$ 45,000	\$ 43	\$ 43,000	\$ 60	\$ 60,000	\$ 60	\$ 60,000
16	Cement Conc. Pedestrian Curb	650	LF	\$ 36	\$ 23,400	\$ 32	\$ 20,800	\$ 43	\$ 27,950	\$ 50	\$ 32,500
17	Cement Conc. Driveway Entrance	140	SY	\$ 145	\$ 20,300	\$ 125	\$ 17,500	\$ 150	\$ 21,000	\$ 150	\$ 21,000
18	Cement Conc. Sidewalk	240	SY	\$ 92	\$ 22,080	\$ 83	\$ 19,920	\$ 235	\$ 56,400	\$ 140	\$ 33,600
19	Cement Conc. Curb Ramp	280	SY	\$ 192	\$ 53,760	\$ 142	\$ 39,760	\$ 170	\$ 47,600	\$ 250	\$ 70,000
20	Mailbox Support, Type 2	1	EA	\$ 1,750	\$ 1,750	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 300	\$ 300
21	Permanent Signing	1	LS	\$ 5,500	\$ 5,500	\$ 18,800	\$ 18,800	\$ 8,000	\$ 8,000	\$ 3,000	\$ 3,000
Total Opinion of Cost					\$ 360,400.00		\$ 393,910.00		\$ 397,820.00		\$ 434,750.00

City of Castle Rock
2025 ADA Improvements
Bidder's Tabulation
Bid Opening Date: July, 1, 2025 10:00am
0130.5032



Item No.	Item	Qty	Unit	North Cascade Excavating		Granite Construction		Dewitt Construction		Northwest Cascade Inc.	
				Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
1	SPCC Plan	1	LS	\$ 1,500	\$ 1,500	\$ 1,000	\$ 1,000	\$ 704	\$ 704	\$ 500	\$ 500
2	Mobilization	1	LS	\$ 50,900	\$ 50,900	\$ 48,000	\$ 48,000	\$ 44,600	\$ 44,600	\$ 102,000	\$ 102,000
3	Project Temporary Traffic Control	1	LS	\$ 17,000	\$ 17,000	\$ 57,000	\$ 57,000	\$ 18,700	\$ 18,700	\$ 128,500	\$ 128,500
4	Roadway Excavation Incl. Haul	310	CY	\$ 122	\$ 37,820	\$ 325	\$ 100,750	\$ 282	\$ 87,420	\$ 290	\$ 89,900
5	Crushed Surfacing Top Course	170	TN	\$ 73	\$ 12,410	\$ 70	\$ 11,900	\$ 259	\$ 44,030	\$ 113	\$ 19,210
6	Crushed Surfacing Base Course	190	TN	\$ 73	\$ 13,870	\$ 70	\$ 13,300	\$ 235	\$ 44,650	\$ 113	\$ 21,470
7	HMA Cl. 1/2 IN. PG 58H-22	100	TN	\$ 410	\$ 41,000	\$ 350	\$ 35,000	\$ 726	\$ 72,600	\$ 555	\$ 55,500
8	Corrugated Polyethylene Storm Sewer Pipe 8 IN. Diam.	70	LF	\$ 156	\$ 10,920	\$ 100	\$ 7,000	\$ 139	\$ 9,730	\$ 142	\$ 9,940
9	Adjust Catch Basin	8	EA	\$ 800	\$ 6,400	\$ 1,000	\$ 8,000	\$ 591	\$ 4,728	\$ 1,500	\$ 12,000
10	Connection to Drainage Structure	2	EA	\$ 2,175	\$ 4,350	\$ 2,000	\$ 4,000	\$ 2,283	\$ 4,566	\$ 5,100	\$ 10,200
11	Catch Basin Type 1	2	EA	\$ 3,400	\$ 6,800	\$ 3,500	\$ 7,000	\$ 4,709	\$ 9,418	\$ 3,600	\$ 7,200
12	Shoring or Excavation Class B	1	LS	\$ 118	\$ 118	\$ 500	\$ 500	\$ 1,100	\$ 1,100	\$ 1,200	\$ 1,200
13	Erosion Control and Water Pollution Prevention	1	LS	\$ 1,740	\$ 1,740	\$ 3,000	\$ 3,000	\$ 1,640	\$ 1,640	\$ 27,500	\$ 27,500
14	Roadside Restoration	1	LS	\$ 13,400	\$ 13,400	\$ 3,000	\$ 3,000	\$ 9,600	\$ 9,600	\$ 14,000	\$ 14,000
15	Cement Conc. Traffic Curb and Gutter	1,000	LF	\$ 61	\$ 61,000	\$ 40	\$ 40,000	\$ 39	\$ 39,000	\$ 71	\$ 71,000
16	Cement Conc. Pedestrian Curb	650	LF	\$ 47	\$ 30,550	\$ 40	\$ 26,000	\$ 34	\$ 22,100	\$ 52	\$ 33,800
17	Cement Conc. Driveway Entrance	140	SY	\$ 280	\$ 39,200	\$ 110	\$ 15,400	\$ 216.50	\$ 30,310	\$ 162	\$ 22,680
18	Cement Conc. Sidewalk	240	SY	\$ 185	\$ 44,400	\$ 95	\$ 22,800	\$ 112	\$ 26,880	\$ 144	\$ 34,560
19	Cement Conc. Curb Ramp	280	SY	\$ 264	\$ 73,920	\$ 260	\$ 72,800	\$ 166	\$ 46,480	\$ 269	\$ 75,320
20	Mailbox Support, Type 2	1	EA	\$ 800	\$ 800	\$ 1,000	\$ 1,000	\$ 1,984	\$ 1,984	\$ 2,600	\$ 2,600
21	Permanent Signing	1	LS	\$ 5,960	\$ 5,960	\$ 12,000	\$ 12,000	\$ 5,560	\$ 5,560	\$ 13,000	\$ 13,000
Total Opinion of Cost					\$ 474,058.00		\$ 489,450.00		\$ 525,800.00		\$ 752,080.00

