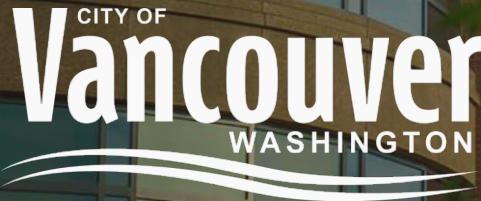


Multifamily Tax Exemption

- Waterfront Block 20
- Nicholson Duplexes



City Council Workshop
March 25, 2019

Peggy Sheehan, Community Development
Programs Manager

Presentation Overview

- Multifamily Tax Exemption (MFTE) Program overview
- Proposed project – Waterfront Block 20
- Proposed project – Nicholson Duplexes
- Next steps and timeline

Exemption Options

8 years

- Market-rate properties with approved Development Agreement

8 years

- Properties with 20% of units for tenants earning up to 100% AMI

10 years

- Properties with 20% of units for tenants earning up to 80% AMI

12 years

- Properties with 20% of units for tenants earning up to 60% AMI

MFTE Project Pipeline

- 28 exemption requests to date
- 25 projects approved, 3 in process
- Current status:
 - 4 out of exemption period
 - 9 renting
 - 12 under construction or pending permit review
 - 3 under review
- Total of 2,348 units including 503 income restricted

Proposed Project – Block 20

Developer: An Affiliate of Jackson Square Properties

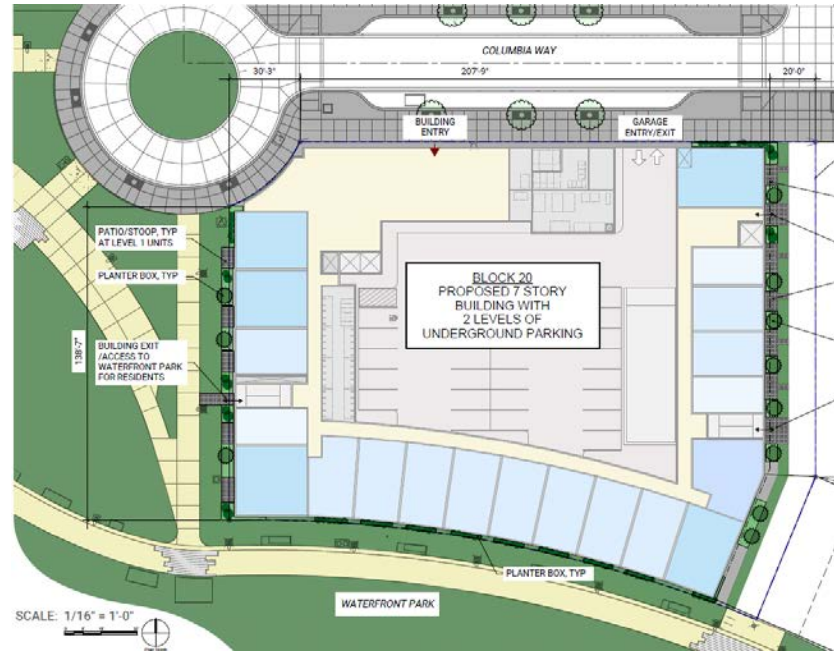
Project location: Waterfront Block 20 (W Columbia Way)

Requested exemption: 8 year market-rate option (Public Benefit)



Project Overview- Block 20

- 7 story residential development
- 246,700 sq. ft.
- 248 units (studios, 1-BD, 2-BD)
- 257 on-site parking spaces
- \$60 million est. development cost



Unit Mix and Monthly Rent-Block 20

Unit Type	Projected Monthly Rent	# Units
Studio	\$1,600-\$1,900	23
1 bed/1 bath	\$1,900-\$2,200	149
2 bed/2 bath	\$2,550-\$2,850	76

Tax Summary- Block 20- If developed under exemption

Net Present Value of Tax Revenue (20 years)**	
Total New Tax Revenue**	\$ 9,953,000
New City of Vancouver Tax Revenue**	\$ 2,646,000
Total Foregone Property Tax Revenue**	\$ 2,778,000
City of Vancouver Foregone Property Tax Revenue**	\$ 862,000
Estimated 2019 tax (on land only, after subdividing)	\$ 29,627
Revenue Collected Over 8 year Exemption	\$ 6,144,000
Revenue Forgone Over 8 year Exemption	\$ 2,778,000

Market Rate Projects Require Public Benefit

Public Benefit Summary:

- Applicant to provide up to \$500,000 for replacement of Esther Short playground equipment.
- City will approve and pay for the master plan and construction drawings / specifications.

Public Benefit Nexus at Esther Short Park

- Esther Short is the closest public park to Block 20 in need of attention
- Esther Short and its playground was renovated in 2000
- The playground is showing wear from age and heavy use
- The playground surfacing is beyond its useful life.
- Master planning will include phased improvements for a new accessible playground and future loo-style restrooms
- Waterfront Park improvements are currently fully funded



Public Benefit at Esther Short Park

- City will partner with the non-profit Harper's Playground, to insure the playground installed is an all-inclusive play space for resident with all abilities.



Proposed Project – Nicholson Duplexes

Developer: Ginn Development

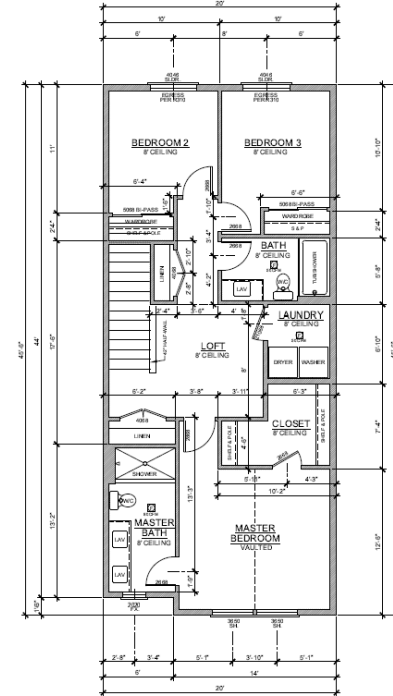
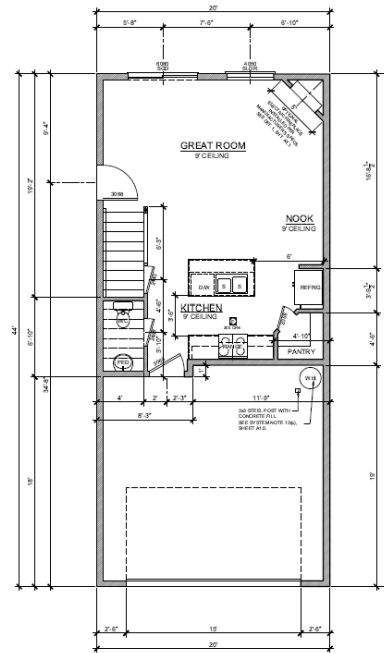
Project location: Tax lot 30790180 (E. 36th Court and Nicholson Road)

Requested exemption: 10 year option with 20% of units assigned for renters at or below 80% of Area Median Income



Project Overview- Nicholson Duplexes

- 13 lot duplex subdivision
- 25 units total (3 bedroom)
- 5 affordable units (80% AMI)
- 2 car garage per unit
- \$3.8 million est. construction cost



Unit Mix and Monthly Rent- Nicholson Duplexes

Proposed Unit Type		Projected Monthly Rent			# Units
3 bedroom		\$1,550-\$1,795			25
Income limits at 80% AMI*					
Median Income	Low Income	1 person	2 person	3 person	4 person
\$81,400	80% AMI	\$45,600	\$52,100	\$58,600	\$65,100
Affordable rent including utilities*					
Income Level at 80% AMI		1 person	2 person	3 person	4 person
		\$1,140	\$1,302	\$1,464	\$1,624

Tax Summary- Nicholson Duplexes- If developed under exemption

Net Present Value of Tax Revenue (20 years)**	
Total New Tax Revenue	\$ 587,000
New City of Vancouver Tax Revenue	\$ 226,000
Total Foregone Property Tax Revenue	\$ 242,000
City of Vancouver Foregone Property Tax Revenue	\$ 79,000
Estimated 2019 Property Tax (on land only, after subdividing)	\$ 9,392
Revenue Collected Over 10 year Exemption	\$ 374,000
Revenue Forgone Over 10 year Exemption	\$ 242,000

Questions

Peggy Sheehan, Community Development Programs Manager

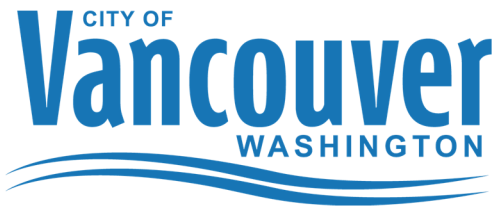
360-487-7952

Julie Hannon, Director Parks and Recreation Department

360-487-8309

Keith Jones, Senior Planner

360-487-7887



MEMORANDUM

DATE: March 6, 2019

TO: Mayor and City Council
CC: Eric Holmes, City Manager

FROM: Peggy Sheehan, Community Development Grants Manager

RE: **Waterfront Block 20 and Nicholson Duplexes Multifamily Tax Exemption**

Purpose

City staff will brief Council on two new Multifamily Tax Exemption projects:
Waterfront Block 20 in the VCCV
Nicholson Duplexes in the 4th Plain area

Background

The City adopted a multifamily tax exemption program to stimulate new construction of multi-family housing in specifically designated urban areas in order to reduce development pressure on single-family residential neighborhoods, to increase and improve housing opportunities, and encourage development densities supportive of tenant use. To date 28 projects have applied. If all projects develop as proposed this ordinance will have spurred 2,348 new units including 503 affordable income restricted units.

Current Proposals

Waterfront Block 20- VCCV

The proposed project will take place on the Waterfront Block 20. The developer is proposing a 7 story, 248 unit residential building using the market-rate with public benefit option. To meet the public benefit requirement the applicant will work with the Vancouver Parks Department to replace the playground equipment at Esther Short Park. The City will provide the park plan and the applicant will provide up to \$500,000 in funding and construct the improvements. The estimated development cost is 60 million. The financial analysis indicates that the new City tax revenue collected over the 8 year exemption would be \$6,144,000. The forgone City revenue over the 8 year exemption would be \$2,778,000.

Nicholson Duplexes-4th Plain Area

The proposed project will take place at the 3600 block of Nicholson Road. The developer is proposing a 13 lot duplex development of 25 units residential building using the 10 year exemption with 20% of the units assigned for renters at or below 80% of the area median income. The estimated development cost is 3.8 million. The financial analysis indicates that the new City tax revenue collected over the 10 years would be \$374,000. The forgone City revenue over the 10 year exemption would be \$242,000. If approved the development would provide 5 affordable restricted to household incomes at or below 80% of the area median income.

Next Steps

- April 1, 2019 hold Public Hearing to consider providing exemptions.

Staff Contact

Peggy Sheehan- Programs Manager
360-487-7952
peggy.sheehan@cityofvancouver.us



To request other formats, please contact:
Amanda Delapena
(360) 487-8605 | WA Relay: 711
amanda.delapena@cityofvancouver.us

**DEVELOPMENT AGREEMENT
for
MULTI-FAMILY HOUSING LIMITED PROPERTY TAX
EXEMPTION**

THIS AGREEMENT is entered into this ____ day of _____, 2019, by and between An Affiliat of Jackson Square Properties LLC a _____ (hereinafter referred to as “Applicant”), and the CITY OF VANCOUVER, a Washington Charter City of the First Class (hereinafter referred to as “City”).

WITNESSETH:

WHEREAS, the City desires to stimulate new construction of multi-family housing in certain designated urban areas in order to reduce development pressure on single-family residential neighborhoods, to increase and improve housing opportunities, and to encourage development densities supportive of transit use, and

WHEREAS, the City is interested in promoting new housing in the downtown area of the City of Vancouver, and

WHEREAS, the City has, pursuant to authority granted to it under the Revised Code of Washington (RCW), designated various Residential Target Areas for the provision of limited property tax exemptions for new multi-family residential housing, and

WHEREAS, the City has, as set forth at Chapter 3.22 of the Vancouver Municipal Code (“VMC”), enacted a program whereby property owners may qualify for a Final Certificate of Tax Exemption which certifies to the Clark County Assessor and Treasurer that the Applicant is eligible to receive a limited property tax exemption, and

WHEREAS, the Applicant is interested in receiving a limited property tax exemption for constructing units of new multi-family residential housing within the Vancouver City Center Vision Subarea, which is a Designated Residential Target Area identified in Chapter 3.22 VMC, and

WHEREAS, the Applicant has submitted to the City a complete application for the City’s limited tax exemption program outlining the proposed development of new multi-family residential housing to be constructed on property described in the legal description in Exhibit A (Property) for an 8 year market rate tax abatement.

WHEREAS, the City has determined that the improvements to the Property will, if completed as proposed, satisfy the requirements for a Final Certificate of Tax Exemption.

NOW THEREFORE, the City and Applicant mutually agree as follows:

1. The City agrees to issue the Applicant a Conditional Certificate of Acceptance of Tax Exemption.
2. The City has determined that the Development provides significant public benefits on the Property and in the Vancouver City Center Vision Subarea generally and agrees to issue the Applicant a Conditional Certificate of Acceptance of Tax Exemption for a period of eight (8) years in accordance with VMC 3.22.040 (the “Conditional Certificate”). The public benefits provided by the applicant for this project include but are not limited to those set forth on Exhibit B attached hereto (the “Public Benefits”).
3. All work performed by Jackson Square, LLC shall comply with requirements of Washington State law pertaining to public bidding (Chapter 39.04 RCW) and prevailing wage (Chapter 39.12 RCW). The parties agree to develop a protocol for compliance with both Chapters and to follow such protocol.
4. The Applicant agrees to construct on the site multi-family residential housing as described in the most recent site plans, floor plans, and elevations on file with the City as of the date of City Council approval of this agreement. In no event shall such construction provide fewer than 248 new permanent multi-family residential units.
5. The Applicant agrees to complete construction of the agreed upon improvements within three years from the date the City issues the Conditional Certificate of Acceptance of Tax Exemption, or within any extension thereof granted by the City.
6. The Applicant agrees, upon completion of the improvements and upon issuance by the City of a temporary or permanent certificate of occupancy, to file with the City’s Director of Community Development (“Director”) the following:
 - (a) A statement of expenditures made with respect to each multi-family housing unit and the total expenditures made with respect to the entire property;
 - (b) A description of the completed work and a statement of qualifications for the exemption; and
 - (c) A statement that the work was completed within the required three-year period or any authorized extension.
7. The City agrees, conditioned on the Applicant’s successful completion of the improvements in accordance with the terms of this Agreement and on the Applicant’s filing of the materials described in Paragraph 4 above, to

file a Final Certificate of Tax Exemption with the Clark County Treasurer and Assessor within ten days.

8. The Applicant agrees, within 30 days following the first anniversary of the City's filing of the Final Certificate of Tax Exemption, and each year thereafter for a period of eight years, to file a notarized declaration with the Director indicating the following:
 - (a) A statement identifying the total number of occupied and vacant multi-family units receiving a property tax exemption;
 - (b) A certification that the property continues to be in compliance with this Agreement, Chapter 3.22 VMC, and Chapter 84.14 RCW;
 - (c) A description of any improvements or changes to the property constructed after the issuance of the certificate of tax exemption; and
 - (d) The total monthly rent for each unit.
9. The applicant agrees to maintain the property including all improvements in compliance with all applicable City codes and requirements.
10. The Applicant agrees to maintain records supporting all information provided to the City and to make those records and the multi-family units available for inspection by the City. Failure to submit the annual declaration identified in Paragraph 6 or to maintain adequate records may result in the tax exemption being canceled.
11. If the Applicant converts to another use any of the new multi-family residential housing units constructed under this Agreement, the Applicant shall notify the Clark County Assessor and Treasurer and the Director within 60 days of such change in use.
12. The Applicant agrees to notify the Director promptly of any transfer of the Applicant's ownership interest in the site or in the improvements made to the site under this Agreement.
13. The City reserves the right to cancel the Final Certificate of Tax Exemption should the Applicant, its successors and assigns, fail to comply with any of the terms and conditions of this Agreement. Cancellation of the Final Certificate of Tax Exemption may subject the Applicant to potential tax liability as further described in RCW 84.14;
14. No modifications of this Agreement shall be made unless mutually agreed upon by the parties in writing.
15. In the event that any term or clause of this Agreement conflicts with applicable law, such conflict shall not affect other terms of this Agreement

which can be given effect without the conflicting term or clause, and to this end, the terms of this Agreement are declared to be severable.

16. Applicant agrees that this Agreement is subject to the Vancouver Multi-Family Housing Tax Exemption set forth at Vancouver Municipal Code, Chapter 3.22.

CITY OF VANCOUVER

**An Affiliate of Jackson Square
Properties**

Eric Holmes, City Manager

Chad Bungcayao- Vice President
Acquisitions

Attest:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:

Bronson Potter, City Attorney

EXHIBIT A
LEGAL DESCRIPTION

**EXHIBIT B
DEVELOPMENT AGREEMENT
BLOCK 20 PUBLIC BENEFIT**

Public Play Ground and Restroom Improvements- to be installed at Esther Short Park in Vancouver WA

The Developer will be responsible for:

- Up to \$500,000 construction costs, including any change orders for removing the old Esther Short playground equipment and restroom facilities per City issued plans and specification.
- Managing project construction, in coordination with the City parks team.
- Compliance with Washington State prevailing wage requirements set forth at Chapter 39.04 RCW.
- Compliance with Washington State public works bidding requirements set forth at Chapter 39.12 RCW.

The City will be responsible for:

- Costs for the master plan, construction drawings, and specification for two future phases of Esther Short improvements including replacement and development of new playground and replacement of restrooms with future Portland Loos.
- City will have design, plans and permits by September 2020.

MULTI-FAMILY HOUSING LIMITED PROPERTY TAX EXEMPTION AGREEMENT

THIS AGREEMENT is entered into this ____ day of _____, 2019, by and between Ginn Development LLC, (hereinafter referred to as “Applicant”), and the CITY OF VANCOUVER, a Washington Charter City of the First Class (hereinafter referred to as “City”).

WITNESSETH:

WHEREAS, the City desires to stimulate new construction of multi-family housing in certain designated urban areas in order to reduce development pressure on single-family residential neighborhoods, to increase and improve housing opportunities, and to encourage development densities supportive of transit use, and

WHEREAS, the City is interested in promoting new housing in the Fourth Plain area of the City of Vancouver, and

WHEREAS, the City has, pursuant to authority granted to it under the Revised Code of Washington (RCW), designated various Residential Target Areas for the provision of limited property tax exemptions for new multi-family residential housing, and

WHEREAS, the City has, as set forth at Chapter 3.22 of the Vancouver Municipal Code (“VMC”), enacted a program whereby property owners may qualify for a Final Certificate of Tax Exemption which certifies to the Clark County Assessor and Treasurer that the Applicant is eligible to receive a limited property tax exemption, and

WHEREAS, the Applicant is interested in receiving a limited property tax exemption for constructing units of new multi-family residential housing within the Fourth Plain area, which is a Designated Residential Target Area identified in Chapter 3.22 VMC, and

WHEREAS, the Applicant has submitted to the City a complete application for the City’s limited tax exemption program (the “Application”) outlining the proposed development of new multi-family residential housing (“Development”) for an 10 year exemption to be constructed on property located at the intersection of Nicholson Road and E 36th Court more specifically described on Exhibit A attached hereto (“Property”), and

WHEREAS, the City has determined that the improvements to the Property will, if completed as proposed, satisfy the requirements for a Final Certificate of Tax Exemption.

NOW THEREFORE, the City and Applicant mutually agree as follows:

1. The City agrees to issue the Applicant a Conditional Certificate of Acceptance of Tax Exemption.
2. The Applicant agrees to construct on the Property residential housing as described in the most recent site plans, floor plans, and elevations on file with the City as of the date of City Council approval of this agreement. In no event shall such construction provide fewer than 25 new permanent residential units.
3. The Applicant commits to renting at least twenty percent of the housing units as affordable housing units to low and moderate-income households as defined at RCW 84.14.010, and agrees that the property must satisfy that commitment and any additional affordability and income eligibility conditions contained in Chapter 3.22 VMC for the duration of the tax exemption.
4. The Applicant agrees to complete construction of the agreed upon improvements within three years from the date the City issues the Conditional Certificate of Acceptance of Tax Exemption, or within any extension thereof granted by the City.
5. The Applicant agrees, upon completion of the improvements and upon issuance by the City of a temporary or permanent certificate of occupancy, to file with the City's Director of Community Development ("Director") the following:
 - (a) A statement of expenditures made with respect to each multi-family housing unit and the total expenditures made with respect to the entire property;
 - (b) A description of the completed work and a statement of qualifications for the exemption;
 - (c) A statement that the project meets the affordable housing requirements as described in RCW 84.14.020 including a statement committing to renting or selling at least twenty percent of the housing units as affordable housing units to low and moderate-income households; and
 - (d) A statement that the work was completed within the required three-year period or any authorized extension.
6. The City agrees, conditioned on the Applicant's successful completion of the improvements in accordance with the terms of this Agreement and on the Applicant's filing of the materials described in Paragraph 5 above, to file a Final Certificate of Tax Exemption with the Clark County Treasurer and Assessor within ten (10) days.

7. The Applicant agrees, within 30 days following the first anniversary of the City's filing of the Final Certificate of Tax Exemption, and each year thereafter for a period of 10 years, to file a notarized declaration with the Director indicating the following:
 - (a) A statement identifying the total number of occupied and vacant multi-family units receiving a property tax exemption;
 - (b) A certification that the property continues to be in compliance with this Agreement, Chapter 3.22 VMC, and Chapter 84.14 RCW;
 - (c) A description of any improvements or changes to the property constructed after the issuance of the certificate of tax exemption;
 - (d) The total monthly rent for each unit;
 - (e) Documentation of the income of each renter household at the time of initial occupancy; and
 - (f) Documentation showing that twenty percent of the units were rented as affordable housing units to low and moderate-income households as defined at RCW 84.14.010 and VMC 3.22.
8. The applicant agrees to maintain the property including all improvements in compliance with all applicable City codes and requirements.
9. The Applicant agrees to maintain records supporting all information provided to the City and to make those records and the multi-family units available for inspection by the City. Failure to submit the annual declaration or to maintain adequate records may result in the tax exemption being canceled.
10. If the Applicant converts to another use any of the new multi-family residential housing units constructed under this Agreement, the Applicant shall notify the Clark County Assessor and Treasurer and the Director within 60 days of such change in use.
11. The Applicant agrees to notify the Director promptly of any transfer of the Applicant's ownership interest in the site or in the improvements made to the site under this Agreement.
12. The City reserves the right to cancel the Final Certificate of Tax Exemption should the Applicant, its successors and assigns, fail to comply with any of the terms and conditions of this Agreement. Cancellation of the Final Certificate of Tax Exemption may subject the Applicant to potential tax liability as further described in RCW 84.14; The Applicant shall have the right to appeal such cancellation pursuant to VMC 3.22.040(N).
13. No modifications of this Agreement shall be made unless mutually agreed upon by the parties in writing.

14. In the event that any term or clause of this Agreement conflicts with applicable law, such conflict shall not affect other terms of this Agreement which can be given effect without the conflicting term or clause, and to this end, the terms of this Agreement are declared to be severable.
15. Applicant agrees that this Agreement is subject to the Vancouver Multi-Family Housing Tax Exemption set forth at Vancouver Municipal Code, Chapter 3.22.

CITY OF VANCOUVER

APPLICANT NAME

Eric Holmes, City Manager

Individual Name

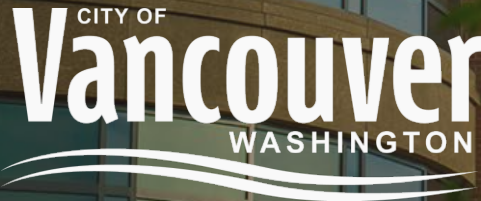
Attest:

Natasha Ramas, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:

Bronson Potter, City Attorney

Westside Bike Mobility Project Update



March 25, 2019
City Council Workshop

Chad Eiken, Community & Economic Development
Director

Rebecca Kennedy, Long Range Planning Manager

Anna Dearman, Senior Transportation Planner

3/21/2019 10:50 AM

Presentation Overview

- Overview of planning process thus far
- Additional analysis and stakeholder outreach completed since March 4 Council presentation
- Staff Recommendations
- Next Steps

Previous Council Review

- Feb. 25 Council Workshop
- March 4 Council Communication

Phase 1: Network Analysis

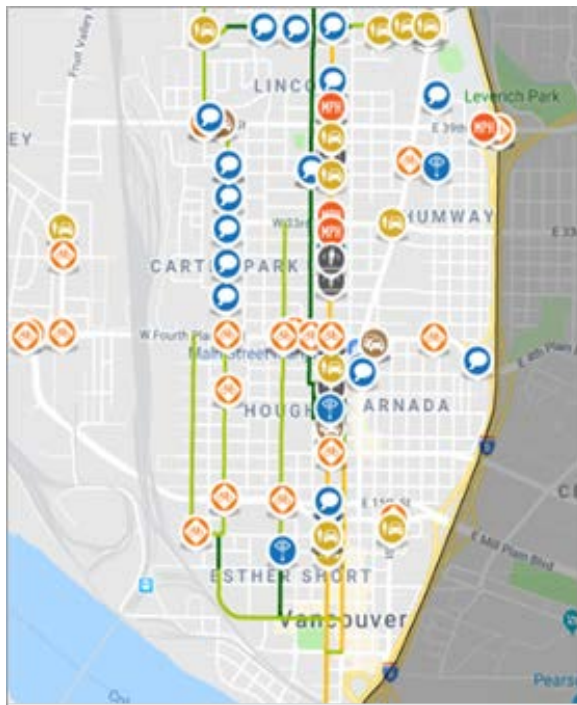
- Utilized network framework from Westside Mobility Strategy
- Existing Conditions Analysis: traffic speeds and volumes, parking utilization, bike/ped counts, intersection counts, parking capacity study, level of stress analysis
- Public Outreach: NA & stakeholder presentations, open houses, online survey, event tabling, print materials, social media



Phase 1: Network Analysis

Key takeaways from the fall 2018 outreach included:

- Develop a network of safe, connected bike routes, including separated or “protected” bike facilities where necessary, so people feel comfortable riding
- The Columbia Street, Daniels/Franklin Street, and Lincoln/Kauffman Avenue corridors were identified as preferred routes
- Columbia Street was identified as the route that provides the most access to desired destinations



Phase 2: Corridor Analysis

- The consultant team incorporated the public outreach process into the analysis of the study corridors to identify which corridors best met the following criteria:
 - Access and connectivity
 - Safety
 - Multimodal improvements
 - Community context and impact
- Columbia Street scored the highest in the evaluation analysis



Phase 2: Corridor Analysis

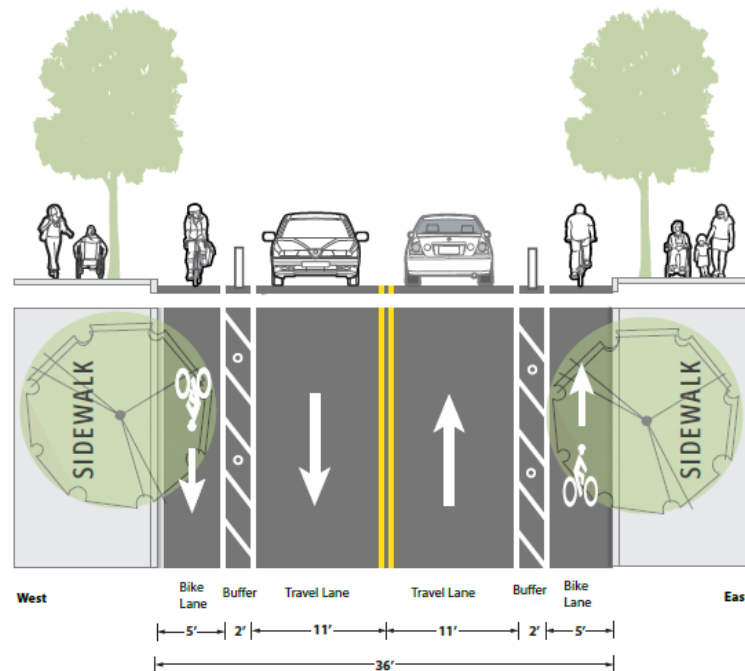
Phase II Public Outreach (Jan – Feb. 2019):

- Coffee talks at Boomerang and Latte Da, open house at VHA, booth at the Night Market
- Online survey and social media
- Postcards to residents on the identified corridors, flyers, and yard signs
- Door hangers to residents on Columbia & visits to businesses on Columbia



Phase 2: Corridor Analysis – Columbia

- Columbia - Mill Plain Blvd to Fourth Plain Blvd: remove parking on both sides, add protected bike lanes in each direction, complete as part of 2019-2021 pavement resurfacing
- Columbia – Mill Plain to 6th Street: remove parking on one side, add bike lanes in each direction, identify options for 13th to Mill Plain



Existing Conditions Analysis

Analysis completed since March 4th Council Workshop:

- Expanded parking utilization study that incorporated area from Main Street west to Franklin Street, and then between 13th Street and Fourth Plain Boulevard
- Counts were taken Tuesday, Wednesday, Thursday, and Sunday during 4 different time periods (10 a.m., 12 p.m., 4 p.m., 7 p.m.)
- Sunday counts were taken on March 17, 2019 (St. Patrick's Day holiday)

Existing Conditions: Weekday Max Parking Use

Columbia Street Blocks	Available Parking Stalls		Weekday Max June 2018		Weekday Max March 2019		Legend
	SB	NB	SB	NB	SB	NB	
25th-Fourth Plain	0	0	0%	0%	0%	0%	60-79% occupied
24th-25th	0	0	0%	0%	0%	0%	80-100% occupied
23rd-24th	4	5	75%	100%	83%	67%	
21st-23rd	6	5	100%	100%	33%	53%	
20th-21st	12	11	50%	55%	53%	33%	
19th-20th	10	12	70%	33%	57%	44%	
McLoughlin-19th	7*	6	71%	83%	54%	72%	
17th-McLoughlin	6	5	50%	60%	61%	40%	
16th-17th	7	6	14%	100%	0%	100%	
15th-16th	3	5	100%	100%	78%	67%	
Mill Plain-15th	6	7	83%	86%	100%	86%	
13th-Mill Plain	8	9	75%	78%	83%	52%	

Existing Conditions: Sunday Max Parking Use

Columbia Street Blocks	Available Parking Stalls		Sunday Max June 2018		Sunday Max March 2019 (Holiday)		Legend
	SB	NB	SB	NB	SB	NB	
25th-Fourth Plain	0	0	0%	0%	0%	0%	60-79% occupied 80-100% occupied
24th-25th	0	0	0%	0%	0%	0%	
23rd-24th	4	5	50%	60%	75%	80%	
21st-23rd	6	5	33%	80%	33%	80%	
20th-21st	12	11	58%	73%	42%	36%	
19th-20th	10	12	50%	33%	80%	67%	
McLoughlin-19th	7*	6	29%	17%	100%	100%	
17th-McLoughlin	6	5	0%	20%	100%	100%	
16th-17th	7	6	0%	33%	57%	83%	
15th-16th	3	5	33%	0%	67%	60%	
Mill Plain-15th	6	7	100%	86%	100%	14%	
13th-Mill Plain	8	9	63%	44%	100%	67%	

Community/Stakeholder Outreach

Project outreach since March 4th Council Workshop:

- Uptown Village Association March 7, 2019
- Lincoln Neighborhood Association March 11, 2019
- Vancouver Neighborhood Alliance March 13, 2019
- Regional Transportation Advisory Committee March 15, 2019
- Hough Neighborhood Association March 18, 2019



Community/Stakeholder Outreach

Project outreach since March 4th Council Workshop (cont.):

- Veterans Assistance Center March 21, 2019
- Carter Park Neighborhood Association March 21, 2019
- Westside Neighborhood Coalition March 22, 2019
- Met one-one with businesses, residents and other stakeholders
- Responded to ongoing public comments and communications received

Community/Stakeholder Outreach

Project outreach since March 4th Council Workshop (cont.):

- Visited 16 homes identified with no off-street parking capacity opportunities
- Left 50 doorhangers at homes and businesses on Columbia between Mill Plain and Fourth Plain Boulevards
- Developed resident survey about parking opportunities and challenges



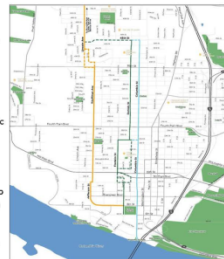
Columbia Parking Survey, Mill Plain to Fourth Plain

What is the Westside Bike Mobility Project?

The Westside Bike Mobility Project identifies a north-south network of safe bike routes on the west side of Vancouver. The proposed north-south bike network would include bike routes on Columbia Street, Daniels Street, and Lincoln/Kouffman Avenues.

In addition to safer bike facilities, the project also includes improvements that will make it safer for people walking. Pedestrian improvements can include new crosswalks, traffic calming, spot sidewalk improvements, upgraded ADA ramps, enhanced lighting, and new street trees. These "complete street" improvements are intended to make streets safer for everyone who travels.

There is no funding to construct the proposed bike routes, so the routes would be implemented in phases over time when streets are scheduled to be repaved or the City pursues future grant opportunities. Columbia is scheduled to be repaved in sections from 2019 to 2021, which provides an opportunity to implement any proposed improvements.



Proposed west side bike network

What is the City proposing to do on Columbia?

As part of a planned repaving project in summer 2019, the City proposes to construct protected bike lanes on both sides of Columbia Street for the section between Mill Plain and Fourth Plain, which would require removing on-street parking on both sides of Columbia.

What is the purpose of this survey?

The City is seeking additional feedback from residents and businesses in the section of Columbia between Mill Plain and Fourth Plain to better understand how the City can help with the loss of parking. Please complete the survey on the back of this page and return by Friday, March 22, using the pre-paid envelope provided, or you can complete the survey online using your unique code 000. Thank you so much!



To request other formats, please contact:
Aria Dearman | (360) 487-7738 | WA Relay: 711 aria.dearman@cityofvancouver.us

415 W. 6th St. | P.O. Box 1995 | Vancouver, WA 98668-1995 | (360) 487-7800 | TTY: (360) 487-8602 | www.cityofvancouver.us

Community/Stakeholder Outreach

Project outreach since March 4th
Council Workshop (cont.):

- Updated project web site with added background material
- Updated project fact sheet
- Information distributed through project outlets such as email newsletter and social media



Project Phases and Documents

The Westside Bike Mobility Project started in 2018 and is ongoing. The project includes the following phases, with links to the documents related to each phase.

Phase 1: Network Analysis (May through November 2018)

Existing Conditions Analysis

[Bicycle and Pedestrian Counts](#)
[Corridor Crash Data](#)
[Traffic Speed and Volume Counts](#)
[Columbia Parking Utilization Study Maps](#)
[Parking Opportunities and Constraints Analysis](#)

Public Outreach Process

[Outreach Summary \(December 2018\)](#)

Phase 2: Corridor Analysis (December 2018 through March 2019)

Route Analysis/Data Collection

Design Concept Development

[Proposed Corridor Maps](#)
[Proposed Design Concepts](#)

Public Outreach Process

[Phase 2 Feedback Summary \(February 2019\)](#)
[Fact Sheet \(March 2019\)](#)

Phase 3: Phased Route Implementation (Future)

Design Refinement

[Public Outreach Focused on Corridor Sections](#)

Share Your Thoughts

Learn More

[Westside Bike Mobility Project Main Page](#)

[Frequently Asked Questions](#)

[Ways to Get Involved](#)

Sign up for email updates

Email

Submit

Pedestrian Improvements

Continued refinement of pedestrian improvements since March 4th Council Workshop:

- Coordination with Urban Forestry on street tree capacity along project corridors
- Coordination with Traffic Engineering to further refine traffic calming and crossing improvements



Original Project Phasing Plan

- Phase 1: Network Analysis – May through November 2018
 - Existing Conditions Analysis
 - Public Outreach Process
- Phase 2: Corridor Analysis – December 2018 through March 2019
 - Route Analysis/Data Collection
 - Design Concept Development
 - Public Outreach Process
- Phase 3: Phased Route Implementation – Future
 - Design Refinement
 - Segment Focused Public Outreach

Alternate Project Phasing Plan

- Phase 1: Network Analysis – May through November 2018
- Phase 2: Corridor Analysis – December 2018 through March 2019
- Phase 3: Design Refinement and Stakeholder Engagement for Columbia Street Improvements– starting in April 2019
- Phase 4: Phased Route Implementation of Columbia: 2020-2021
- Future Phase: future implementation of other network routes as resources become available; will require significant additional stakeholder involvement to refine design and understand impacts.

Alternate Implementation Approach

- Reschedule repaving of Columbia Street (Mill Plain – Fourth Plain) to 2020 to provide additional time to engage stakeholders and system users in the design process
- Continue developing pedestrian improvement plans with stakeholders, including street trees, traffic calming, and pedestrian crossing improvements
- Develop a more inclusive public outreach process, including a project stakeholder committee

Next Steps

- ADA curb ramp upgrades this summer in preparation for resurfacing project in 2020
- Work with project consultant to develop a new public outreach plan
- Continue project outreach and design refinement in preparation for Columbia repaving
 - 2020: Mill Plain – 33rd Street
 - 2021: 6th Street to Mill Plain, 33rd St. and 45th St.
- Continue to develop Complete Streets Program, including performance measures and public engagement processes

Questions and Discussion

VANCOUVER
CITY HALL



- Chad Eiken, Community & Economic Development Department Director, chad.eiken@cityofvancouver.us or 360-487-7882
- Rebecca Kennedy, Long Range Planning Manager, rebecca.kennedy@cityofvancouver.us or 360-487-7896
- Anna Dearman, Senior Transportation Planner, anna.dearman@cityofvancouver.us or 360-487-7738
- www.cityofvancouver.us/bikemobility



Staff Report 039-19

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 3/25/2019

SUBJECT Evergreen Airpark Sanitary Sewer Improvements - Construction Acceptance

Key Points

- The project installed over 1,975 linear feet of gravity sewer.
- Public sanitary sewer is now available to 29 parcels
- Staff proposes awarding construction acceptance and release of the retainage bond.

Strategic Plan Alignment

Goal 1, Objective 1.2: Ensure our infrastructure, including buildings and utilities, is safe, environmentally responsible and well maintained.

Present Situation

Advanced Excavating Specialist of Longview, Washington, has completed construction of the Evergreen Airpark Sewer Connection Incentive Program (SCIP) project. The project provided reliable sewer service to 29 parcels by installing over 1,975 linear feet of 8-inch gravity sewer mains in the following Avenues: NE 139th Avenue between NE 9th Street and NE 18th Street in the North Hearthwood neighborhood.

The work was completed satisfactorily in accordance with the plans and specifications. Contract costs are summarized below:

TOTAL CONTRACT COSTS

Labor, Equipment and Material	\$348,328.73
Sales Tax	29,259.61
Total	\$377,588.34
<i>Retainage</i>	<i>Bond</i>

The original contract amount, including sales tax, was \$350,199.21. The final project cost was

\$377,588.34, which was \$27,389.13 (under 8%) greater than the original contracted amount. The difference between original contract amount and final contract amount can be attributed to extra street restoration required, as well as the typical variances in unit prices and/or quantities commonly encountered during construction.

The contract amount fell below the \$500,000.00 contract value threshold that would require an apprenticeship utilization goal.

Advantage(s)

1. Provides reliable sanitary sewer service to residents.
2. Subsequent decommissioning of septic systems will protect the community's ground water supply.
3. Completes the City's contractual and statutory process for accepting the project.
4. Formal project acceptance allows for closure on third-party bond claims and facilitates release of the Contractor's retainage bond.

Disadvantage(s)

None.

Budget Impact

None. Funds for this project are appropriated in the Sewer Construction Fund, in the 2017-2018 Budget.

Prior Council Review

- Approval of the 2017-2018 Capital Improvement Budget
- Award of contract at the August 27, 2018, Vancouver City Council Meeting

Action Requested

On March 25, 2019, accept the facilities as constructed by Advanced Excavation Specialists of Longview, Washington, and authorize release of the retainage bond subject to receipt of all documentation required by law.

Sheryl Hale, Senior Engineering Supervisor, 487-7151

ATTACHMENTS:

- ▢ Project Boundary Map - Evergreen Airpark



Project Number: 083463



Staff Report 040-19

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 3/25/2019

SUBJECT Bid Award for 2019 West Curb Ramps

Key Points

- Under the City's 2019 Street Preservation and Resurfacing contracts the City is resurfacing approximately 11 lane miles of street with hot mix asphalt (HMA) overlay treatments, is microsurfacing approximately 10 lane miles of street and is cape sealing approximately 21 lane miles of street.
- Per the Federal Highway Administration (FHWA), streets receiving treatments that are considered an alteration are required to be upgraded so that existing curb ramps meet current ADA requirements. Alterations include HMA overlay treatments, microsurfacing and cape seals.
- Project includes construction of 39 curb ramps. Approximate curb ramp locations are shown on the attached map.
- City maintenance crews do not have the available labor or equipment to do the type of work being done as part of this project.

Strategic Plan Alignment

Goal 1, Objective 1.2: Ensure our infrastructure, including buildings and utilities, is safe, environmentally responsible and well maintained.

Present Situation

The City is issuing three separate curb ramp contracts this year as part of its 2019 pavement management program. A total of 151 ramps are to be constructed under those three contracts. These contracts include the "2019 Resurfacing Curb Ramps" which includes 42 curb ramps, the "2019 East Curb Ramps", which includes 70 curb ramps, and the "2019 West Curb Ramps" which includes 39 ramps. The purpose of splitting the work into multiple contracts is to reduce each contract to a manageable size, which helps expedite ramp construction. From a construction sequencing standpoint, it is far more efficient to construct the new curb ramps in advance of the on-street pavement management resurfacing work.

This staff report and recommended action is to award the 2019 West Curb Ramps contract only. The 2019 Resurfacing Curb Ramps and 2019 East Curb Ramps contracts were both awarded on March 18, 2019.