AUTHORIZATION 2023-003
AMENDMENT NO. 1
CARPENTER ROAD WATER PUMP STATION AND POWELL ROAD
WATERLINE EXTENSION
CITY OF CASTLE ROCK, WASHINGTON

This Amendment No. 1 modifies the Agreement for Engineering Services (Agreement) between Gibbs & Olson, Inc. (Engineer) and the City of Castle Rock, Washington (Client) executed on January 9, 2023, for the Carpenter Road Water Pump Station and Powell Road Waterline Extension project.

The following modifications are made to the Agreement and all other terms and conditions in the original Agreement remain in full force and effect:

SCOPE OF WORK

Engineer's scope of work is modified to include the following:

1. Prepare figure showing potential location of future reservoirs, calculate future service pressures from future reservoirs, and show potential easements. Revise as requested by Client. Prepare legal description and exhibit map for future watermain and reservoir site. Revise easement legal description and exhibit map across parcel WJ1212006 - \$5,000.00.
2. Prepare drawing set, construction cost opinion and contract documents for the horizontal direction drill (HDD) waterline installation to be separated and implemented as a standalone construction project as requested by Client. Assist with award of the HDD construction contract and provide construction phase engineering services including attending preconstruction meeting, progress meetings, submittal reviews, review and responding contractor requests for information (RFI's), prepare construction pay estimates, provide part time onsite project observation, project closeout and prepare record drawings - \$15,000.00.
3. Prepare drawings and technical specifications for Client pre-purchase (procurement) of the package pump station skid system as requested by Client. Review bid questions and prepare and issue responses via an addendum. Attend bid opening, review bids and assist with ordering the package pump skid. Review submittal and review/respond to questions during installation of the package pump skid - \$3,000.
4. Assist Client with providing drawings and specifications for procurement of the metal frame building for the pump station and attend bid opening - \$2,000.
5. Provide revised architectural, structural and design civil drawings for a stick framed pump station building per Client request. Design will include wood framed walls with layout of pre-engineered wood trusses and structural building and foundation calculations and design. Civil drawings will be revised to accommodate the stick frame building. Electrical design drawings will not be revised - \$14,000.
6. Provide limited construction phase engineering services during construction of the pump station and watermain from the Carpenter Road reservoir to Powell Road and north on Powell Road by the Client. Engineer will provide construction survey for the pump station building corners, and review and respond to Client questions during construction. Field survey of the watermain is not included. - \$25,000.