On March 12, 2019, the City received four bids for the subject project. The responsive bids ranged between \$327,450.00 to \$375,580.00. The low bidder was nonresponsive. The second lowest bidder was responsive. The bids are as follows:

SUMMARY OF BIDS	
BIDDER	AMOUNT
Lee Contractors LLC, Battle Ground, WA	\$327,450.00
Advanced Excavating Specialists (AES), LLC, Longview, WA	\$361,785.00
Clark and Sons Excavating, Inc., Battle Ground, WA	\$375,580.00
MJ Hughes Construction, Vancouver, WA	Nonresponsive
Engineers' Estimate	\$400,000.00 to \$500,000.00

The bid amount of \$327,450.00, which covers the City's portion of the cost, is below the \$500,000.00 threshold requirement set for apprenticeship utilization goals. No apprenticeship utilization goals are required for this project.

Advantage(s)

1. Will construct curb ramps in advance of the annual paving contract, which will allow the paving to be done much faster and more efficiently.
2. Will ensure that cuts in the street from ramp construction will be completed before the final paving, which will prolong the life of the new pavement.
3. Will install ADA compliant curb ramps at intersections with sidewalks but without ramps.

Disadvantage(s)

1. Neighborhood residents, businesses and local traffic will be inconvenienced during the construction period at the various locations; however, the construction duration at each location is short, with traffic able to drive through construction zones, which will minimize the temporary inconvenience.
2. Construction will generate noise in the area; however, the contractor will not be working in one spot the entire time with all work expected to be complete within a few days at each location.

Budget Impact

The project is currently funded through the Pavement Management Program in the Street Fund (\$400,000.00). No additional budget appropriation is required.

Prior Council Review

None

Action Requested

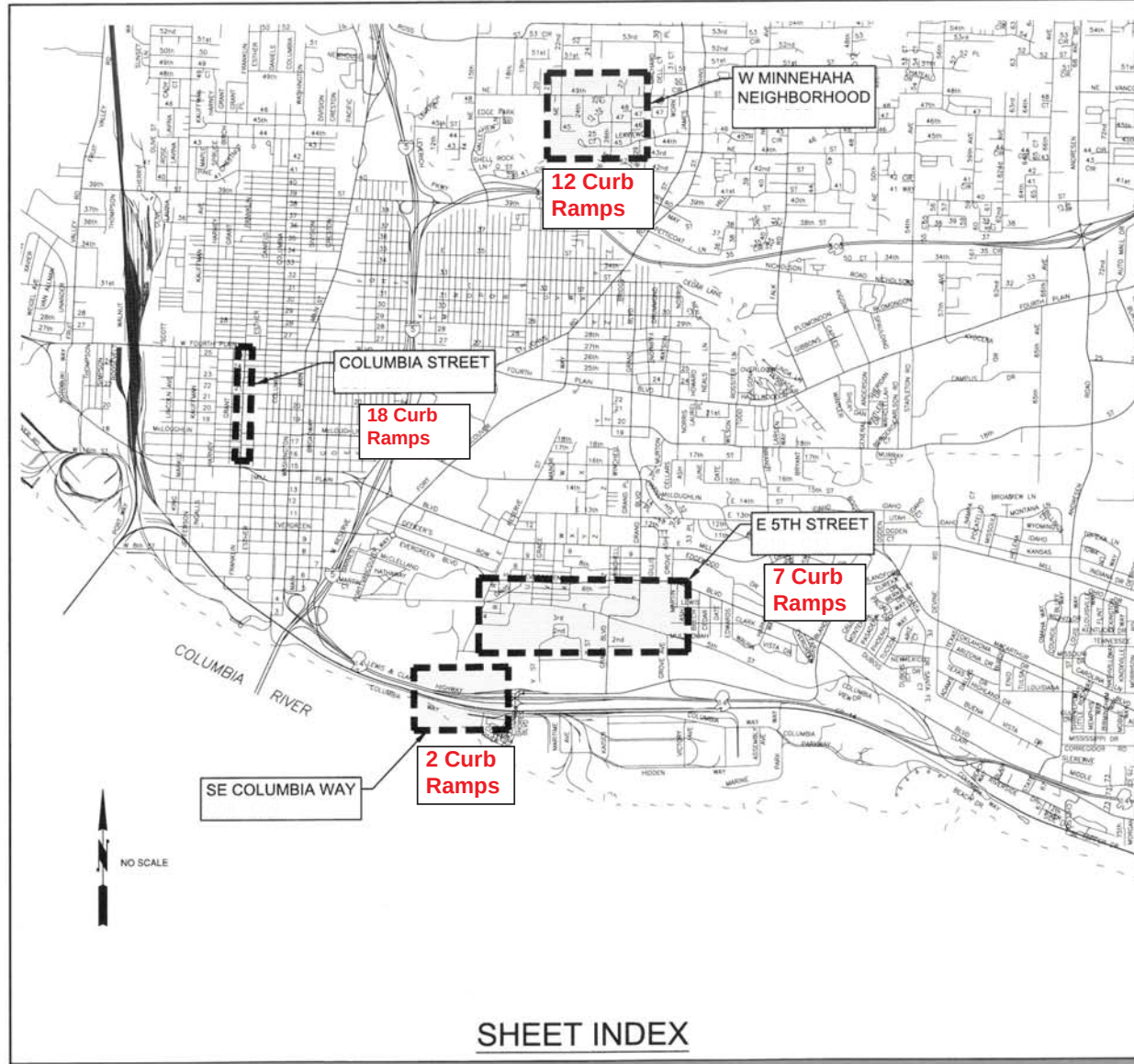
On March 25, 2019, award a construction contract for the 2019 West Curb Ramps project to the lowest responsive and responsible bidder, and authorize the City Manager or his designee to sign a contract with Lee Contractors LLC from Battle Ground, Washington, at their bid price of \$327,450.00, which includes Washington State sales tax.

Chris Sneider, Senior Civil Engineer, 487-8239

ATTACHMENTS:

- ▢ 2019 West Curb Ramps - Map
- ▢ Contract

G:\VOLUME PROJECTS\1812286 - COV 2019 CURB RAMP\CAO\SHEETS\18-2286-WA-G.DWG 1/29/2019 1:16:22 PM Dorian Kuhn



SHEET INDEX

CURB RAMP GENERAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL AMERICANS WITH DISABILITIES (ADA) REQUIREMENTS AS DEFINED BY THE PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG). DETAILS AND DIMENSIONS SHOWN ARE APPROXIMATE ONLY AND INTENDED AS A GUIDE FOR INITIAL LAYOUT PURPOSES ONLY AND ARE NOT COMPLETE. CONTRACTOR SHALL TAKE ALL NECESSARY FIELD MEASUREMENTS AND OTHERWISE VERIFY ALL DIMENSIONS TO MEET ADA REQUIREMENTS. SHOULD ANY ERROR OR INCONSISTENCY EXIST, THE CONTRACTOR SHALL NOT PROCEED WITH THE WORK AFFECTED UNTIL REPORTED TO THE ENGINEER FOR CLARIFICATION OR CORRECTION.
2. NO SURVEY HAS BEEN COMPLETED FOR THESE RAMPS. GIS MAPPING WAS USED TO CREATE THE PROJECT PLAN SHEETS AND CURB RAMP DETAILS SHOWN. DIMENSIONS ARE APPROXIMATE AND SHALL BE VERIFIED.
3. ALL SURVEY AND STAKING NECESSARY FOR CONSTRUCTION SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL DEVELOP AND MAKE ALL DETAIL SURVEYS NECESSARY FOR LAYOUT AND CONSTRUCTION. COMPLETE ALL SURVEY STAKING AS NEEDED USING INFORMATION CONTAINED IN THE PLANS AND ADJUSTED AS NECESSARY TO MEET ADA REQUIREMENTS. ADDITIONAL INFORMATION OR CLARIFICATION BY THE ENGINEER MAY BE AVAILABLE UPON REQUEST, BUT IS NOT GUARANTEED. SURVEYED FIELD LAYOUT SHALL BE REVIEWED BY THE ENGINEER PRIOR TO DEMOLITION AND AGAIN PRIOR TO CONCRETE PLACEMENT.
4. THE MAXIMUM CLOSURE TIME FOR ANY SINGLE CURB RAMP SHALL BE ONE WEEK. SUBMIT TRAFFIC CONTROL PLAN AND PEDESTRIAN DETOUR PLAN FOR RAMP CLOSURES. PLAN SHALL INCLUDE BUT IS NOT LIMITED TO WORK AREA PROTECTION, SIDEWALK CLOSURES AND DETOURS.
5. COORDINATE UTILITY RELOCATIONS AND/OR ADJUSTMENTS AS NEEDED. SEE SPECIFICATIONS FOR UTILITY CONTACT INFORMATION.
6. REPLACE CURBS, SIDEWALKS, AND/OR DRIVEWAY APRONS THAT ARE DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS. REPLACE FULL SECTIONS TO THE NEAREST EXISTING CONSTRUCTION JOINT. REPLACEMENT WILL BE CONSIDERED INCIDENTAL TO THE WORK.
7. PROTECT FRESHLY POURED CONCRETE FROM VANDALISM OR OTHER DAMAGE FOR A MINIMUM OF TWENTY-FOUR (24) HOURS OR UNTIL CURED ENOUGH TO SUPPORT TYPICAL USE, WHICHEVER IS LONGER. ANY CONCRETE DAMAGED BY VANDALISM OR OTHER CAUSES SHALL BE REPLACED AT NO COST TO THE CITY.
8. ALL AREAS DISTURBED THROUGH THE CONSTRUCTION OF THE SIDEWALK RAMPS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION PRIOR TO PROJECT COMPLETION. THIS INCLUDES, BUT IS NOT LIMITED TO, LANDSCAPE RESTORATION AROUND NEW RAMPS.
9. DETECTABLE WARNING DEVICE QUANTITIES ARE AN ESTIMATE. VERIFY ACTUAL QUANTITIES IN FIELD.
10. THE EXISTING CURB, SIDEWALKS, AND UTILITIES, ETC. SHOWN ARE FOR INFORMATION ONLY.
11. THE GRADE CORRECTION CURB ALONG THE BACK OF RAMPS MAY BE ELIMINATED IF APPROVED BY CITY.
12. EXTEND RAMP AND SIDEWALK TRANSITION PANEL TO NEXT SIDEWALK JOINT OR AS DIRECTED BY CITY.
13. WHEN CONSTRUCTING TYPE A-1 CURB AND GUTTER, MATCH THE PROPOSED GUTTER PAN WIDTH TO THE EXISTING GUTTER PAN WIDTH.
14. PROTECT EXISTING TREES. IF ROOTS ARE ENCOUNTERED, DO NOT RIP OR SHATTER ROOTS. ROOT PRUNE BY CUTTING THE ROOT CLEANLY WITH A HAND SAW. IF TREE IS DAMAGED AS PART OF THE PROJECT BEYOND REPAIR, CONTRACTOR WILL BE RESPONSIBLE FOR REMOVAL COSTS AND APPRAISED VALUE OF TREE.
15. IF SURVEY MONUMENT WILL BE DISTURBED BY CONSTRUCTION ACTIVITIES, CONTACT THE CITY OF VANCOUVER SURVEY DEPARTMENT PRIOR TO DISTURBING SO THEY CAN RE-ESTABLISH THE MONUMENT LOCATION UPON COMPLETION OF CONSTRUCTION.
16. RAMP RUN AND CROSS SLOPES DESIGNED TO 7.0% AND 1.5%, RESPECTIVELY. SEE CURB RAMP DETAIL SHEETS FOR MAXIMUM ALLOWED AS-CONSTRUCTED SLOPES.



PUBLIC WORKS
TRANSPORTATION
P.O. BOX 1995
VANCOUVER, WA
98668-1995
360-487-7750
FAX: 360-487-4781

DATE	REVISION
FEB 2019	DESIGNED BY: DW/SPS DRAWN BY: CAD CHECKED BY: DW/SPS APPROVED BY: DW/SPS

PROJECT NUMBER	072819
TASK NUMBER	G03
SHEET	3 OF 27

2019 WEST CURB RAMPS
SHEET INDEX AND
CURB RAMP GENERAL NOTES

CITY OF VANCOUVER

CONTRACT # _____

ITB #19-12: 2019 WEST CURB RAMPS

THIS CONTRACT effective this ____ day of _____, 2019 is entered into by and between Lee Contractors LLC, 20907 NE 72nd Ave, Battle Ground, WA 98604, hereinafter referred to as the Contractor, and the City of Vancouver, a municipal corporation of the State of Washington, hereinafter referred to as the Owner.

1. **Contractor's Obligation:** The Contractor, for and in consideration of the sum to be paid to it by the Owner in the manner and at the times provided, hereinafter and in the Specifications, and in consideration of the covenants and agreements herein contained, which documents are incorporated into and made a part of this contract, hereby agrees to furnish all materials, labor, tools, machinery and implements of every description necessary for construction and installation of the following improvements:

This contract provides for the improvement of curbs, sidewalks, excavation, minor paving and other work, all in accordance with the attached Contract Plans, these Contract Provisions, and the Standard Specifications.

The contract work shall be fully complete within 40 working days from the Notice to Proceed date.

The Contractor agrees to perform the work and furnish the materials in a most substantial and workmanlike manner and within the time limits stated in this Contract. The Contractor agrees that it will make all necessary arrangements for the obtaining of permits from the United States, State of Washington, and/or any of its agencies as may be necessary to do the work required and covered by this Contract.

2. **E-Verify Program:** Contractor shall register and enter into a Memorandum of Understanding (MOU) with the Department of Homeland Security E-Verify program within sixty (60) days after execution of this Contract. Contractor shall ensure all Contractor employees and any sub-contractor(s) assigned to perform work under this Contract are eligible to work in the United States. Contractor shall provide verification of compliance upon City request. Failure by Contractor to comply with this subsection shall be considered a material breach.
3. **Subcontractor Responsibility:** The Contractor shall include the language of this section in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. The requirements of this section apply to all subcontractors regardless of tier.

At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

1. Have a current certificate of registration in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;
2. Have a current Washington Unified Business Identifier (UBI) number;
3. If applicable, have:
 - a. Have Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW;
 - b. A Washington Employment Security Department reference number, as required in Title 50 RCW;
 - c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
 - d. An electrical contractor license, if required by Chapter 19.28 RCW;
 - e. An elevator contractor license, if required by Chapter 70.87 RCW.
4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3).

4. **City of Vancouver Business & Occupational License:** Contractors will be required to get a business license when contracting with the City of Vancouver, unless allowable exemptions apply. Businesses/Contractors shall contact the State of Washington Business License Service (BLS) at 800-451-7985, or go to www.bls.dor.wa.gov/cities/vancouver.aspx or www.cityofvancouver.us/businesslicense, to determine whether a business license is required pursuant to VMC Ch. 5.04.

5. **Owner's Obligation:** In consideration of the promises and agreements of the Contractor as set forth herein, and in consideration of the faithful performance and furnishing of the work and materials required by this Contract to the satisfaction of the Vancouver City Council, the Owner agrees to pay to the Contractor in the manner and at the times provided hereinafter and in the Contract Documents, and in accordance with the ordinances of the City of Vancouver and the laws of the State of Washington, the following sum as indicated, which amount does includes 8.4% Washington State Sales Tax (if applicable):

\$327,450.000

___Three Hundred Twenty Seven Thousand Four Hundred Fifty Dollars 00/100_____

The amount finally to be paid is, however, variable upon the work actually performed and final payment will be made upon the basis of the amount of work performed and the materials furnished, and at the lump sum or unit prices fixed in the Contractor's Bid and as modified by any and all approved Change Orders.

5. **Contractor's Insurance:** The Contractor agrees to procure insurance coverage as required by Section 1-07.18 of the Special Provisions.
6. **Contractor's Bond:** The Contractor agrees that before it undertakes performance of this Contract, it will file with the City of Vancouver a Contract Performance Bond and Payment Bond, in the forms prescribed by the City of Vancouver, in the full amount of the Contract price executed by itself as principal and by a surety company authorized to do business in the State of Washington as surety. The bonds shall comply with the laws of the State of Washington, and especially with the provisions of Chapter 39.08 RCW.
7. **Employment of Labor:** The Contractor agrees that all persons employed by Contractor and by any of its subcontractors and any of their lower tier contractors in work performed pursuant to this Contract shall not be employed in excess of eight (8) hours in any one day, except as provided or allowed by law.
8. **Payment of Labor:** The Contractor agrees that all laborers, workers, or mechanics employed by it or by any subcontractor in the performance of this Contract will be paid not less than the prevailing rate of wage for an hours work, in accordance with the provisions of the Chapter 39.12 RCW, and all rules and regulations promulgated pursuant thereto. The State of Washington prevailing wage rates applicable for this public works project, which is located in Clark County, may be found at the following website address of the Department of Labor and Industries: <https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx>. Based on the Bid submittal deadline for this project, the applicable effective date for prevailing wages for this project is **March 12, 2019**.

In case any dispute arises as to what the prevailing rates of wages for work of a similar nature are and such dispute cannot be adjusted by the parties involved, the matter shall be referred to the director of the Department of Labor and Industries of the State of Washington for arbitration, and the director's decision shall be final, conclusive and binding on all parties involved in the dispute.

9. **Payment to the Contractor:** Payment to the Contractor of the Contract price by the Owner shall be made in checks drawn on the fund provided therefore. Payment shall be in the manner provided below unless another manner has been specified in the Special Provisions.

Progress payments to the Contractor shall be made within 30 days of receipt of the signed progress payment request, as approved by the Owner, for work completed during the previous month. There will be reserved and retained from monies earned by the Contractor on estimates during the progress of the improvements of work, a sum equal to 5 percent of all such estimates. Said retained amount shall be held in trust in accordance with the Specifications and Chapter 60.28 RCW.

Payment of the retained percentage shall be withheld, by the owner, for a period of 45 days following the completion of all Contract work, as defined by WSDOT Section 1-01.3, and shall be paid the Contractor at the expiration of 60 days per Chapter 39.12 RCW and Chapter 60.28 RCW, in the event no claims, as provided by law, have been filed against such funds; and provided further, that releases or certificates have been obtained from the State Department of Labor and Industries, from the State Department of Revenue, and the Employment Security Department and all other departments and agencies having jurisdiction over the activities of the Contractor. In the event such claims are filed, the Contractor shall be paid such retained percentages less an amount sufficient to pay any such claims, together with a sum sufficient to defray the cost of foreclosure action and to cover attorney fees as determined by the Owner.

Every person performing labor or furnishing supplies toward the completion of said improvement of work shall have a lien upon said monies so reserved; provided, that such notice of the lien of such claimant shall be given in the manner provided in RCW 39.08.030 and within the time provided in Chapter 60.28 RCW as now existing and in accordance with any amendments that may hereafter be made thereto.

No payment shall be made to the Contractor, however, until the Contractor and all subcontractors who have performed work shall have filed, with Procurement Services, the Labor and Industries executed Statement of Intent to Pay Prevailing Wage as required by RCW 39.12.040. Said Contractor and all subcontractors shall also keep accurate payroll records for three years from the date of acceptance as described in WAC 296-127-320 *Payroll*. A Contractor and all subcontractors shall, within ten days after it receives a written request, as defined by RCW 39.12.010(4) file a certified copy of the payroll records with the Owner. A Contractor's noncompliance with this section shall constitute a violation of RCW 39.12.050.

10. **Indemnity**: Contractor agrees to indemnify, defend, save and hold harmless the City, its officials, employees and agents from any and all liability, demands, claims, causes of action, suits or judgments, including costs, attorney fees and expenses incurred in connection therewith, or whatsoever kind or nature, arising out of, or in connection with, or incident to, the performance of services by Contractor pursuant to this Contract.

In the event that any suit based on such a claim, demand, loss, damage, cost, or cause of action is brought against the Contractor, the City retains the right to participate in said suit.

This indemnity and hold harmless shall include any claim made against the City by an employee of Contractor or subcontractor or agent of the Contractor, even if Contractor is thus otherwise immune from liability pursuant to the workers' compensation statute, Title 51 RCW. To the extent that such liability arises from the concurrent negligence of both the City and the Contractor, such cost, fees and expenses shall be shared between the City and the Contractor in proportion to their relative degrees of negligence. This indemnity and hold harmless shall NOT apply in the case where liability arises from the sole

negligence of the City. Contractor specifically acknowledges that the provisions contained herein have been mutually negotiated by the parties and it is the intent of the parties that Contractor provide the broadest scope of indemnity permitted by RCW 4.24.115.

11. **Ownership of Records and Documents – Public Disclosure:** All materials, writings and products produced by the Contractor in the course of performing this Contract shall immediately become the property of the City. In consideration of the compensation provided for by this Contract, the Contractor hereby further assigns all copyright interests in such materials, writings and products to the City. A copy may be retained by the Contractor. In the event the City receives a public record request for such materials, writings of products the City may, in its discretion, notify the Contractor of such request and withholds disclosure of such information for not less than five (5) business days to permit the Contractor to seek judicial protection of such information, provided that the Contractor shall be responsible for attorney fees and costs in such action and shall save and hold harmless the City from any costs, attorney fees, or penalty assessment under Chapter 42.56 RCW.
12. **Amendments:** All changes to this Contract, including changes to the statement of work and compensation, must be made by written amendment and signed by all parties to this Contract.
13. **Jurisdiction/Venue:** In the event that any litigation should arise concerning the construction or interpretation of any of the terms of this Contract, the venue of such action of litigation shall be in the Superior Court of the State of Washington in and for the County of Clark. This Contract shall be governed by the law of the State of Washington.
14. **Assignment:** This Contract is binding on each party, its successors, assigns, and legal representatives and may not, under any circumstances, be assigned or transferred by either party without express written authorization.
15. **Termination for Convenience:** The City, at its sole discretion, may terminate this Contract for convenience at any time for any reason deemed appropriate. Termination is effective immediately upon notice of termination given by the City.
16. **Termination for Cause:** In the event the Contractor is, or has been, in violation of the terms of this Contract, including the Invitation to Bid, the Owner reserves the right, upon written notice to the Contractor, to cancel, terminate, or suspend this contract in whole or in part for default. Termination shall be effected by serving a notice of termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will be paid only the contract price for services performed in accordance with the manner of performance set forth in the Contract.

If it is later determined by the Owner that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, or events which are not the fault of or are

beyond the control of the Contractor, the City after setting up a new delivery or performance schedule, may allow the Contractor to continue work or treat the termination as a termination for convenience.

17. **Opportunity to Cure:** The Owner at its sole discretion may in lieu of a termination allow the Contractor to cure the defect(s), by providing a “Notice to Cure” to Contractor setting forth the remedies sought by Owner and the deadline to accomplish the remedies. If the Contractor fails to remedy to the Owner’s satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within the time stated time, the Owner shall have the right to terminate the Contract without any further obligation to the Contractor. Any such termination for default shall not in any way operate to preclude the Owner from also pursuing all available remedies against the Contractor and it’s sureties for said breach or default, including but not limited to termination of this Contract for convenience.
18. **Bid Documents & Contract:** The complete Contract includes these parts: this Contract, the terms of this Invitation to Bid and any addenda thereto, the Contractor’s complete Bid Form, the City of Vancouver Amendments to the 2018 WSDOT Standard Specifications, the Special Provisions and Plans are all incorporated herein and made a part of this Contract by this reference. These parts complement each other in describing a complete Work. Any requirement in one part binds as if stated in all parts.
19. **Order of Precedence:** Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):
 1. Amendments to the Contract,
 2. This Contract,
 3. Addenda to the Solicitation,
 4. The Solicitation,
 5. Contractor’s Bid,
 6. Special Provisions,
 7. Contract Plan Set,
 8. City of Vancouver Amendments to the specified WSDOT Standard Specifications,
 9. City of Vancouver Standard Plans,
 10. WSDOT Amendments to the WSDOT Standard Specifications,
 11. WSDOT Standard Specifications,
 12. WSDOT Standard Plans.
20. **Notices:** Whenever in this written Contract written notices are to be given or made, they may be sent by certified mail to the following people at the addresses as shown herein unless a different address is designated in writing or delivered to the respective party hereto:

Owner:

Procurement Services Manager
City of Vancouver
415 W 6th St.
P O Box 1995
Vancouver WA 98668-1995

Contractor:

Lee Contractors LLC
20907 NE 72nd Ave
Battle Ground, WA 98604

Original signed at Vancouver, Washington, on the dates listed below.

CITY OF VANCOUVER

A municipal corporation

CONTRACTOR:

Eric Holmes, City Manager

Signature:

DATE

By: Printed Name / Title

Attest:

Natasha Ramras, City Clerk

Approved as to form:

E. Bronson Potter, City Attorney

LABOR AND MATERIALS PAYMENT BOND

(NOTE: CONTRACTOR MUST USE THIS FORM, NOT A SURETY COMPANY FORM. MUST BE ACCOMPANIED BY A POWER OF ATTORNEY FOR THE SURETY'S OFFICER AUTHORIZED TO SIGN)

KNOW ALL MEN BY THESE PRESENTS:

We the Undersigned _____ as
PRINCIPAL (Contractor) and _____
_____ a corporation organized and existing under and by virtue of the laws of the state of _____,
_____ and duly authorized to do surety business in the state of
Washington and named on the current list of approved surety companies acceptable on federal
bonds and conforming with the underwriting limitations as published in the Authorized Insurance
List in the State of Washington published by the Office of the Insurance Commissioner and
which carries an "A" rating and is of the appropriate class for the bond amount as determined by
Best's Rating System, as SURETY, hereby hold and firmly bind ourselves, our heirs, executors,
administrators, successors and assigns, jointly and severally, unto CITY OF VANCOUVER, as
OBLIGEE, in the sum of _____
Dollars (\$_____) in lawful money of the United States of America, for the payment of that
sum for the use and benefit of claimants as defined below.

The condition of this obligation is such that whereas the PRINCIPAL entered into a
contract with CITY OF VANCOUVER dated _____, 20____, which
contract is hereunto annexed and made a part hereof, for accomplishment of the all contract
terms for the project described as follows:

ITB #19-12: 2019 WEST CURB RAMPS

NOW THEREFORE, if the PRINCIPAL shall promptly make payments to all persons,
firms, subcontractors, corporations and/or others furnishing materials for or performing labor in
the prosecution of the Work provided for in the aforesaid contract, and any authorized extension
or modification thereof, including all amounts due for materials, equipment, mechanical repairs,
transportation, tools and services consumed or used in connection with the performance of such
Work, and for all labor performed in connection with such Work whether by subcontractor or
otherwise, and all other requirements imposed by law, then this obligation shall become null and
void; otherwise this obligation shall remain in full force and effect, subject, however, to the
following condition:

The above-named PRINCIPAL and SURETY hereby jointly and severally agree that
every claimant, who has not been paid in full, may sue on this bond for the use of such claimant,
prosecute the suit to final judgment in for such sum or sums as may be justly due claimant, and
have execution thereon. The OBLIGEE shall not be liable for the payment of any judgment,
costs, expenses or attorneys' fees of any such suit.

PROVIDED, FURTHER, that SURETY for the value received, hereby stipulates and agrees that all changes, extensions of time, alterations to the terms of the contract or to Work to be performed thereunder or the Specifications accompanying the same shall be within the scope of the SURETY's undertaking on this bond, and SURETY does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the Specifications. Any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the Specifications shall automatically increase the obligation of the SURETY hereunder in a like amount, provided that the total of such increases shall not exceed twenty-five percent (25%) of the original amount of the obligation without the consent of the SURETY.

This obligation shall continue to bind the PRINCIPAL and SURETY, notwithstanding successive payments made hereunder, until the full amount of the obligation is exhausted, or if the full amount of the obligation is not exhausted and no claim is pending resolution, until such time as no further claims can be made pursuant to law with regard to the above-described project.

SURETY shall indemnify, defend, and protect the CITY OF VANCOUVER against any claim of direct or indirect loss resulting from the failure of the CONTRACTOR (or any of the employees, subcontractors, or lower tier subcontractors of the CONTRACTOR) to pay all laborers, mechanics, subcontractors, lower tier subcontractors, materialpersons, or any other person who provides supplies or provisions for carrying out the work.

If more than one SURETY is on this bond, each SURETY hereby agrees that it is jointly and severally liable for all obligations of this bond.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20____.

SURETY

CONTRACTOR

By:_____

By*:_____

Title:_____

Title:_____

Street Address

Street Address

City, State ZIP

City, State ZIP

Phone Number

Phone Number

* Must be signed by president or vice-president of Contractor.

PERFORMANCE BOND

(NOTE: CONTRACTOR MUST USE THIS FORM, NOT A SURETY COMPANY FORM. MUST BE ACCOMPAINED BY A POWER OF ATTORNEY FOR THE SURETY'S OFFICER AUTHORIZED TO SIGN)

KNOW BY ALL MEN BY THESE PRESENTS:

We the undersigned _____ as
PRINCIPAL (hereinafter called CONTRACTOR), and _____
_____ a corporation organized and existing under and by virtue of the laws of the state of _____
_____ duly authorized to do surety business in the state of Washington
and named on the current list of approved surety companies acceptable on federal bonds and
conforming with the underwriting limitations as published in the Authorized Insurance List in the
State of Washington published by the Office of the Insurance Commissioner and which carries an
"A" rating and is of the appropriate class for the bond amount as determined by Best's Rating
System, as SURETY, hereby hold and firmly bind ourselves, our heirs, executors, administrators,
successors and assigns, jointly and severally, to pay to CITY OF VANCOUVER as OBLIGEE
(hereinafter called CITY OF VANCOUVER), the amount of _____
_____ Dollars (\$ _____) in lawful money of the United
States of America.

WHEREAS, the CONTRACTOR entered into a contract with CITY OF VANCOUVER
dated _____, 20____, which Contract is hereunto annexed and made a part
hereof, for accomplishment of the all contract terms for the project described as follows:

ITB #19-12: 2019 WEST CURB RAMPS

NOW, THEREFORE, the condition of this obligation is such that if the CONTRACTOR
shall promptly, truly and faithfully perform all the undertakings, covenants, terms, conditions,
and agreements of the aforesaid contract and having performed its obligations thereunder, then
this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever CONTRACTOR shall be declared by CITY OF VANCOUVER to be in
default under the Contract Documents for the project described herein, the SURETY shall
promptly remedy the default by completing the project in accordance with the Contract
Documents and the project Specifications with a contractor approved by the CITY OF
VANCOUVER. SURETY, for value received, further stipulates and agrees that all changes,
extensions of time, alterations, or additions to the terms of the Contract or Specifications for the
above described contract are within the scope of the SURETY's undertaking on this bond, and
SURETY hereby waives notice of any such change, extension of time, alteration or addition to
the terms of the contract or to the Work or to the Specifications. Any such change, extension of
time, alteration or addition to the terms of the contract or to the Work or to the Specifications
shall automatically increase the obligation of the Surety hereunder in a like amount, provided that
such increase shall not exceed twenty-five percent (25%) of the original amount of the obligation
without the consent of the Surety.

This obligation shall continue to bind the PRINCIPAL and SURETY, notwithstanding successive payments made hereunder, until the full amount of the obligation is exhausted.

SURETY shall indemnify, defend, and protect the CITY OF VANCOUVER against any claim of direct or indirect loss resulting from the failure of the CONTRACTOR (or any of the employees, subcontractors, or lower tier subcontractors of the CONTRACTOR) to faithfully perform the terms of the contract.

No right of action shall accrue on this bond to or for the use of any person or corporation other than CITY OF VANCOUVER or its heirs, executors, administrators, successors or assigns.

If more than one SURETY is on this bond, each SURETY hereby agrees that it is jointly and severally liable for obligations on this bond.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20____.

SURETY

CONTRACTOR

By:_____

By*:_____

Title:_____

Title:_____

Street Address

Street Address

City State ZIP

City State ZIP

Phone Number

Phone Number

* Must be signed by president or vice-president of Contractor.



Staff Report 041-19

TO: Mayor and City Council

FROM: Eric Holmes, City Manager

DATE: 3/25/2019
4/1/2019

SUBJECT Four Seasons South Planned Unit Development

Key Points

Approval of a planned development ordinance and approval of a preliminary plat to allow for the development of Four Seasons South Subdivision.

Strategic Plan Alignment

N/A

Present Situation

The applicant requests approval of a proposed planned development for a 70-lot single family subdivision totaling 8.47 acres in R-9 Low Density Residential & R-22 Higher Density Residential zoning. The proposal also includes a boundary line adjustment.

On February 19, 2019, a public hearing was conducted before the Hearings Examiner. On March 5, 2019, the Hearings Examiner issued findings, conclusions and recommendations. Her findings recommend that the planned development, boundary line adjustment and subdivision ordinance be approved by City Council.

Advantage(s)

- Approval will allow for additional housing units to be constructed.
- Approval will allow for flexible design with the emphasis on senior housing.
- Approval will allow for the development in an area currently served by public utilities.

Disadvantage(s)

There will be additional traffic. However, this has been reviewed and the City has determined there is adequate capacity.

Budget Impact

None

Prior Council Review

None

Action Requested

On March 25, 2019, approve the ordinance on the first reading, setting the date of second reading and public hearing for April 1, 2019.

Kristian Corbin, Associate Planner, 487-7818

ATTACHMENTS:

- ▢ Ordinance
- ▢ Staff Report 2/19/2019 Hearing
- ▢ Staff Report Exhibits 2/19/2019 Hearing
- ▢ Exhibit 9 2/19/2019 Hearing
- ▢ Exhibit 16 2/19/2019 Hearing
- ▢ Exhibit 17 2/19/2019 Hearing
- ▢ Hearings Examiner Recommendation

This staff report references the terms and conditions of the request for approval. Any document referred to herein and that is not attached may be reviewed prior to the City Council meeting in the office of the City Manager. Documents may be reviewed following scheduled Council meetings in the office of Central Records, 415 West 6th Street, Vancouver, WA. Office hours are 8:00 a.m. to 5:00 p.m., Monday through Friday.

03/25/19
04/01/19

ORDINANCE NO. M-_____

AN ORDINANCE approving the concept development plan for the Four Seasons South Planned Unit Development; and providing for severability and an effective date.

WHEREAS, on February 19, 2019, a hearing was held before the Vancouver Hearings Examiner regarding the approval of the concept development plan for the Four Seasons South Planned Unit Development.

WHEREAS, on March 5, 2019, the Vancouver Hearing Examiner recommended approval of the concept development plan for the Four Seasons South Planned Unit Development under File PRJ-156552, LUP-70974; and

WHEREAS, the concept development plan is consistent with the Comprehensive Plan and the underlying zoning of the property.

NOW, THEREFORE,

BE IT ORDAINED BY THE CITY OF VANCOUVER:

Section 1. Findings.

A. The Vancouver Hearing Examiner has found that all of the following criteria have been met, with conditions, as required by VMC 20.260.050:

1. Content. The concept plan contains all of the components required in Section 20.260.070. Compliance with all applicable standards. The proposed development and uses comply with all applicable standards of the Title, except where adjustments are

ORDINANCE - 1

being approved as part of the concept plan application, pursuant to Section 20.260.030(D)(2).

2. Architectural and site design. The proposed development demonstrates the use of innovative, aesthetic, energy-efficient and environmentally-friendly design and materials.
3. Transportation system capacity. There is either sufficient capacity in the transportation system to safely support the development proposed in all future phases or there will be adequate capacity by the time each phase of development is completed.
4. Availability of public services. There is either sufficient capacity within public services such as water supply, police and fire services, and sanitary waste and storm water disposal, to adequately serve the development proposed in all future phases, or there will be adequate capacity available by the time each phase of development is completed.
5. Protection of designated resources. City-designated resources such as historic landmarks, significant trees and sensitive natural resources are protected in compliance with the standards in this and other Titles of the VMC.
6. Compatibility with adjacent uses. The concept plan contains design, landscaping, parking, traffic management and multi-modal transportation elements that limit conflicts between the planned development and adjacent uses. If zoning districts are shifted per Section 20.260.020(C) VMC, there shall be a demonstration that the reconfiguration of uses is compatible with surrounding uses by means of appropriate setbacks, design features or other techniques.

7. Mitigation of off-site impacts. All potential off-site impacts including litter, noise, shading, glare and traffic, will be identified and mitigated to the extent practicable.

B. The information for the concept development plan has been submitted and approved, as required by VMC 20.260.070.

C. The concept development plan of the Four Seasons South Planned Unit Development is consistent with the Comprehensive Plan and the underlying zoning.

D. City Council hereby adopts the foregoing findings and the findings of the Vancouver Hearings Examiner contained in the Findings, Conclusions, and Recommendation, which are hereby incorporated by reference, as its own.

Section 2. Legal Description. The legal description of the lands referred to in this ordinance is as follows:

Lot 3 of Northwestern Home Lots, according to the Plat thereof, recorded in Volume “C” of Plats, Page 41, and Records of Clack County, Washington, located in a portion of the Northwest quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, and Clark County, Washington.

Section 3. Approval Granted. Based upon the foregoing findings, as well as the findings contained in Staff Report No. PRJ-143892/LUP-34824, which are hereby incorporated by reference, approval of the concept development plan for the Four Seasons South Planned Unit Development is hereby granted, with the conditions outlined in the Hearing Examiner’s Findings, Conclusions, and Recommendation, incorporated above by reference.

Section 4. Severability. If any provision of this ordinance or its application to any person or circumstance is held invalid, the remainder or the application of the provision to other persons or circumstances is not addicted.

Section 5. Effective Date. This ordinance shall take effect thirty15 days after passage and publication.

Read first time:

Ayes: Councilmembers

Nays: Councilmembers

Absent: Councilmembers

Read second time:

PASSED by the following vote:

Ayes: Councilmembers

Nays: Councilmembers

Absent: Councilmembers

SIGNED this _____ day of _____, 2019.

Anne McEnery-Ogle, Mayor

ORDINANCE - 4

Attest:

Natasha Ramras, City Clerk
By: Carrie Lewellen, Deputy City Clerk

Approved as to form:

E. Bronson Potter, City Attorney

ORDINANCE - 5

SUMMARY

ORDINANCE NO. _____

AN ORDINANCE approving the concept development plan for the Four Seasons South Planned Unit Development; and providing for severability and an effective date.

The full text of this ordinance will be mailed upon request. Contact Raelyn McJilton, Records Officer at 487-8711, or via www.cityofvancouver.us (Go to City Government and Public Records).



City of Vancouver • P.O. Box 1995 • Vancouver, WA 98668-1995
www.cityofvancouver.us

Staff Report and Recommendation to the Hearing Examiner
Four Seasons South PUD
PRJ-156552/LUP-70974

Report Date	February 5, 2019
Hearing Date	February 19, 2019
Proposal	A proposed Planned Development for a 70-lot single family subdivision totaling 8.47 acres in R-9 Low Density Residential & R-22 Higher Density Residential zoning. The proposal also includes a boundary line adjustment.
Location	Parcels 110250000, 110251000, 110252000 and 110235000 are located on the northeast corner of the intersection of NE 112th Avenue and NE 16th Street. The site is located in the NW Quarter of Section 27, Township 2N, Range 2E of the WM.
Applicant/Contact	Lisa Harker Four Seasons Subdivision LLC 7223 NE Hazel Dell Avenue Vancouver WA 98665
Property Owners	Kilada Walnut Village LLC PO Box 61982 Vancouver, Washington 98666 Joseph and Gayle Beaudoin 701 NE 112th Avenue Vancouver, Washington 98684
Staff	Kristian Corbin, Associate Planner Jen Patrick, Transportation Steve Ulibarri, Fire Giff Hancock, Water Eric Torgerson, Sewer Fereidoon Safdari, Stormwater Sue McNutt-Koning, Building

SEPA**Determination**

Final Determination of Non-significance

Approval**Criteria**

Planned Developments - VMC20.260.050

Boundary Line Adjustments - VMC20.310.050

Subdivision - VMC20.320.040

Staff**Recommendation**

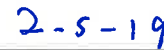
Planned Development, Preliminary Plat and Boundary Line Adjustment approval with conditions. Project conditions and/or required revisions are identified in the conclusion of this report.

RECOMMENDATION

This report to the hearing examiner is a recommendation from Community & Economic Development Department. The examiner may adopt, modify or reject this recommendation. The hearing examiner recommendation will be forwarded to City Council for a final decision.



Report Prepared By
Kristian Corbin, Associate Planner/Case Manager



Date



Greg Turner, Manager
Land Use Team



Date

BACKGROUND

Project Summary

The subject site consists of four parcels and a boundary line adjustment is proposed to divide the lot into two parcels, one .99 acres in size and the remaining three parcels consisting of a total of approximately 8.47 acres. The proposal also includes a Planned Development containing a 70-lot single-family subdivision on the 8.47 acre tract of land. The eastern rear portion of the site is zoned R-9 Lower Density Residential and western portion of the site is zoned R-22 Higher Density Residential. The applicant is proposing both attached and detached single-family dwellings units.

The original design concept of the project was to create a 70-lot single-family development for senior oriented living. However, a new off-site connection to the existing signal on NE 18th Street in association with this project will be required. In response to the required change, the applicant has altered their original design concept to allow for sale of units to all potential buyers rather than to just 55 and older. The change will result in some two story dwellings as opposed to all single-story dwellings as originally proposed. This was due to the anticipated impact of flow-through traffic along the newly proposed 115th Avenue, to mitigate the cost of developing an additional 300 linear feet of roadway and the potential loss of desirability to the 55 and older demographic due to increased traffic through the site. The applicant has provided a supplemental narrative to address amendments to the original narrative addressing the new requirements.

Access to the 70 lots will be directly to NE 16th Street which runs east and west along the southern property lines of the subject site. The site is relatively flat and contains no mapped critical areas as listed in VMC 20.740 Critical Areas Protection.