BUDGET

Engineer's budget is increased by \$64,000.00 to provide compensation for the additional Scope of Work as shown below and as indicated above in the detailed Scope of Work.

Original Agreement Amount	\$197,500.00
<u>Amendment No. 1 Amount.....</u>	<u>\$64,000.00</u>
Total Agreement Amount including Amendment No. 1.....	\$261,500.00

IN WITNESS, WHEREOF this Amendment No. 1 is made and executed this _____ day of July 2025.

For: CITY OF CASTLE ROCK

For: GIBBS & OLSON, INC.

By: _____

Mayor Paul Helenberg
City of Castle Rock
141 A Street SW
Castle Rock, WA 98611

By:  _____

Richard A. Gushman, President
Gibbs & Olson, Inc.
PO Box 400
Longview, WA 98632

File: 0130.5028



TIME & MATERIALS CONSTRUCTION AGREEMENT

Customer-Supplied Kit – Prevailing Wage – Not to Exceed \$115,000.00, not including sales tax.

This Agreement is made and entered into on this 8th day of July, 2025, by and between:

Contractor:

Columbia Groundwork Inc.

WA Contractor License #: COLUMGI828N1

Address: PO Box 1855, Castle Rock, WA 98611

Phone: 360-957-8847

Email: structure@columbiagroundwork.com

Client:

Dave Vorse, City of Castle Rock

Address: PO Box 370, Castle Rock, WA 98611

Phone: 360-274-7478

Email: crpwd@ci.castle-rock.wa.us

Project Location:

Address: 240 North County Dr., Castle Rock, WA 98611

1. Scope of Work

Contractor agrees to furnish all **labor, supervision, equipment, and incidental materials** required to assemble and construct a pole building at the Project Location using a **building kit provided by the Client**. Scope of work includes supporting structure, exterior siding, trusses, personnel doors and standing seam roofing.

Contract work is anticipated to start upon acceptance of this bid and will be completed by 8/30/2025 unless there are circumstances beyond the Contractor's control.

Contractor realizes that this work is contingent upon a successful contract between the City of Castle Rock and the State of Washington Department of Commerce.

All work will be performed according to:

- The manufacturer's assembly instructions, and
- Any stamped engineered plans provided by Client (see Exhibit A)

Contractor is not responsible for engineering or design deficiencies, missing or damaged components, or any failure of the building kit itself.

Contractor is not responsible for labor or materials related to:

- Concrete preparation, procurement or installation.
 - Post hole drilling.
 - Aggregate or aggregate hauling.
 - Bay door installation.
 - Insulation.
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2. Customer-Supplied Building Kit

Client shall deliver a complete and ready-to-install building kit to the job site. This includes but is not limited to: posts, framing, trusses, siding, roofing, fasteners, hardware, and construction drawings.

If material issues or omissions delay the work, associated downtime, rescheduling, or site mobilizations will be billed at standard labor and equipment rates.



3. Prevailing Wage Compliance

This project is subject to Washington State **Prevailing Wage Law (RCW 39.12)**. Contractor shall:

- Pay workers the applicable **prevailing wage rates** for their trade classification
- Submit **certified payroll reports** as required
- Maintain all L&I compliance records
- Post wage rates at the job site as required

Wage Determination Date: July 8th, 2025

The Client shall be responsible for filing the **Intent to Pay Prevailing Wages** and the **Affidavit of Wages Paid** with the Washington State Department of Labor & Industries unless otherwise agreed.

4. Contract Pricing – Time & Materials

This is a **Time and Materials Agreement**, billed as follows:

- **816 labor hours at \$140.93/hr, not to exceed \$115,000.00 not including sales tax**

Materials

- Incidental materials (e.g. anchors, fasteners, concrete, shims) provided by Contractor will be billed at **cost + 20% markup**

Subcontractors (if applicable): Billed at **cost + 20% markup**

5. Billing & Payment Terms

Invoices will be issued monthly and will include:

- Certified payroll summary
- Itemized labor by trade
- Incidental material and receipts
- Subcontractor invoices (if any)

The City of Castle Rock will withhold 5% of all invoices until all Washington State prevailing wage issues are resolved.

6. Not-to-Exceed Cap

This Agreement is subject to a not-to-exceed cap of **\$115,000.00, not including sales tax**. Contractor shall notify Client when costs approach 90% of this amount.

7. Change Orders

Any Client-requested work outside the original scope (e.g. interior buildout, slab prep, site work) must be approved in writing and will be billed at the same T&M rates.

8. Permits and Inspections



Client is responsible for obtaining all necessary building permits and coordinating required inspections. Permit delays are not Contractor's responsibility unless specifically stated otherwise.

9. Limitations of Responsibility

Contractor is **not liable** for:

- Design or engineering flaws in the kit
 - Delays or added costs caused by defective, incomplete, or delayed materials from the Client or supplier
 - Structural failures arising from third-party plans or products
 - Damages caused by acts of God, theft, vandalism, weather, or site inaccessibility
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12. Lien Rights Notice (RCW 60.04.031)

Under Washington law, contractors, subcontractors, and suppliers may file a **mechanic's lien** if unpaid. The Client is encouraged to obtain lien releases upon payment.

13. Termination

Either party may terminate with **7 days' written notice**. Contractor shall be paid for all work completed, materials procured, and costs incurred through the termination date.

14. Dispute Resolution

Disputes shall first be submitted to **mediation**. If unresolved, jurisdiction lies with the **courts of Cowlitz County, Washington**.

15. Entire Agreement

This document constitutes the full agreement. No oral representations or informal understandings are binding unless written and signed by both parties.

Signatures

Contractor:

Signature: _____

Name:

Date:

Client:

Signature: _____

Name: Dave Vorse

Date:

Exhibit A – Client-Supplied Stamped Engineering

ALL STRIPES, LLC



Date: 7/7/25
 Submitted To: City of Castle Rock
 Submitted By: All Stripes, LLC – Mike Sels 206-718-4509
 Job Location: City of Castle Rock-Various Locations
 Castle Rock, WA

STRIPING PROPOSAL

We hereby submit specifications and estimates for the following:

Quantity	Unit	Item Description	Unit Price	Amount
17,000	LF	Double Yellow Center Line	\$.25	\$4,250.00
10,000	LF	Yellow Skip Center Line with No-Pass Line	\$.25	\$2,500.00
1,000	LF	Yellow Single Lane Passing with Solid Yellow on the Opposite Lane	\$.25	\$250.00
44,000	LF	White Fog Line (Edge Line)	\$.20	\$8,800.00
500	LF	White Turn Lane (6"-8" Wide)	\$.50	\$250.00
1	EA	Mobilization/Lodging/Per Diem per Day		\$1,000.00
			Sub Total	\$17,050.00
			Tax 7.9% (materials)	\$355.50
			Total:	\$17,405.50

Notes:

- All Striping to be completed with one coat of Sherwin Williams TTP 1952 waterborne traffic paint.
- All striping to be reflective with type 1 glass beads.
- Price good for 60 days from date marked on proposal.
- Current Cowlitz County prevailing wage rates apply.
- Price includes one mobilization per day; additional days are charged at \$1,000.00 per occurrence. Please have vehicles clear and schedule accordingly.
- Tax is calculated from paying tax on materials only. If full sales tax is required, the revised tax amount above will be \$1,346.95 instead of \$355.50.
- This work will be completed after the county work is complete, with no liquidated damages incorporated.

Exclusions:

- Cleaning of roads prior to striping.
- Traffic control (including placing cones) (traffic control/flagging/cone placement to be done by Cowlitz County)
- Any item not listed above.

This proposal is not a binding document without a signature, acknowledging acceptance of the above listed terms.

ACCEPTANCE OF PROPOSAL:

AUTHORIZED COMPANY REP.:

ALL STRIPES, LLC

Mike Sels
 Cell – 206-718-4509

Signature

Date

Signature

Date

ALL STRIPES, LLC
 P. O. BOX 69107
 SEATTLE, WA 98168
 206-718-4509
 LIC#ALLSTSL874RL