General Site Information

Zoning District	R-22, R-9 High Density Residential
Adjacent Zoning Designation	North, South, West: R-22 High Density Residential East: R-9 Low Density Residential
Comprehensive Plan Designation	UL Urban Low Density
Parcel Size	8.47 Acres
Adjacent Land Uses	North, South: Vacant East, West: Single-Family Residential
Access Roads	NE 16th Street to the south
Existing Vegetation	Trees and Grasses
Existing Structures	Sheds
Topography	Flat
Geologic Hazards	No mapping indicators
Seismic Hazard	No mapping indicators
Flood Plains	No mapping indicators
Wetlands	No mapping indicators
Archaeology	Level B – Lower Probability above 5 acres
Drainage Basin	Burnt Bridge Creek
Soils	Non-Hydric / WrB, Non-Hydric / WrF
Park Impact Fee District	District C
School Impact Fee District	Evergreen

Impacted Schools	Fircrest Elementary, Cascade Middle School, Evergreen High School
Traffic Impact Fee District	Cascade
Transportation Analysis Zone	None
Sewer District	Vancouver
Water District	Vancouver
Fire Service	Vancouver
Neighborhood Association	Fircrest

Procedural History

Activity	Case #	Date
Annexation history, Ordinance M-3299	M-3131	01-01-1995
Pre-application conference	PIR-62754 PIR-64574 PIR-69948	07-06-2017 10-12-2017 08-23-2018
Application submitted		09-28-2018
Application determined fully complete		11-16-2018
Notice of application and notice of public hearing		11-30-2018
Final DNS		01-03-2019
Hearing Date		02-19-2019

APPLICABLE REGULATIONS

Vancouver Municipal Code

VMC Chapters 11.80 Street Standards; 11.90 Transportation; 11.95 Transportation Concurrency; 14.04 Water and Sewer Use Regulations; 14.16 Water and Sewer Service Connections; 14.24 Erosion Control; 14.25 Stormwater Control; 16.04.160 Water Supply and Fire Hydrants; 16.04.150 Fire Apparatus Access; 16.04.170 through 16.04.210 Fire Protection Systems; 16.04.010 Premises Identification; 20.210 Decision Making Procedures; 20.260 Planned Development; 20.320 Subdivisions; 20.915 Impact Fees; 20.770 Tree Conservation; 20.410 Lower Density Residential Districts; 20.925 Landscaping and Open Storage; 20.945 Parking and Loading; and 20.790 State Environmental Policy Act Regulations.

Public Works Publications

General Requirements & Details for Water Main Construction

General Requirements & Details for Sewer Main Construction

Other

RCW 58.17

Manual on Uniform Traffic Control Devices

ANALYSIS

Major Issues

Staff reviewed the proposal for compliance with applicable regulations, code criteria and standards in order to determine whether all potential impacts will be mitigated by the requirements of the code. Staff's recommendation reflects review of agency and public comments received during the comment period and knowledge gained from a site visit.

Only the major issues, errors in the development proposal and/or justification for any conditions of approval are discussed below. Staff finds that all other aspects of this proposed development comply with the applicable code requirements and require no discussion in this report.

Building code review is not performed during pre-application or site plan review. Filing of building permit application with required fees and review materials is required for a building code review.

AGENCY AND PUBLIC COMMENT

Department of Ecology

A comment letter was received from the Department of Ecology dated Jan. 2, 2019 (Exhibit 10). The letter contains standards and requirements related to water quality and water resources.

Public Health

A comment was received from the State of Washington Environmental Public Health Division requesting the nearby wellhead protection area be evaluated under VMC 14.26.

Staff Response: The wellhead was reviewed by city engineering staff for water resource protection as required by VMC Chapter 14 Water Resource Protection.

FINDINGS

Land Use

20.210 Decision Making Procedures

Finding: Per VMC 20.210-1 Planned Developments 25 acres or less require a Type IV process and recommendation by the hearing examiner to the City Council for final approval. Per Table 20.210-1, preliminary subdivision (10 lots or more) require a Type III process and preliminary approval by the hearing examiner.

Per VMC 20.210.020.D, when more than one application is submitted for a given development and those applications are subject to different types of procedure, then all of the applications are subject to the highest type of procedure that applies to any of the applications.

Conclusion: The proposal was reviewed as a Type IV application which is the highest type of procedure. The proposal complies with the decision making procedures of VMC 20.210.

20.260 Planned Developments

Finding: Per VMC 20.260.030(1) Planned Developments, 25 acres or less require a Type IV process and a recommendation by the hearing examiner to the City Council for final approval.

20.260.010 Purpose

A. Flexibility. Provide a means for creating planned environments in any base zoning district through the application of flexible standards, i.e., zero-lot lines, narrower streets, and other innovative planning practices that will result well-designed, efficient and functional urban environments.

B. Efficiency. Facilitate the efficient use of land.

C. Economic feasibility. Increase economic feasibility by fostering the efficient arrangement of land use, buildings, circulation systems, open space and utilities.

D. Resource preservation. Preserve to the greatest extent possible the existing landscape features and amenities through the use of a planning procedure that can tailor the type and design of a development to a particular site.

Applicant Response: This proposal seeks to create a cohesive planned community attractive to adults 55 and over that desire to live close to live in the Four Seasons activity center in the heart of east Vancouver. The community is planned to provide single-level housing, two-car garages, well designed and finished homes with on-site open space amenities and convenient proximity to groceries, retail opportunities and health care services. The homes may be purchased by any buyer and will not be exclusively for older buyers, but the Applicant believes that the homes will be particularly attractive to older buyers seeking to downsize and live closer to urban services and amenities.

Staff Response: The applicant is proposing a planned development to accommodate specific design elements to attract the 55 and older demographic. The design requires the applicant to request the following adjustments through the planned development to applicable codes requirements: maximum lot coverage up to 75 percent for single-story homes, up to 68 percent maximum lot coverage for the two-story homes and reduction of the R-9 minimum lot size to 2,450 square feet.

Additionally, the applicant is requesting to utilize adjustments to the development standards found in VMC 20.910 Exceptions & Interpretations and VMC 20.927 Narrow Lot adjustments.

Hearing Date: February 10, 2010

Staff Name: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B. Permitted Uses.

Applicant Response: Planned development may be allowed on the subject site. Also, the applicant is allowed a 5% density bonus.

Per 20.260.020.B, single-family detached and single-family attached are permitted by right in both the R-9 and the R-22 zones.

Eighteen attached single-family residential units and 52 detached single-family units are proposed. Associated with the planned development, an adjustment is requested to the maximum lot coverage standards allowed in both the R-9 and R-22 zone.

Because the site is proposed for narrow lots and more than 50% of the lots will be provided alley access (discussed in more detail below), the base zone lot coverage is 55% on the R-9 portion and 65% on the R-22 portion of the site. This Planned Development proposal requests an adjustment to 75% lot coverage. The purpose of the lot coverage request is to accommodate the single level housing that will be attractive to buyers that are planned 55 and older community. This development will consist primarily (at least 80%) of single-level two-car-garage homes. The single level homes will include two-car garages and all living space on a single floor to provide accessibility for an aging population the requires more space on each lot. At the same time, some outside area is preserved on each lot for pleasant landscaping, without a heavy ongoing maintenance burden for the future owners.

Staff Response: Staff concurs with the applicant. The subject site is currently zoned both R-9 Lower Density Residential and R-22 Higher Density Residential. The applicant is proposing a series of 18 single-family attached units and 52 single-family detached units. In both the R-9 and R-22 residential districts, single-family detached and single-family attached (two or more) are permitted by right within planned developments per VMC 20.260.020(B)(1)(a) & VMC 20.206.020(B)(2)(a).

C. More than one base zone.

More than one base zone. When a site contains land that is in more than one zoning district, the allowed and conditional uses at the required minimum and maximum densities, if applicable, shall be proportionate to the land within the development site devoted to each zoning district. The zoning may be shifted around the site provided that the same proportion acreage of each zoning district is retained. The concept and detailed plans shall explicitly illustrate such physical re-configuration of the site and shall be used as the basis for all subsequent land use reviews.

Applicant Response: The proposal contains 4.79 acres zoned R-9 (although, as mentioned above, this parcel will be reduced to 3.79 acres via a boundary line adjustment prior to subdivision) and 4.68 acres zoned R-22. The gross site acreage after BLA will be 8.47. The minimum and maximum densities in the R-9 zone are 5.9 to 8.7. In the R-22 zone the allowed densities range from 18.1 – 22 units per acre. These are based on net density.

The proposed density related to the R-9 zoned area is 12.61 units per acre. The proposed density related to the R-22 zoned area is 13.27 units per acre.

The maximum net density allowed in the R-9 zone is 8.7 units per acres. The minimum net density allowed in the R-22 zone is 18.1 units per acre.

The minimum number of units allowed in the R-9 portion of the site is 14. The maximum number of units is 20.

In the R-22 zoned area the minimum number of units allowed is 56 and the maximum number of units allowed is 67.

For the entire proposal, the combined minimum number of units allowed is 70. The combined maximum number of units allowed is 87. The applicant proposes 70 units.

Staff Response: The applicant proposes to retain the proportionate land area for both the R-9 and R-22 zoning designations. Maximum and minimum density requirements will be discussed later in this report.

20.260.030 Approval Process

A. Elements of approval process. The two elements of the planned development approval process:

- 1. Approval of the planned development concept development plan which contains a substantial level of detail for the whole project; and*
- 2. Approval of the detailed site plan(s) to be constructed in one or more phases that provide all of the additional detail not contained in the concept plan.*

Applicant Response: Although the code indicates there two elements of the planned development approval process, 20.260.030.C, concurrent reviews, indicates an applicant may file two or more related requests concurrently. The applicant is filing for concept development plan, detailed site plan and subdivision approval.

Staff Response: The applicant has submitted a concept development plan and a detailed development plan as part of their planned development application. In addition, the applicant is requesting approval of a subdivision and boundary line adjustment. Per VMC 20.260.030(C), filing multiple applications is permitted and shall be reviewed by the procedure type of the highest level. The review for a new planned development concept plan requires a Type IV procedure which is the highest level in this application. Staff finds the proposed concurrent reviews adhere to VMC 20.260.030(C).

B. Decision-making process.

- 1. Initial approval. A new planned development concept plan shall be processed by means of a Type IV review, per 20.210 VMC, using approval criteria contained in 20.260.050 VMC. The Planning Commission shall be the initial review authority for planned developments greater than 25 acres in size and the Hearings Examiner shall be the initial review authority for planned development 25 acres or less in size. The initial reviewer shall issue a recommendation to the City Council. The City Council shall be the final authority for planned developments.*

Applicant Response: VMC 20.260.030.B describes the decisions-making process. The applicant is aware of the decision-making process. No further response is required.

Staff Response: As previously mentioned, a new development concept plan shall be processed by means of a Type IV review. Planned developments less than 25 acres in size shall be initially reviewed by the hearing examiners then subsequently the city council for final authority. The public hearing is set for Feb. 19, 2019, and City Council hearing is set for March 25, 2019.

C. Concurrent reviews. *An applicant may file two or more related requests concurrently. These concurrent reviews will be reviewed by the procedure type of the higher/highest level, that is, if one review is subject to a Type III process and the other a Type II process, both will be subject to a Type III review process.*

Applicant Response: As indicated above, the requested action in approval of a concept development plan, detail site plan and subdivision approval concurrently. The proposal includes a planned development, planned development require a Type IV review process. Therefore, the entire application is subject to the Type IV review standards.

Staff Response: As previously mentioned, staff finds the proposed concurrent reviews adhere to VMC 20.260.030(C).

D. Adjustments. *Adjustments to numerical development standards in the underlying zoning district shall meet the criteria contained in Section 20.260.050(B) VMC below in lieu of requirements for variances contained in Chapter 20.290 VMC. The exception to this is a request to exceed the maximum height permitted in the underlying zone, which will require a concurrent variance request per 20.290 VMC.*

Applicant Response: The applicant is requesting an adjustment to the maximum lot coverage standard. Under the narrow lot standards, the maximum allowed lot coverage is 55% in the R-9 zone and 65% in the R-22 zone. The applicant is requesting maximum lot coverage of 75% for the entire development. This is addressed fully in response to 20.260.050(B).

The applicant is also requesting an adjustment to the minimum required lot area in the R-9 portion of the proposal.

Staff Response: As previously mentioned, the applicant is requesting two adjustments under the planned development provisions. The first is an increase in maximum allowable lot coverage from 55 percent (R-9 narrow lot VMC 20.927.050(B)) and 65 percent (R-22 narrow lot VMC 20.927.050(B)) to 75 percent for single-story homes and 68 percent for two-story homes. The applicant is limiting the two-story homes to only 20 percent of the total lots to accommodate for marketing trends and architectural diversity.

Provide a note on the final plat indicating which lots will be dedicated for two-story dwelling units.

The second adjustment is a reduction in minimum allowable lot sizes in the R-9 zoning designation from 5,000 square feet to 2,400 square feet.

Staff has no issues with the requested adjustments. As previously mentioned, the purpose of these adjustments is to primarily attract the 55 and older demographic. The proposal is consistent

with the vision of the 112th Corridor Subarea Plan. The plan identifies goals for a diversity of housing types in more urban areas for a growing demographically diverse population.

Time Limits 20.260.040

A. Time limit on filing of detailed development plan. Within two years after the date that the conceptual development plan is approved, the applicant shall prepare and file with the planning official a detailed development plan to be reviewed pursuant to 20.260.030(B)(1) VMC. In the case of phased development, as governed by Subsection (C) below, this provision shall apply to the first phase of the development.

Applicant Response: The applicant is aware of the time limits associated with the planned development process. No comments from the Applicant are required at this time.

Staff Response: The applicant is not proposing phasing or extensions with the application.

20.260.050 Approval Criteria

A. Concept development plan approval criteria. To receive approval for a planned development, the applicant shall demonstrate compliance with all of the following criteria:

1. Content. The concept plan contains all of the components required in Section 20.260.070. The proposed development and uses comply with all applicable standards of the Title, except where adjustments are being approved as part of the concept plan application, pursuant to Section 20.260.030 (D)(2).

Applicant Response: Compliance with the provisions of 20.260.070 is addressed under the response to that subsection.

Staff Response: The applicant submitted a Concept Development Plan with the application. Elements of this plan were reviewed against VMC 20.260.070. Further analysis of this plan will be addressed throughout this report.

2. Architectural and site design. The proposed development demonstrates the use of innovative, aesthetic, energy-efficient and environmentally-friendly architectural and site design.

Applicant Response: Within the application materials at Section 10, the applicant has submitted detailed drawings addressing the architecture and site design.

Staff Response: The subject site is located in the 112th Avenue Corridor Subarea plan which contains design guidelines and standards. This will be discussed later in this report.

3. Transportation system capacity. There is either sufficient capacity in the transportation system to safely support the development proposed in all future phases or there will be adequate capacity by the time each phase of development is completed.

Applicant Response: The applicant has submitted a traffic study (Exhibit 17) prepared by Kittelson and Associate, Inc. addressing trip generation, trip distribution and traffic impacts prepared pursuant to City-required traffic study standards.

Staff Response: A traffic study dated Oct. 23, 2018, was submitted to the City of Vancouver Transportation Department for review. Comments on the traffic study are listed later in this report addressing this requirement.

4. Availability of public services. There is either sufficient capacity within public services such as water supply, police and fire services, and sanitary waste and storm water disposal, to adequately serve the development proposed in all future phases, or there will be adequate capacity available by the time each phase of development is completed.

Applicant Response: The pre-application conference report dated August. 23, 2018, indicated public utilities were available or could be extended to the site. Stormwater facilities will be required to meet the standards contained in VMC 14.25.

Staff Response: The proposal was reviewed by the engineering department for public services availability. Their comments are listed later in this report addressing this requirement.

5. Protection of designated resources. Protection of designated resources. City-designated resources such as historic landmarks, significant trees and sensitive natural resources are protected in compliance with the standards in this and other Titles of the VMC.

Applicant Response: The pre-application report indicated no resources designated for protection on the project site. However, although the site is not within an area of high probability of encountering artifact, an archaeological predetermination is required as the site contains more than 5 acres.

Staff Response: There were no mapped critical areas located on the subject site. However, per VMC 20.710.020(B)(2), an archaeological predetermination was required. Findings listed in this report were inconclusive. Additional information on this report is addressed later in this report under 20.710 Archaeological Resource Protection.

6. Compatibility with adjacent uses. The concept plan contains design, landscaping, parking/traffic management and multi-modal transportation elements that limit conflicts between the planned development and adjacent uses. If zoning districts are shifted per Section 20.260.020(C) VMC, there shall be a demonstration that the reconfiguration of uses is compatible with surrounding uses by means of appropriate setbacks, design features or other techniques.

Applicant Response: To the east, the land use is residential. One tier of the proposed residential development abuts the existing residential. To the south the land uses are single-family residential, the city of Vancouver water station and a vacant tract. To the west is NE 112th Avenue. This major arterial separates the proposal from the land to the west, to the north is the BPA right of way. This approximately 340-foot-wide right of way separates the proposed development from the higher density residential zoned to the north. The proposed use is single-family residential.

Staff Response: The subject site is surrounded by single-family detached uses to the east and south. Adjacent to the north is farmland located within a BPA easement and to the west is 112th

Avenue corridor separating the subject site from undeveloped land zoned residential. Based on the surrounding uses, zoning and comprehensive plan designation, the proposed development is compatible with the adjacent uses.

7. Mitigation of off-site impacts. All potential off-site impacts including litter, noise, shading, glare and traffic, will be identified and mitigated to the extent practicable.

Applicant Response: The proposal is for single-family residential development. Litter, noise, shading glare and traffic are not generally off-site impacts associated with single-family dwellings.

The proposal is required to meet concurrency standards, including demonstration of compliance with the City transportation concurrency and safety standards which is established in the Applicant's traffic study. Areas for solid waste disposal and recycling collection will be provided. Access for collection vehicle access will also be provided.

The proposed structures will be single level. Significant shading is not anticipated. Related to glare, lighting is anticipated to be typical of a residential neighborhood.

Staff Response: The development will be subject to applicable building codes, routine site inspections during construction and VMC 8.20 Nuisances.

B. Adjustment approval criteria. Adjustments to numerical development standards may be processed as part of the request for concept if the applicant can demonstrate compliance with all of the following approval criteria:

1. The adjustment(s) is warranted given site conditions and/or characteristics of the design.
2. The benefits accruing from the implementation of the adjustment outweigh any potential adverse impacts.
3. Any impacts resulting from the adjustment are mitigated to the extent practical.

Applicant Response: The applicant requests two adjustments. The first is to the maximum lot coverage standard. The second is to the minimum lot area requirement.

The requested adjustment would increase lot coverage from the base zone amount to 75% to provide for sufficient ground-floor building area for single-level dwellings and to provide additional amenities that will enhance the community. Specifically, a portion of the increased lot coverage will be allocated to inclusion of front porches which are allowed under City code in the front yard setback area where homes are alley loaded. This supplemental narrative includes an exhibit showing a typical plan view and how the porch will be incorporated into the building and community design.

There are two base zoning districts included in the proposed Planned Development, R-9 and R-22. Both zoning districts have a maximum lot coverage of 50% but both are also modified by VMC 20.927.050 to allow 60% lot coverage as of right where more than 50% of the proposed homes on narrow lots will be served by alleyways. More than 50% of the proposed lots will be accessed via alleys, so the applicable base lot coverage is 60%. The applicant is seeking 75% lot coverage to accommodate single-level primarily detached homes on narrow lots.

The site design is based on meeting the minimum allowable density (70 lots) on the combined site (R-9 & R-22) on smaller lots and targeting the underserved market segment for single-level homes for entry level buyers and/or homes for downsizing baby boomers. As can be seen on the proposed preliminary plat, lot sizes vary from 2450 square feet to 3400-3800 square feet. These lot sizes will accommodate a home for single level living with a two-car garage and three bedrooms, but only at 70% to 75% lot coverage. Conditioned living space for a three bedroom home will typically be about 1550-2260 square feet (average of around 1800) and a two-car garage (necessary, we believe, due to the location of the property) will be approximately 460 square feet. Thus, the combined ground floor area for a three bedroom, single level home is 2200 square feet. Because the lots vary between 2450 to around 3500, 75% lot coverage will allow for around 2000 square feet buildings, including garages, which allows for a reasonable home design. Finally, the Applicant also wants to include front porches on the alley load lots as an additional community amenity and to create character and livability and the front porches will count against allowable lot coverage.

Because the Applicant is seeking to both meeting minimum density and provide housing in an underserved market segment, the adjustment is warranted to accommodate the proposed community design.

The use of maximum lot coverage percentages in the zoning code is interesting in light of minimum and maximum lot dimensions, densities and setbacks. It is an issue that is not addressed in the City's narrow lot code but probably should be. More affordable housing for both those entering the housing market for the first time and for those families downsizing from larger homes is lacking in Vancouver. In this case, higher lot coverage will allow for a lower price point in exchange for smaller individual yards.

Through the Planned Development ordinance, we are proposing to build homes with smaller yards but more community open space and off-site guest parking. The proposed development includes 10% open space on three separate tracts and a trail tract that provides access through the site to the BPA right of way on the north side of the development site. The project also proposes off-site guest parking in three separate areas and significant opportunities for on-street parking in front of homes because of the alley-load design.

The combination of community open space, off-site parking and homes with single-level living, smaller yards and 2-car garages outweighs the proposed increase in lot coverage from 60% to 75%. 75% would be a maximum. In most cases we believe that lot coverage will be between 68%-72%. All homes will still meet all required setbacks and heights will be limited due to the single level living design.

As noted above, the community design includes significant open space and parking and will meet all setback requirements under the code. The goal of increasing lot coverage is to build homes for single level living that includes a similar level of functionality to traditional two-level homes, and to do so on smaller, more urban lots. In this context, the impact of smaller yards is mitigated by including more community space and parking. The benefit is a housing product in very short supply in the City of Vancouver.

Minimum lot area standard adjustment request

The minimum lot area standard in the R-9 zone is 5,000 square feet. The minimum lot area standard in the R-22 zone is 1,500 square feet. The site contains 3.79 gross acres of R-9 zoned land and 4.68 gross acres of R-22 zoned land.

The proposed lots range from 2,450 square feet to 3,858 square feet. The average lot area is 2,881.34 square feet. The applicant is requesting the minimum lot area required be reduced to 2,400 square feet.

The adjustment is warranted as the average lot areas within the proposal exceed the blended average minimum lot area requirements to create a cohesive community design for a 55 and older community.

The proposal is not anticipated to have any adverse impacts. The total number of residential units will be less than the maximum number of units allowed by the current zoning districts.

The required setbacks of the underlying zones will be met. Storm drainage will be addressed. All required utilities and facilities will be provided. The residential density is within the allowed range. Parking and landscaping standards will be met.

The proposal allows for an innovative approach to single-family residential development.

Staff Response: Staff finds the approval criteria have been met. The requested adjustment is warranted given the characteristics of the design concept is to attract the 55 and older demographic. This aligns with the intent of the 112th Corridor Subarea design guidelines which emphasize a mixture of housing types that accommodate the area's demographic diversity.

The proposal does not appear to impact the general, health safety and welfare of the area and as previously mentioned, is consistent with the City of Vancouver Comprehensive plan.

C. Conditions of approval. The review authority shall impose any conditions of approval necessary to mitigate potentially adverse impacts on surrounding properties to the greatest extent practicable.

Applicant Response: The applicant recognizes the review authority can impose conditions necessary to address potentially adverse impacts. However, as indicated above, no adverse impacts are anticipated.

Staff Response: Staff recommends conditions of approval that are listed at the end of this report.

D. Detailed site plan approval criteria. During the site plan review process, the Planning Official shall approve the detailed development plan for one or more phases of the development upon finding that the final plan conforms to the approved conceptual development plan, including all conditions of approval, unless the modification of the concept plan is sought concurrently as described in 20.260.030 (C)(6) VMC.

Applicant Response: The applicant requests concept development plan approval, detailed site plan approval of the entire development and preliminary land division approval as allowed by 20.260.030.D.

Staff Response: The applicant is not proposing any phasing for this project.

20.260.060 Development Standards

A. Minimum development size. There shall be no minimum site size for any type of planned development.

Applicant Response: The total post BLA site area is 8.47 acres.

Staff Response: The applicant is proposing a planned development for a tract of land 8.47 acres in size.

B. Applicability of base zone development standards. The provisions of the base zone are applicable as follows. When the zoning districts within the planned development have been shifted as permitted in Section 20.260.020 (C) VMC, the applicable development standards for the underlying zones shall shift accordingly.

1. *Lot dimensional standards:* The minimum lot depth and lot width standards shall not apply.

Applicant Response: No response required.

Staff Response: Though not required, the applicant is proposing adherence to the Narrow Lot Development standards VMC 20.927 for this development.

2. *Lot coverage:* The site coverage provisions of the base zone shall apply.

Applicant Response: The proposal has two zoning designations. The western portion is zoned R-22 and the eastern portion R-9. In each zone, the maximum lot coverage allowed is 50% (Tables 20.410.050-1 and 20.420.050-1).

The proposal is also subject to the narrow lot standards. Section 20.927.050, incentives for providing alleys states any development subject to this chapter which provides alley access to at least 50% of the total number of lots shall qualify for the following modifications to development standards:

- In lower density residential districts, maximum lot coverage shall be 55%.
- In higher density residential districts, maximum lot coverage shall be 65%.

The proposal provides alley access to 48 of the proposed 70 lots. This exceeds the 50% criterion.

Staff Response: The base zoning allows for 50 percent lot coverage for both the R-9 and R-22 residential zoning districts. Through the narrow lot incentives for providing alleys (VMC 20.927.050(B)), maximum lot coverage can be increased to 55 percent for lower density residential districts and 65 percent for higher density residential. As previously mentioned, the applicant is requesting the following adjustment through the Planned Development to the lot coverage: 75 percent for single-story homes and 68 percent for two-story homes with a limitation on the two-story homes to only 20 percent of the total lots.

3. Setbacks:

- a. *Front and rear yard setbacks for structures at the perimeter of the project shall be the same as required by the base zone except when an adjustment is approved, per Section 20.260.030(D).*

Applicant Response: Per table 20.410.050-1, the minimum front yard setback in the R-9 zone is 10 feet, except for garages/carports which required 18 feet. The rear yard setback is 5 feet.

Per table 20.420.050-1, the minimum front yard setback in the R-22 zone is 10 feet, except for garages/carports which required 18 feet. The rear yard setback is 0 feet or 5 feet.

The site is also subject to narrow lot standards. Under incentives for alleys, at 20.927.050(F)(2) the code allows the minimum rear yard setback from edge of alley pavement to garage or carport may be either 4 feet or at least 18 feet. Lots with alley access will have 4-foot rear yard setbacks. Lots without alley access will have 5-foot rear yard setbacks.

Lots with the garage fronting public street will have the garages setback 18 feet from the right of way. The minimum front setback for house is 10 feet in the R-9 and R-22 zones. The Applicant anticipates using the setback exception provided for in VMC 20.927.050(F)(3), so that front porches can be integrated into the building and community design.

Staff Response: The applicant is proposing to utilize incentive based adjustments to the setback requirements as listed in VMC 20.927.050 Narrow Lot Developments and VMC 20.910.050 Zero Lot Line Development. More specifically the incentives sought are for porch allowance of a six-foot encroachment into the front yard setback (20.927.050(F)(3)), zero lot lines (20.910.050), and a four-foot rear yard setback from the edge of alleys (20.927.050(F)(2)). All other setback requirements will adhere to the development standards of the underlying zoning.

- b. *The side yard setback provisions shall not apply except that all detached structures shall meet the City's adopted building code requirements for type of construction.*

Applicant Response: The project incorporates the zero lot line provisions contained in 20.910.050. 20.910.050(A) states the minimum setback on the adjacent lot to the zero-setbacks side yard lot shall be either zero or 5 feet. The proposal will meet the requirement of that code section by recording the required easements and covenants and incorporating the required building design provisions.

Staff Response: As mentioned by the applicant, the setbacks will adhere to the VMC 20.910.050 Zero Lot Line requirements.

- c. *Front yard and rear yard setback requirements in the base zone setback shall not apply to structures on the interior of the project except that any garage facing a street shall be set back a minimum of 18 feet from the front or side street property line.*

Applicant Response: All buildings will meet the front and rear yard setback standards as modified by the narrow lots standards (including allowance of front-porch encroachment into the setback) and the zero lot line standards.

Staff Response: The applicant is permitted to utilize the narrow lot development setback requirements as listed in VMC 20.927.

- d. All buildings will meet the front and rear yard setback standards as modified pursuant to this Chapter, except for maximum height for which a variance shall be sought, as governed by Chapter 20.290 VMC.*

Applicant Response: The minimum lot area standards apply unless modified by an adjustment. The minimum lot area requirement in the R-9 zone is 5,000 square feet. The minimum lot area standard in the R-22 zone is 1,500 square feet. The applicant requests an adjustment under the planned development process.

Staff Response: The applicant is not proposing any adjustments to the height requirements of the base zone therefore, no variance is required for the requested adjustments. As previously mentioned, the applicant is requesting adjustments to overall lot coverage and minimum lot size for the R-9 zoned portion of the site and to allow for 2,400-square-foot lots. Staff has no issues with the requests. The incentive for using alleys allows for greater lot coverage above what is permitted in the base zoning (VMC 20.927.050). Additionally, the subject site is located within the 112th Corridor Subarea Plan Design Guidelines. As part of the concept of the plan, there is an emphasis on a mixture of housing types that accommodate demographic diversity (*B 112th Corridor Concept pg. 6*) and the encouragement of street-oriented developments (*C Site Planning & Amenities [C.1 Building Location & Orientation] pg. 8*). The request meets the design concept, intent and vision of the 112th Corridor Subarea Plan. Buildings adjacent to the proposed alleys are oriented towards the street and lot design is proposed to attract a specific demographic. Staff does not foresee any conflicts with the adjustment requests that would jeopardize the general health, safety and welfare of the immediate area.

C. Common open space. In exchange for the approval of higher residential densities, smaller lots and relaxed development standards, the developer of a planned development is required to provide common open space for the active and passive recreational activities of residents, employees and visitors. Such space will be aggregated wherever feasible and shall consist of a combination of landscaped and paved (hard-scraped) areas. Such common open space shall include some combination of the following: plazas, arbors, sitting areas, picnic areas, playing fields and trails to accommodate a variety of active and passive activities and promote visual interest.

- In planned developments, the following requirements shall apply.
 - a. At least 10 percent of the gross area of the site must be devoted to such open space. Such space must be fully accessible to the residents, employees, visitors and/or other users of the site. Reduction of this standard in PDs of two acres or more is prohibited. A reduction of this standard in PDs of less than two acres is subject to an adjustment per Section 20.260.030(D) VMC using approval criteria in Section 20.260.050(B) VMC.

Applicant Response: The site has a gross area of 8.47 acres. Therefore, 0.847 acres must be open space.

Staff Response: The applicant is proposing three open space tracts that will be accessible to the residents of the proposed development. The applicant has dedicated a total land area of 50,506 square feet for the open space on an 8.47 acre project area. This totals 13.6 percent of the gross area devoted to open space meeting the requirement of this section.

- b. Fenced yards associated with buildings immediately adjacent to designated open space and landscaping in parking lots shall not count toward the total requirement.
- c. Environmentally-constrained land within the planned development, including wetlands, geologically hazardous areas, sensitive wildlife habitats, pursuant to Section 20.740 VMC or native vegetation and healthy soil preservation pursuant to 20.770 VMC or stormwater facilities pursuant to Chapter 14.25 VMC; may be used to meet up to 50 percent of the total requirement specified in Subsection (a) above, provided that these areas are not fenced and are either accessible to pedestrians to the extent practical or are visually accessible from adjacent and adjoining common open space.

Applicant Response: 0.849 acres of open space are incorporated into the design.

Staff Response: Based on information taken from county data, there are no mapped areas that contain environmental constraints within the subject site as listed in VMC 20.740 Critical Areas or 20.770 Tree, Vegetation, and Soil conservation. A slope easement was granted by the City of Vancouver on the west side of the site adjacent to 112th Avenue (Exhibit 12). The land area of this easement is approximately 6,206 square feet. The area of this easement is permitted to be removed from the density calculations per VMC 20.150.

- The common open space designated to meet this requirement shall be permanently maintained by and conveyed to one of the following:
 - a. A homeowners' or property owners' association as regulated by State law.
 - b. A public agency that agrees to maintain the common open space and any buildings, structures or improvements placed within it.

Applicant Response: The open space, trail tract and front yards of each home will be maintained by the homeowners' association.

Staff Response: A condition of approval has been added requiring the following note to be placed on the final plat **"Home Owner Association is responsible for maintenance of all open space tracts listed on this plat."**

- The applicant may not seek a variance or adjustment to reduce the minimum open space requirement specified in Subsection (2)(a) above.

Applicant Response: The applicant is not seeking a variance or adjustment to reduce the minimum open space requirements.

Staff Response: The applicant did not request application variance or adjustment to the minimum open space requirement.

- The open space created under this provision is not subject to the Park Impact Fee (PIF) credit unless so authorized by the Vancouver-Clark Parks Department.

Applicant Response: The applicant is aware of this provision and has not requested the City of Vancouver Parks and Recreation Department to authorize Park Impact Fee Credits.

Staff Response: The applicant will be required to pay impacts fees at issuance of building permits.

20.310 Boundary Adjustment

Finding: In addition to the Planned Development and Subdivision, the applicant has submitted for boundary line adjustment approval. This was review for compliance with the terms and requirements of VMC 20.310 as listed below.

20.310.030 Approval Process

- Decision-making process. Boundary adjustments shall be reviewed by means of a Type I procedure.
- Time limit for recording. A legal description of the newly-configured lots approved by the planning official shall be recorded with the Clark County Auditor within 90 days of the date of the written decision, unless a longer time period is specified in the decision.
- Extension. By means of a Type I procedure the applicant may request an extension of the recording date for a period not to exceed one-year provided that no changes are made from the original approval.

20.310.050 Approval Criteria

The planning official shall approve, approve with conditions or deny a request for a boundary adjustment in writing based on findings addressing all of the following criteria:

1. No additional parcel(s) shall be created by the boundary adjustment;

Finding: The request is to adjust the existing property lines between PID 110252000 and PID 110235000. The proposal will not create any additional parcels.

2. The lot and location of any structure(s) on the lots shall comply with the minimum density, dimensional and area requirements of the zoning district, unless a variance is sought in conjunction with the request per the requirements of Chapter 20.290. Per VMC 20.410.040(C)(1)(a), lots developed or approved before March 11, 2004, are exempt from the requirement for minimum density/maximum lot size. However, if a site is completely redeveloped the new development must comply with the minimum density requirements contained in Table 20.410.010-1.

Finding: The subject parcels were legally created prior to 1969 when the State Subdivision Law (RCW 58) went into effect.

The adjusted parcels are zoned R-9 (Low Density Residential) and R-22 (Higher Density Residential). The R-9 zoning district requires a minimum lot size of 5,000 square feet, maximum lot size of 7,400 square feet, a minimum lot width of 45 feet and a minimum lot depth of 65 feet.

The R-22 zoning district requires a minimum lot size of 1,500 square feet, no maximum lot size, a minimum lot width of 20 feet and minimum lot depth of 50 feet.

Since the lots were created before March 11, 2004, they are exempt from the maximum lot size requirement.

3. Legal access shall be provided to each of the lots.

Finding: Lot 11025200 and Lot 110235000 currently have access from NE 16th Street.

20.320 Subdivision

Finding: Per VMC 20.320.020.A.2, the hearing examiner shall approve, approve with conditions or deny an application for subdivision preliminary plat by means of a Type III procedure using approval criteria contained in VMC 20.320.040.

Phasing VMC 20.320.020.C. The developer may develop the subdivision in phases. Any phasing proposal shall be submitted with application materials for the preliminary plat and approved by the review authority, except that the planning official may approve a phasing plan for an approved short subdivision or subdivision by means of a Type I procedure, governed by 20.210.040 VMC Type I Application upon finding that:

- The phasing plan includes all land identified within the legal notice of the approval hearing;
- The sequence of phased development is identified by map;
- Each phase shall constitute an independent project meeting all of the requirements for density, open space, public and private infrastructure, landscaping, pedestrian and vehicle circulation etc.; and
- The Director of Public Works and Transportation Manager have approved the necessary documents to determine that all streets, sanitary and storm sewers, water and other public improvements, including but not limited to drainage improvements, and erosion control measure are assured.

Staff is agreeable to look at future phasing subject to the above approval criteria if requested. At this time, no such request has been made by the applicant.

Approval Criteria Per 20.320.040 VMC, to receive approval of a preliminary subdivision, the applicant must demonstrate compliance with the following criteria:

Public Facilities Provision

Approved provisions to the extent necessary to mitigate an impact of the development have been made for transportation, water, storm drainage, erosion control and sanitary sewage disposal methods that are consistent with the city's current ordinances, standards and plans, where applicable.

Finding: All utilities required for development are available to the site and will be extended as required for connection.

Proposed Improvements

Appropriate provisions have been made for proposed streets, alley and public ways, utilities and other improvements that are consistent with the city's current ordinances, standards and plans, and Department of Health and/or Washington State Department of Transportation standards and plans, where applicable.

Finding: The frontage along 112th Avenue and NE 16th Street will be improved with detached sidewalks, planter strips and street trees. The new internal streets will be constructed to City of Vancouver standards. Utilities and stormwater management provisions will be extended through the site. Existing sewer and water systems have sufficient capacity to serve this development and stormwater will be managed in accordance with adopted codes and regulations.

Open Space Dedications

Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for open space, parks, schools, dedications, easements and reservations.

Finding: Provisions for the acquisition and maintenance of parks, open space, and schools will be provided with the payment of school and parking impact fees, paid upon at the issuance of building permits. The proposed dedications for right of way and utility easements are indicated on the plans. The applicant is proposing three open space tracts and a trail system that connects NE 16th Street to the site. The applicant will be required to provide any necessary easements for sidewalks, streetlights and utility extensions prior to final plat approval.

Physical Characteristics

The design of the proposed short subdivision or subdivision-site has taken into consideration the physical features of the site including but not limited to topography, soil conditions, susceptibility to flooding, inundation or swamp conditions, steep slopes or unique natural features such as wildlife habitat or wetlands.

Finding: The project will be developed on native soils. The area is relatively flat with no mapped environmental critical areas as listed in VMC 20.740 Critical Areas Protection.

Re-platting of existing subdivisions

When re-platting an existing subdivision, the short subdivision shall comply with all of the terms and conditions of the existing subdivision's conditions of approval.

Finding: There was no prior subdivision associated with the subject site.

Compliance with all requirements of this title

The proposed short subdivision or subdivision complies with all applicable requirements of this title unless modified through the approval.

Finding: The provisions of this title have been met or will be met with proposed mitigation and with conditions of approval imposed on the approval of this request.

Compliance with state requirements

The proposed short subdivision or subdivision complies with the requirements of RCW 58.17.110.

Finding: The comprehensive plan identifies goals and policies that guide development in the City of Vancouver for the benefit of the public health, safety and general welfare. The proposed plat complies with these goals and policies by providing new housing units to a large segment of the population at anticipated densities; by providing the necessary infrastructure to serve the development, including the payment of impact fees for schools, parks and transportation; and by demonstrating all applicable laws can be complied with as conditioned.

The proposed plat will assist in the expansion of the city's housing supply; it will facilitate development in an area that is developed and has urban services; it will implement city goals promoting development while limiting urban sprawl.

This project complies with RCW 58.17.110.

Evergreen School District

The Evergreen School District received notification of the proposed development to assist in the forecasting growth within each school from the SEPA application dated Sept. 28, 2018.

Evergreen School District provides bus service to the area. School bus services are provided at the following locations as provided by Evergreen School District website:

Fircrest Elementary School – 11906 NE 16th Street – Bus #202

Cascade Middle School – 11900 NE 18th Street – Bus #121

Evergreen High School – 11022 NE 18th Street – Bus #128

Street improvement standards. *All proposed street and street improvements shall comply with the provisions of Title 11 and approved transportation standards details on file with Transportation Services.*

As stated in the Transportation section of this report, proposed street improvements will comply with the provisions of Title 11, subject to the conditions of approval.

Blocks. *The length, width and shape of blocks shall be designed with due regard to providing adequate building sites for the use contemplated; consideration of the needs for convenient access, circulation, control, safety of motor vehicular, bicycle and pedestrian traffic and recognition of limitations and opportunities of topography.*

The proposed blocks comply with these limits.

Blocks – sizes. *Blocks shall not exceed 1,300 feet in length between street lines, except blocks adjacent to arterial streets or unless a previous adjacent layout or topographical condition justifies variation. The recommended minimum distance between intersections of arterial streets in 1,800 feet. Minimum length of a block shall not be less than 180 feet.*

The proposed blocks comply with these limits.

Easements – utility lines. *Easements for sewers, drainage, water lines, electric lines or other public use utilities shall be provided. The size and location of the easement shall be reviewed and approved by the appropriate utility provider.*

All water, storm and sanitary sewer lines constructed within the public right of way do not require easements. However, if these lines, hydrants, water meters or other utilities are constructed outside the public right of way, dedication or easements will be required prior to final plat approval.

Watercourse. *If a subdivision is traversed by watercourse, such as a drainage way, channel or stream, there shall be provided a stormwater easement for the widths of the watercourse plus 15 feet on each side of the watercourse. Street or parkways parallel to a major watercourse may be required.*

No watercourses traverse the property.

Pedestrian/bicycle way in and through residential subdivisions. *In blocks over 800 feet in length, a pedestrian/bicycle way with a minimum width of 16 feet shall be required through the middle of the block when required by the Transportation Manager for public convenience and safety; 12 feet of the 16-foot corridor shall be paved in a durable material. If unusual conditions require blocks longer than 1,200 feet in length, two pedestrian/bicycle ways shall be required. When required by the Transportation Manager for public convenience and safety, pedestrian ways.*

There are no proposed blocks that exceed over 800 feet in length.

Flag lots. *Flag lots may be permitted, provided that the minimum width of the flag stem is 15 feet for a single lot and 20 feet for a shared flag access. No more than four lots may be accessed from a single flag stem.*

The applicant is not proposing any flag lots.

Lots side lines. *Sides lines, as far as practical, shall run at a right angles to the street on which the lot faces.*

Side lot lines run at right angles to adjacent existing streets and proposed.

Lot frontage. *With the exception of flag lots, all lots shall abut on a public or private street with a minimum frontage of not less than 20 feet.*

All lots have at least 20 feet of frontage.

Lot depth and setbacks. *Lots fronting or accessing on primary or secondary arterials shall be avoided when possible. If lots front on arterials, the lots shall have an average minimum depth of 100 feet.*

The subject site fronts NE 16th Street, which is a local access. None of the proposed lots have frontage along arterials.

Parks and playgrounds. *The review authority shall see that appropriate provision is made for parks and playground to serve the proposed subdivision.*

Park impact fees, assessed for each new residence at the time of building permits, are to be used for the acquisition of new parklands and improvements to existing parks.

Existing trees. *All subdivision developments shall comply with the tree and vegetation management provisions contained in Chapter 20.770 VMC Tree Conservation.*

The proposal complies with the tree ordinance as conditioned in this report.

Public Improvements. *Public improvements, which are installed by the developer either as a requirement of this approval or at his own option, shall conform to the requirements, improvement standards, specifications, inspections and procedures of Title 20.*

The applicant has submitted preliminary utility plans for public improvements. These have been reviewed and noted with necessary corrections. Civil plans will be required to be submitted for review, approval and construction prior to recording the final plat.

20.410 Lower Density Residential

Finding: Per table 20.410.030-1, detached single-family dwellings and attached single-family dwellings are permitted within R-9 zoning districts in Planned Developments. The base zoning minimum lot size is 5,000 square feet; the maximum is 7,400. The applicant is requesting an adjustment to the minimum lot size which is permitted under VMC 20.260.050(B) so long as compliance to the approval criteria is demonstrated. As previously mentioned in this report, the applicant is requesting the minimum lot area required be reduced to 2,400 square feet to create a design to attract a 55 and older population.

Staff has no issues with the request to reduce the minimum lot size to 2,400 square feet. As previously mentioned, the proposal meets elements of the 112th Corridor Subarea Plan vision. More specifically, it meets planning for a mixture of housing for a diverse demographic and development orientation towards the street as the development utilizes alleyways.

Conclusion: The proposal meets the requirements of this section.

20.420 Higher Density Residential

Finding: Per table 20.420.030-1 attached single-family dwellings are permitted provided the minimum required residential density is met on an overall project basis.

20.420.040 Minimum and Maximum Densities

Finding: The site carries two zoning designations; R-9 and R-22. Allowed net density in the R-9 district ranges between 5.9 to 8.7 units per acre. The allowed net density in the R-22 is 18.1 to 22 units per acre. Net lot area excludes public and private streets, stormwater facilities and unbuildable critical areas (slopes). As noted in the table below, the combined maximum number of units allowed on this site is 96, while the minimum required is 70. The proposal is for 70 units which are all single-family dwellings.

Zone	Total Net Area	Minimum Units Required	Maximum Units Allowed
R-9	2.30 (100,325 sf)	14	20
R-22	3.09 (134,733 sf)	56	68
Required		70	96

The density proposed falls within the acceptable range of minimum 70 units; maximum units of 96.

20.420.050 Development Standards

Finding: Development Standards are listed in the table below for the R-9 and R22 zoning districts.

Standard	R-9	R-22
Minimum Lot Size	5,000 sf	1,500 sf*
Maximum Lot Coverage	50percent	50percent
Minimum Lot width	45 feet	20 feet
Minimum Lot Depth	65 feet	50 feet
<i>Minimum Setbacks</i>		
Front Yard	10 feet	10 feet
Rear Yard	5 feet	0 feet** / 5 feet
Side Yard	0 feet* / 5 feet**	0 feet / 5 feet
Garage/carport from public/private street R.O.W or sidewalk easement	18 feet	18 feet***
Maximum Height	35 feet	50 feet
Minimum Landscaping Requirements (percentage of total net area)	10percent	10percent

R-9

* Subject to VMC 20.910.050 Zero Lot Line Development

** For each additional 10 feet of building height, or fraction thereof, over 25 feet, add 2 feet to the setback to a maximum of 10 feet on each side or rear yard.

R-22

* Provided the required residential density is met on an overall project basis.

** See requirements for zero lot line developments pursuant to Section 20.810.050 VMC.

*** There must be a minimum of 20' maneuvering space from entrance edge of garage/carport to approved edge of alley

The R-9 lot sizes range from 2,450 square feet to 3,800 square feet; the multi-family lots each exceed 1,500 square feet. As previously mentioned, the applicant is requesting an adjustment to the minimum allowable lot size in the R-9 via a Planned Development. Justification for this request is listed in that section of this report. Staff has no issues with this request.

Lot width and depths requirements do not apply for Planned Developments per VMC 20.260.060. The applicant proposes to adhere to VMC 20.927 Narrow Lot Developments criteria. All lots have a proposed depth of 70 feet or greater.

Setbacks requirements for each lot will be reviewed for compliance at the time of building permits review. The applicant has shown the ability to meet the required setbacks.

20.691 112th Avenue Corridor District

Finding: The site is located within the 112th Avenue Corridor Plan District. Per VMC 20.691.030(B), properties within the Plan District shall comply with their respective code requirements and development standards **and** meet the intent of the 112th Avenue Corridor Design Guidelines. The applicant has designed the site incorporating design guidelines for the 112th Corridor into the overall plan, including building placement, roadway locations, pocket parks, alley access, sidewalks and a pedestrian trail system through the site.

The site has approximately 311 feet of street frontage along 112th Avenue. This street is classified as a four-lane principal arterial with center left turn and bike lanes, has a 50-foot centerline right of way and is a heavily traveled main thoroughfare. In the interest of safety, the entrances to the living units are not proposed to front 112th Avenue.

Design Requirements of the 112th Corridor Subarea Plan:

- All new development, streets, and street improvements shall meet the intent of the adopted 112th Avenue Corridor Design Guidelines.

Finding: The design calls for interior alleyway access where applicable which minimize interruptions to sidewalks and pedestrian flow promoting safe and attractive streetscapes as required in the subarea plan. The applicant proposes front porches that protrude into the front yard setback as permitted in VMC 20.927. This meets the intent of the design guidelines for creating a welcoming building frontage that engages the sidewalks.

- All new development shall meet the intent of the connecting street, trails and open spaces illustrated on the Conceptual Site Plan within the 112th Avenue Corridor Design Guidelines.

Finding: The applicant's design incorporates a trail system leading from connecting the subject site to the NE 16th Street frontage. The trail includes trees and small turf areas as landscape elements required by the Corridor Design Guidelines.

- Street connections between adjacent properties need not be opened until such time as the connecting roadway on each property is constructed to urban standard, consistent with Vancouver's street standard plans.

Finding: The applicant is not proposing any phasing for this project. Connections will be opened at the time of project completion.

Staff finds the proposed development and the adjustments requested in the Planned District meets the overall intent of the 112th Avenue Corridor Plan district.

20.710 Archaeological Resource Protection

Finding: An archaeological predetermination was conducted on the site by Archaeological Services LLC dated Nov. 21, 2017. The predetermination found no evidence of archaeological materials on the site. The report was reviewed by the city's contract archaeologist who concurred with the findings.

Place the following on the final plat: **If any archaeological deposits are found during construction, work shall stop and the City of Vancouver's Community & Economic Development and the Washington State Department of Archaeology and Historic Preservation shall be notified.**

Conclusion: As conditioned, the proposal meets the requirements of this section.

20.770 Tree Conservation

Finding: Based on a net building area of 5.50 acres, a minimum of 165 trees are required. The Level V tree plan shows 171.5 to be planted. Of the 171.5 proposed units, 90.5 units are from retained trees. This meets the minimum tree density requirements of 30 tree units per acre.

Street trees are required to be planted along all street frontages, one per 30 feet of frontage. Street trees will be planted along NE 16th Street and adjacent streets fronting the subject site.

Conclusion: The applicant meets the requirements of this section.

20.790 SEPA

Finding: The applicant submitted an environmental checklist for review (Exhibit 8). Staff issued a Notice of Application and Optional SEPA Determination of Nonsignificance (DNS) Nov. 30, 2018. A Final Notice of Determination of Nonsignificance (DNS) was issued Jan. 3, 2019.

The appeal period ended January 17, 2019. No appeals were received.

Conclusion: The application meets the requirements of this section.

20.915 Impact Fees

Finding: This project is subject to park, transportation and school impact fees. For a single-family residential subdivision, a per-lot impact fee shall be calculated at the time of preliminary plat approval, **noted on the face of the final plat**, and imposed on a per-lot basis at the time of individual building permit issuance.

Impact fees for the multi-family development shall be paid prior to building permit issuance.

Fee Type	Fee per new single-family dwelling
Park District C	\$2,142
Evergreen School District	\$6,100
Cascade/I 205 Mill Plain Overlay	\$729.96

The fees shall be re-calculated for building permit applications filed more than three years following the date of the preliminary approval.

Conclusion: As conditioned, the applicant meets the requirements of this section.

20.927 Narrow Lot Development

Finding: All of the lots in this subdivision are 40 feet or less in width which requires adherence to the narrow lot development chapter.

20.927.030 Narrow Lot Development Approval Criteria

- *Conflicts on narrow lots shall be eliminated.*

Finding: The applicant has submitted a development plan showing that utilities, driveways, street trees, etc. have been located and designed to minimize conflicts with one another.

- *Adequate guest parking shall be provided.*

Finding: per VMC 20.927.030(B), guest parking shall be one parking space provided per every three narrow lots. The applicant is proposing 70 lots which equates to 23 required guest parking spaces. The applicant current provides 18 parking spaces.

Depict the five additional guest parking spaces required on the final site development plan.

- *Solid waste and recycling collection and access shall be provided.*

Finding: Where access is not feasible common collection points shall be established and are noted on site plans. Where collection is not feasible in front of the residence or via an alley, a designated common collection point will be established. Specifically lots along the private tracts will be required to bring their carts to the public street for collection due to limited access along the private tracts in accordance with VMC 20.927.040.A.3(c-d).

20.927.040 Narrow lot Development Standards

1. On and off-site improvements plan required.

Finding: The applicant has submitted a development plan showing that utilities, driveways, street trees, etc. have been located and designed to minimize conflicts with one another. The plan shows street widths, planter strips, sidewalks, light poles, fire hydrants and mail boxes. City water and sanitary sewer have reviewed placement of lines and meters to each narrow lot.

2. Standards for guest parking in common areas

Finding: Adequate guest parking shall be provided. Per VMC 20.927.030(B), at least one guest parking space for every three narrow lots in the development shall be provided. With 70 narrow lots, 23 guest parking spaces are required for this development. The development plans show 18 spaces which is short of the requirement.

3. Standards for Solid Waste and recycling access and collections.

Finding: Proposed plans for the western portion of the site show Lots 1 through 8 have frontage along a 16-foot narrow looped alley and private track. This narrow and curved alley may limit the ability of collection vehicles to maneuver safely to all points of the affected lots. As a condition of approval, the applicant can submit an access and collection plan that demonstrates recycling truck maneuvering is feasible at the narrow looped alley as proposed, or provide an alternate location for Lots 1 through 8 to stage their carts for collection. The applicant shall ensure the designated cart set out points allow for carts to be spaced with three feet between to permit automated collection.

4. Standards for alleys and lots with alley access

Finding: Alleys are highly effective in addressing conflicts at the front street. Alleys shall be within a 20-foot access easement and consist of 16 feet of paving. The alley easement width is shown at 24 feet with 16 feet of paving meeting this minimum requirement. **A note shall be recorded on the plat regarding maintenance of the alleys as the responsibility of a homeowner's association.**

The applicant has proposed 48 lots with alley access.

5. Narrow Driveways

Finding: Proposed driveways are required to be no wider than 10 feet and where possible on adjoining lots, shall be grouped in close proximity to create space along street frontages. The applicant is proposing driveways on Lots 5 through 26 within the development. The proposed driveways meet the 10-foot maximum width requirement. Additionally when possible, lots sharing a zero lot line contain driveways and garages are located on adjoining sides.

20.927.050 Incentives for Providing Alleys

Finding: Per VMC 20.927.050(F)(3), an incentive is allowed for providing alley access to at least 50 percent of the total number of lots. Of the 70 lots proposed with this development, 48 of them have alley access which equates to 69 percent of the total lots. This exceeds the minimum requirement to apply the incentive.

One of the incentives is allowance for covered porches which consume at least 40 percent of the front width of the residence to encroach up to six feet into the required front setback. The applicant is proposing covered porches that extend into the front yard setback of 10 feet up to the maximum six feet

20.925 Landscaping

Finding: Ten percent of the net lot area of each single-family lot shall be landscaped. Compliance with this requirement will be verified at the time of building permit review for each of the single-family lot.

Street tree requirement. Add street trees between 20-30 feet on center depending on conflicts such as street lights along NE 112th. Street trees shall not be more than 30 feet on center. Street trees shall be planted within planter strips or for attached sidewalks, three to four feet behind attached sidewalks. Utilize utility friendly street trees due to overhead powerline such as: Persian Parrotia (Parrotia persica ‘Ruby Vase’ or ‘Vanessa’) or Rocky Mountain Glow Maple (Acer grandidentatum). The applicant is proposing to utilize Stellar Pink Dogwood, October Glory Maple and Black Tupelo as street trees.

Street trees are required for all projects fronting on a public street, private street or private drive. The tree plan submitted shows street trees proposed along the street frontages. This requirement has been met as proposed.

Conclusion: The application meets the requirements of this section.

20.945 Parking

Finding: Each new single-family residence will require one off-street parking space. The space must be a minimum 9 feet wide by 17 feet deep, paved and located outside the minimum setbacks. Each lot will be reviewed for compliance with this requirement at the time of building permit.

As discussed in the narrow lot section of this report, 18 guest parking spaces have been provided throughout the single-family portion of this development. Five additional guest parking spaces are required prior to final plat approval.

As previously mentioned, **add five more guest parking spaces to the development prior to final plat approval.**

Conclusion: As conditioned, the applicant meets the requirements of this section.

20.970 Solid Waste Disposal and Recycling

Finding: The proposed senior housing development consisting of single-family residences located along NE 16th St between NE 112th Ave and NE 115th Ave will either have alley collection or stage their carts along the public street for collection. Future residences shall be informed of cart setout locations.

Conclusion: The application was reviewed by solid waste and the applicant has demonstrated that the standards for solid waste cart setout can be met for the development.

Finding: The provisions for collection vehicles to safely maneuver within the site have been met for most lots in the development, specifically in the alley and along the public streets.

Where access is not feasible common collection points shall be established and are noted on the site plans. Where collection is not feasible in front of the residence or via an alley, a designated common collection point will be established. Specifically lots along the private tracts will be required to bring their carts to the public street for collection due to limited access along the private tracts in accordance with VMC 20.927.040.A.3(c-d).

Proposed plans for the western portion of the site show Lots 1 through 8 have frontage along a 16-foot narrow looped alley and private track. This narrow and curved alley may limit the ability of collection vehicles to maneuver safely to all points of the affected lots. **As a condition of approval, the applicant can submit an access and collection plan that demonstrates recycling truck maneuvering is feasible at the narrow looped alley as proposed, or provide an alternate location for Lots 1 through 8 to stage their carts for collection.** The applicant shall ensure the designated cart set out points allow for carts to be spaced with three feet between to permit automated collection.

Conclusion: The proposal has satisfies solid waste requirements for providing collection vehicle access, as conditioned.

11.70 Transportation Concurrency

Finding: The applicant is proposing a Planned Development 70-lot subdivision. The project is located at the northeast corner of the intersection of NE 112th Avenue and NE 16th Street. Access to the site will be by way of the existing NE 16th Street and an extension of NE 115th Avenue across BPA right of way to NE 18th Street. The developer will partner with the city to construct this length of NE 115th Avenue.

The applicant submitted a Traffic Impact Analysis (TIA) dated Oct. 23, 2018, from Kittelson & Associates. Trip generation rates were based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, utilizing Land Use Code 251 – Senior Adult Housing - Detached. Based on this information, the proposed project will generate 258 new Average Daily

Trips (ADT), including 42 new a.m. peak hour trips and 34 new p.m. peak hour trips. The submitted documentation fulfills the city's requirements for concurrency analysis.

Pursuant to VMC 11.70.090, the segment of NE 112th Avenue between Mill Plain Boulevard and NE 28th Street is designated as a Category 1 Concurrency corridor, which stipulates that the corridor is operating at or above the city's adopted level of service standards. Pursuant to the TIA, the proposed development will distribute 27 new p.m. peak hour trips to this corridor. This is not anticipated to cause the corridor to drop below the adopted level of service standard.

The proposed use is located within the #280 Transportation Analysis Zone. The proposed project contributes PM peak hour trips to the following Transportation Management Zones (TMZ):

Corridor Name	Corridor Limit	PM Peak Trips
NE 18th Street	NE 112th Ave to NE 138th Ave	7
NE 18th Street	NE 138th Ave to NE 162nd Ave	2
NE 28th Street	18th Street to NE 112th Ave	8
NE 28th Street	NE 112th Ave to NE 138th Ave	2
NE 112th Avenue	Mill Plain Blvd. to NE 28th Street	27
NE 112th Avenue	NE 28th Street to NE 51st Street	17
NE 136th Avenue	Mill Plain Blvd. to NE 28th Street	1

Based on the above table, **prior to the issuance of civil plan approval, the applicant shall pay concurrency modeling fees totaling \$1,500.00.** Pursuant to the applicant's information, the project will not distribute trips to any other Transportation Management Zones.

Transportation Impact Fees (TIF) are imposed per VMC 20.915. See the section of this staff report addressing VMC 20.915 for calculation of TIF.

Conclusion: The proposed development meets the requirements of VMC 11.70 as conditioned.

11.80 Transportation – Street & Development Standards

Finding: The applicant is proposing a Planned Development 70-lot subdivision. The project is located at the northeast corner of the intersection of NE 112th Avenue and NE 16th Street. Access to the site will be by way of the existing NE 16th Street and an extension of NE 115th Avenue across BPA right of way to NE 18th Street. The developer will partner with the city to construct this length of NE 115th Avenue.

Northeast 112th Avenue is designated a four-lane principal arterial with center left turn and bike lanes which requires a minimum 50 feet half-width right of way per city standard plan T10-06. The existing road along the property frontage of NE 112th Avenue includes asphalt roadway, curb, gutter, street lighting and storm drainage. Per city standard plan T10-06, the paved street half-width of NE 112th Ave is required to be a minimum of 35 feet measured from the face of curb to the centerline. However, the applicant will not be required to add additional pavement width along the frontage of this project, unless indicated as a safety or capacity mitigation in the traffic analysis.

Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard frontage improvements along NE 112th Avenue including right of way dedication as needed to meet the minimum required half-width, detached sidewalks, street lighting, ADA ramps, planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance. The sidewalk shall be placed at the back of the right of way at the appropriate elevation so that when NE 112th Avenue is reconstructed to the standard the sidewalk will not need to be replaced. The design shall include transition to existing sidewalks on adjacent properties.

Northeast 16th Street is designated a local access street which requires a minimum 25 feet half-width right of way and 16 feet paved street half-width per city standard plan T10-15A. The eastern half of the existing road along the property frontage of NE 16th Street is asphalt roadway with no curb; the other half of the road is gravel only. The gravel road is only used by city staff for access to the adjacent water tower, known as Water Station #7; the road is gated and is not currently accessible to the public.

Prior to the issuance of final subdivision approval, the applicant shall install the following City of Vancouver standard frontage improvements along NE 16th Street:

- From NE 113th Avenue to the western property line of Water Station #7, the applicant shall install standard frontage improvements per T10-03 – Local Access and Loop Road Half Street Construction; including right of way dedication as needed to meet the minimum standard, detached sidewalks, street lighting, ADA ramps, planting strip, and traffic control devices as warranted. The pavement width shall be 25 feet.
- Across the entire street frontage of Water Station #7, the applicant will be required to meet the full-width street requirements of city standard T10-15A. Such improvements include full-width pavement. Also included will be curb-and-gutter, detached sidewalks, planting strips, and street lighting on both sides of the street. A driveway approach for the water station must be constructed and the sidewalk on the south side of the street must connect with the existing dead-end sidewalk near the east property line of Water Station #7.
- From the eastern property line of Water Station #7 to the east end of the subdivision, the applicant shall dedicate right of way as necessary to meet the standard, and install City of Vancouver standard frontage improvements including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.

Northeast 115th Avenue is designated a local access street which requires a minimum 50 feet full-width right of way and 32 feet paved street full-width per city standard plan T10-15A. **Prior to the issuance of final subdivision approval, within the boundaries of the subdivision property, the applicant shall install City of Vancouver standard frontage improvements along NE 115th Avenue including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.**

The city is currently working with the applicant to address the need for construction of NE 115th Avenue from the proposed subdivision across BPA property to connect to the existing signalized intersection at NE 18th Street and NE Four Seasons Lane. The applicant will be expected to

contribute to the cost of design and construction of this connection. The general principles guiding the pending agreement with the applicant are as follows:

- As part of the next phase of the NE 18th Street upgrades, the city will work with BPA to acquire the necessary right of way for NE 115th Avenue from the existing NE 18th Street / Four Seasons Lane intersection southward to connect with the proposed Four Seasons South Subdivision.
- The developer will be responsible for a portion of the design and construction costs for the length of NE 115th Avenue within this right of way across BPA property. The developer's costs associated with this design and construction will be eligible for TIF credits up to the maximum amount of TIFs owed for the subdivision project.
- The developer will commit to a design of the subdivision layout that does not include any connection of NE 16th Street to NE 112th Avenue. It may be possible to vacate the existing unused NE 16th Street right of way to increase the overall subdivision project area.
- If any element of this agreement is delayed, the subdivision project can still move forward, taking full access to the arterial network at the newly constructed signalized intersection at NE 18th Street and NE 118th Avenue.

The details of the partnership between the applicant and the city to design and construct this necessary street improvement are still being negotiated. **Prior to the issuance of civil plan approval, the applicant shall enter into an agreement with the City of Vancouver to assist in the design and construction of NE 115th Avenue from the proposed subdivision, across BPA property, to connect to the existing signalized intersection at NE 18th Street and NE Four Seasons Lane.**

The interior streets within the subdivision including NE 113th Avenue and NE 17th Street are designated local access streets which require a minimum 50 feet right of way and 28 feet paved street width per city standard plan T10-15B. **Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard frontage improvements along NE 113th Avenue and NE 17th Street including right of way dedication, detached sidewalks, street lighting, ADA ramps, planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.**

The proposed alleys in the subdivision will be built to Narrow Lot standards, which require a minimum 24 feet full-width right of way and 16 feet paved street full-width per city standard plan T10-25A and B. **Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard full-width improvements along the alleys including flat curbs, center valley gutter, street lighting, and storm drainage as required by the city stormwater ordinance.**

The applicant's Traffic Impact Analysis contains several recommendations regarding the placement of stop signs at key intersections within or adjacent to the development. These include the following:

- NE 115th Avenue northbound approach to NE 16th Street
- NE 118th Avenue southbound approach to NE 16th Street
- All three of the proposed southbound site access approaches to NE 16th Street

Prior to the issuance of final subdivision approval, the applicant shall coordinate with the city's traffic engineer to provide stop signs at the locations specified in the applicant's traffic impact analysis. Information pertaining to the placement of the new stop signs shall be included in the signing and striping plan section of the approved civil plans. Signing and striping plans are required even if not proposing any new striping in the public right of way. If no new striping is proposed then the plan should indicate what exists.

Street lighting is required on public streets per VMC 11.80.090. Any substandard street lighting shall be required to be upgraded to current city standards as part of this project. Street lighting shall be installed and/or updated to meet the design standards per city standard plans T21-01A through T21-01D. If the applicant proposes to retain the existing lighting or install lighting that exceeds the maximum spacing requirement a photometric analysis will be required to ensure the lighting level standards are met. If the maximum spacing per T21-01A is met, the photometric analysis is not necessary.

IES files for lighting software can be obtained from lighting manufacturer. Use lighting materials from the City of Vancouver approved material list. New lights will be LED and existing HPS lights will be retrofitted to LED unless otherwise noted by Traffic. Any new or existing lights that are within ten feet of primary power and/neutral lines, will require the developer to raise the power lines. The developer will need to work with Clark Public Utilities for requirements and costs.

Per City of Vancouver street lighting policy; where existing street lights are mounted on Clark Public Utilities wood poles, the street lights shall be changed to current standards. However, when no roadway or sidewalk improvements are being installed within an existing neighborhood, the use of an aerial design with a **Type W** standard (wood pole mounting) may be approved by the city's Transportation engineer.

Conclusion: The proposed development meets the requirements of VMC 11.80 as conditioned.

14.01 Water

Finding: City records indicate existing utilities are as follows:

- 12-inch DI main in NE 112th Avenue with an 8-inch DI stub approximately 225 feet north of NE 16th Street
- 8-inch DI main in NE 18th Street
- 8-inch DI main in NE 115th Avenue south of NE 16th Street
- 16-inch DI main in NE 16th Street

At the east end of the project, the applicant will install a 16-inch x 8-inch tee, 16-inch butterfly valve and an 8-inch gate valve onto the 16-inch main in NE 16th Street. Extending an 8-inch DI main in north and looping the 8-inch DI main through the site as needed to serve all required fire hydrants, water meters and fire protection services. Connect the onsite main to the existing 8-inch stub off of the 12-inch main in NE 112th Avenue. An 8-inch DI main will also need to be extended to the 8-inch main in NE 18th Street.

Additional requirements may be outlined during the detailed site plan review process, meeting the water requirements as detailed in the *General Requirements & Details for the Design and Construction of Water, Sanitary Sewer and Surface Water Systems* (latest revision).

Conclusion: The submitted plans indicate the requirements can be met.

14.03 Sanitary Sewer

Finding: An existing sewer flows north along the west side of 112th. A public stub extends east to the north flag stem of the subject lot. A stub marker (#21236) marks the upstream end. This sewer was constructed in 2011 by the NE 18th Street Improvements (City Project #083110). A plan view is shown on sheet U07 of the record drawings. A sewer main fee will be due if the project connects to this line.

A second sewer is located in NE 16th Street, east of the approximate alignment of NE 114th Avenue. A cleanout (#15230) marks the upstream end. The sewer main is thought to be about 13 feet deep. This sewer was constructed in 1993 as part of water station project (XB772). Plan and profile views are shown on Sheet C-7 of the record drawings.

A third sewer flows north from 16th Street within a 20-foot wide sewer easement along the west property line of the east lot (110235000) of the development. The sewer is 8-inch PVC and is within an easement (Developer project #SB1114) The easement was granted by Beaudoin and recorded Sept. 10, 1993 (recording #9309100142).

This development was asked to extend an 8-inch diameter public sewer south, across the frontage of the development, in NE 112th Avenue, from City MH #21237, at sufficient slope and depth to serve properties on the west side of NE 112th Avenue to the north of NE 14th Street, to a point even with the south property line of the subject parcel. A similar extension has also been required of the apartment project currently under review on the opposite side of 112th Avenue (Developer project #PRJ-155732), and this extension is currently planned to be constructed by the Salvation Army Project (Developer project #PRJ-154308).

Sewer service requires the applicant to extend an 8-inch diameter public sewer main on-site to front each lot of the development. Extend public sewer on-site by constructing a manhole over the existing main fronting the east side of the development.

Alternately, the applicant shall extend 8-inch diameter public sewer on-site from the existing stub (or from a new manhole constructed over the sewer extension in NE 112th Avenue) to front each building to be served. Again, a sewer main fee will be due if the project connects to this public sewer.

Public mains not located in the public right of way are to be placed in public easements dedicated to the City of Vancouver. Easements shall be 15 feet wide or greater. Extend public sewers in the public right of way or accessible paved areas if possible. All easements must be submitted on the City of Vancouver's Easement Form. Submittal of a recordable public sanitary sewer easement will be a condition of plan approval. The easement is intended to allow required access by the city and its representatives, and to prevent any structure or tree from interfering with the facility or hindering access to it. Easements shall be paved or covered with approved landscaping (not to include trees). The easements shall extend at least five feet past the end of the main. Sewer mains shall be located at least five feet inside the edge of the easement.

The applicant shall install separate 4-inch minimum diameter service laterals from the new public sewer to serve each of the residential lots. Connect the service lateral to public sewer per City of Vancouver Standard Plan Series S-1.4.

Conclusion: Public sanitary sewer is available at the site and construction standards for public sewer construction and the construction of sewer lateral connections can be met.

(Prior to Construction)

Obtain all required permits to complete the sewer construction.

(Prior to Final Plat Approval)

Satisfy all of the submittal and other related requirements itemized in the projects upcoming Notification of Civil Plan Approval (plan approval letter).

(Prior to Occupancy)

Public sewer (possibly) built by this project, service laterals and connections to public sewer shall meet City of Vancouver construction inspection requirements.

14.24 Erosion Control

Finding: This project proposes construction of a senior-oriented, 70-lot subdivision. The development site consists of four parcels and covers approximately 9.5 acres. Currently the site contains seven buildings and driveways. The applicant has stated the final grade will be close to the current grades.

The applicant has submitted an erosion/sediment control plan to meet the requirements of VMC 14.24.

The applicant is also required to submit a Construction Stormwater Pollution Prevention Plan (SWPPP) to the city, prior to final civil plan approval.

Conclusion: As conditioned, the applicant has demonstrated that the City of Vancouver Erosion Control ordinance (VMC 14.24) can be met.

14.25 Stormwater

Finding: The proposed development will create approximately 5.59 acres of new impervious surface area and convert 3.9 acres to lawn and landscaping area. Therefore, all stormwater minimum requirements #1 through #9 apply to the proposed development.

The applicant proposes to construct several bio retention cells to capture runoff from the on-site pollution generating surfaces and provide water quality treatment. Bio retention facilities are approved best management practices (BMP) by the Stormwater Management Manual for Western Washington and the City of Vancouver Municipal Code (VMC 14.25).

The applicant also proposes to construct infiltration trenches and drywells to meet the city's water quantity control requirement. The applicant has submitted a geotechnical evaluation report to support the proposed stormwater system. Staff finds the proposed stormwater BMP feasible.

The applicant is required to dedicate an easement to the City of Vancouver for access and inspection of the stormwater facilities.

Conclusion: As conditioned, the proposed stormwater management system meets City of Vancouver water quality treatment and water quantity control requirements.

Title 16 Fire

Finding: The fire department has reviewed the proposed project and determined that it can meet the requirements of VMC Title 16 and the International Fire Code.

Staff Report Conditions for Approval

Prior to Civil Plan Approval

New and existing fire hydrant locations shall be shown

Prior to Plat Approval

If attached dwellings require fire sprinkler protection, a note shall be included on the plat stating that all buildings require fire sprinkler protection.

Prior to combustible construction

1. Fire hydrants for emergency use shall be established and maintained.
2. Street identification signs shall be installed for emergency response.

During construction

1. Temporary address signage shall be visible and legible from the street fronting the property for emergency response during construction.

Prior to Issuance of Certificate of Occupancy

1. Address signage shall be visible and legible from the street fronting the property for emergency response. If applicable, individual suite numbers shall be posted at the suite doors.
2. Any fire protection features identified as being required during the construction permit review shall be installed and approved prior to occupancy.
3. Fire lane signs shall be posted throughout the site in accordance with the approved sign and striping plans.

Conclusion: As conditioned, the applicant meets the requirements of this section.

RECOMMENDATION

Staff hereby recommends approval of the planned development, subdivision and boundary line adjustment with conditions as noted below and throughout this report. Based upon the analysis and findings herein, the criteria for approval have been satisfactorily met, or shall be met with the conditions of approval and no significant adverse impacts have been identified. This approval does not grant the right to permits, but only determines the development can meet the requirements of the applicable ordinances as described in this report.

CONDITIONS OF APPROVAL

Prior to Civil Plan Approval

1. Submit for civil plan review with ten (10) new sets of check prints showing all the revisions requested, two (2) sets of all necessary reports (geotechnical, hydrology, traffic analysis, road modification, etc.), and any redlines documents that were returned during the preliminary review process. Submit these to the Community and Economic Development Department Permit Center; request engineering staff for counter assistance. For questions on these requirements please contact 360-487-7804.
2. Grading plan review fees will be due upon submittal of civil plans for review. Contact Permit Center staff at 360-487-7802 to obtain a fee quote.
3. Prior to the issuance of civil plan approval, the applicant shall pay concurrency modeling fees totaling \$1,500.00.
4. Prior to the issuance of civil plan approval, the applicant shall enter into an agreement with the City of Vancouver to assist in the design and construction of NE 115th Avenue from the proposed subdivision, across BPA property, to connect to the existing signalized intersection at NE 18th Street and NE Four Seasons Lane.
5. New and existing fire hydrant locations shall be shown

Prior to Commencing Public Improvement Construction

6. Obtain all required permits to complete the sewer construction.
7. Fire hydrants for emergency use shall be established and maintained.
8. Street identification signs shall be installed for emergency response.

During Public Improvement Construction

9. Temporary address signage shall be visible and legible from the street fronting the property for emergency response during construction.

Prior to Final Plat Approval

10. Submit a final plat application along with five (5) full size copies and 1 reduced 8 ½ x 11 copy of the proposed plat and tree/landscape plan. Applicants can be found under Building, Planning and Environments on the City of Vancouver website, www.cityofvancouver.us.

11. The following note shall be placed on the final plat: “If any archaeological deposits are found during construction, work shall stop and the City of Vancouver’s Community & Economic Development and the Washington State Department of Archaeology and Historic Preservation shall be notified.”
12. The following note shall be placed on the final plat: “Development within this subdivision is subject to an approved tree plan. Tree removal is subject to approval by the City of Vancouver. Street trees must be planted prior to occupancy per the approved plan.”
13. Indicate the following as a note on the final plat: minimum lot size 2,400 square feet, maximum lot coverage for single story structures 75 percent, maximum lot coverage for two-story structures 68 percent, and the corresponding lot numbers dedicated as two-story structures.
14. The following note shall be placed on the final plat: Home Owner Association is responsible for maintenance of all open space tracts listed on this plat.
15. A note shall be recorded on the plat requiring maintenance of the common parking areas as the responsibility of a homeowner’s association.
16. Submit an access and collection plan that demonstrates recycling truck maneuvering is feasible at the narrow looped alley as proposed, or provide an alternate location for Lots 1 – 8 to stage their carts for collection.
17. Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard frontage improvements along NE 112th Avenue including right of way dedication as needed to meet the minimum required half-width, detached sidewalks, street lighting, ADA ramps, planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance. The sidewalk shall be placed at the back of the right of way at the appropriate elevation so that when NE 112th Avenue is reconstructed to the standard the sidewalk will not need to be replaced. The design shall include transition to existing sidewalks on adjacent properties.
18. Prior to the issuance of Final Subdivision Approval, the applicant shall install the following City of Vancouver standard frontage improvements along NE 16th Street:
 - From NE 113th Avenue to the western property line of Water Station #7, the applicant shall install standard frontage improvements per T10-03 – Local Access and Loop Road Half Street Construction; including right of way dedication as needed to meet the minimum standard, detached sidewalks, street lighting, ADA ramps, planting strip, and traffic control devices as warranted. The pavement width shall be 25 feet.
 - Across the entire street frontage of Water Station #7, the applicant will be required to meet the full-width street requirements of city standard T10-15A. Such improvements include full-width pavement. Also included will be curb-and-gutter, detached sidewalks, planting strips, and street lighting on both sides of the street. A driveway approach for the water station must be constructed and the

sidewalk on the south side of the street must connect with the existing dead-end sidewalk near the east property line of Water Station #7.

- From the eastern property line of Water Station #7 to the east end of the subdivision, the applicant shall dedicate right of way as necessary to meet the standard, and install City of Vancouver standard frontage improvements including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.
19. Prior to the issuance of final subdivision approval, within the boundaries of the subdivision property, the applicant shall install City of Vancouver standard frontage improvements along NE 115th Avenue including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.
 20. Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard frontage improvements along NE 113th Avenue and NE 17th Street including right of way dedication, detached sidewalks, street lighting, ADA ramps, planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.
 21. Prior to the issuance of final subdivision approval, the applicant shall install City of Vancouver standard full-width improvements along the alleys including flat curbs, center valley gutter, street lighting, and storm drainage as required by the city stormwater ordinance.
 22. Prior to the issuance of final subdivision approval, the applicant shall coordinate with the city's traffic engineer to provide stop signs at the locations specified in the applicant's traffic impact analysis. Information pertaining to the placement of the new stop signs shall be included in the signing and striping plan section of the approved civil plans. Signing and striping plans are required even if not proposing any new striping in the public right of way. If no new striping is proposed then the plan should indicate what exists.
 23. Satisfy all of the submittal and other related requirements itemized in the projects upcoming Notification of Civil Plan Approval (plan approval letter).
 24. If attached dwellings require fire sprinkler protection, a note shall be included on the plat stating that all buildings require fire sprinkler protection.
 25. Dedicate an easement to the City of Vancouver for access and inspection of the stormwater facilities on the final plat.
 26. Depict the five additional guest parking spaces required on the final site development plan.

27. Place a note shall on the plat regarding maintenance of the alleys as the responsibility of a homeowner's association.

Prior to Issuance of any Building/Development Permits

28. Public sewer (possibly) built by this project, service laterals and connections to public sewer shall meet City of Vancouver construction inspection requirements.
29. Address signage shall be visible and legible from the street fronting the property for emergency response. If applicable, individual suite numbers shall be posted at the suite doors.
30. Any fire protection features identified as being required during the construction permit review shall be installed and approved prior to occupancy.
31. Fire lane signs shall be posted throughout the site in accordance with the approved sign and striping plans.

EXHIBITS

1. Staff Report
2. Application
3. Applicant Narrative
4. Applicant's Supplemental Narrative
5. Preliminary Plat Reduced Copy
6. Affidavit of mailing/posting dated Nov. 30, 2018
7. Notice of Application, Public Hearing and Optional SEPA DNS Nov. 30, 2018
8. SEPA Checklist dated Sept. 28, 2018
9. Geotech Report prepared by Columbia West dated Dec. 4, 2017 **
10. Letter from Department of Ecology dated Jan. 2, 2019
11. Letter from Clark County Public Health dated Aug. 21, 2017
12. City of Vancouver Traffic Impact Calculation Worksheet dated Jan. 22, 2019
13. Slope Easement - 4783753 EAS
14. Public Comment
15. Final Determination of Nonsignificance dated Jan. 3, 2019
16. 112th Avenue Subarea guidelines**
17. Traffic Study **

**Because of the size of the exhibit, it is not included with this report. The document is available for review at Community & Economic Development Department, 415 W 6th Street. If you would like to review the document, check in at the reception area of the Permit Center between the hours of 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.



Planning Permit Application
LAND USE PRELIMINARY APPLICATION (LUP)

415 W 6th ST - Vancouver, WA 98660
PO Box 1985 - Vancouver, WA 98668
Phone (360) 487-7800
www.cityofvancouver.us

EXHIBIT

2

Type Of Work		
☐ Type I	☐ Type II	☒ Type III
☒ Type IV	☐ Tree Removal Only **	
Use Type (Check One Box Only)		
☒ Single Family	☐ Commercial	☐ Multi-Family
☐ Industrial	☐ Residential	☐ Duplex
☐ Wireless Communications Facility (new) please see VMC 20.890		
Process Type		
☒ Standard	☐ Streamline	

Project Site Information And Location	
Project site address:	1611 & 1619 NE 112th Avenue
Suite/bldg./apt #:	
Project name:	Four Seasons South PUD
Tax Assessor Serial Number:	110250-000, 110251-000, 110252-000, 110235-000
Nearest intersection if no site address:	

Description Of Project
Proposal to subdivide 9.47 acres into 70 single family 55+ lots
110250-000, 110251-000, 110252-000 (Kilada Village, LLC)
110235-000 (Joseph and Gayle Beaudoin)

PROPERTY OWNER	
Name	Joseph and Gayle Beaudoin
Address:	701 NE 112th Avenue
City/State/Zip:	Vancouver, WA 98684
Phone:	
E-mail:	

APPLICANT	
Name	Four Seasons Subdivision, LLC
Address:	7223 NE Hazel Dell Avenue
City/State/Zip:	Vancouver, WA 98665
Phone:	(360) 600-8813
E-mail (required):	Patrick@GinnRealtyGroup.com

ELECTRONIC PLANS SUBMITTER*	
Name	Lisa Harker
Address:	7223 NE Hazel Dell Avenue
City/State/Zip:	Vancouver, WA 98665
Phone:	(360) 768-5034
E-mail (required):	projects@ginndevelopment.com
ePermits Username (if existing account)	dhaake

Additional Information		
Special Review Type: (if applicable)	☐ Tenant Improvement ☐ Other	
	☐ Unoccupied Commercial/Utility Structure	
Plan Approval Type: (if applicable)	☐ Conceptual	☐ Detailed ☐ Hybrid
	Sewage Disposal: ☐ Septic ☒ Public	
Water Source:	☐ Private Well ☒ Public	
# of Units:		
# of Proposed Lots:	70	
# of Acres:	9.47	
Size:	☒ Up to 25 acres ☐ Over 25 acres	
Impervious Area sf:	222,592	
Square Feet:	Ground Floor:	
	Upper Floor:	

Notice
<i>I/we understand that per VMC 20.210.090 (Review for Counter Complete Status), if it is determined that the application is not complete, the City shall immediately reject and return the application.</i>
<i>If submitting electronically, I/we understand that if my electronic plan submission is deemed to be incomplete I will receive notification after the prescreening process and review will not begin.</i>
<i>I/we agree that City of Vancouver staff may enter upon the subject property at any reasonable time to consider the merits of the application, to take photographs and to post public notices.</i>

Required Signatures	
Applicant signature:	
Print name: Patrick Ginn	Date: 9-26-10
Property Owner signature:	
Print name: Joe F Beaudoin	Date: 9-26-12

* Please note that the contact listed as "Electronic Plans Submitter" should be the individual responsible for accessing ePlans, (electronic plan review software), and will receive all ePlans correspondence.



Planning Permit Application

LAND USE PRELIMINARY APPLICATION (LUP)

415 W 6th ST ~ Vancouver, WA 98660
PO Box 1995 ~ Vancouver, WA 98668
Phone (360) 487-7800
www.cityofvancouver.us

Type Of Work		
☐ Type I	☐ Type II	☒ Type III
☒ Type IV	☐ Tree Removal Only **	
Use Type (Check One Box Only)		
☒ Single Family	☐ Commercial	☐ Multi-Family
☐ Industrial	☐ Residential	☐ Duplex
☐ Wireless Communications Facility (new) please see VMC 20.890		
Process Type		
☒ Standard	☐ Streamline	

Project Site Information And Location	
Project site address:	1611 & 1619 NE 112th Avenue
Suite/bldg./apt #:	
Project name:	Four Seasons South PUD
Tax Assessor Serial Number:	110250-000, 110251-000, 110252-000, 110235-000
Nearest intersection if no site address:	

Description Of Project
Proposal to subdivide 9.47 acres into 70 single family 55+ lots
110250-000, 110251-000, 110252-000 (Kilada Village, LLC)
110235-000 (Joseph and Gayle Beaudoin)

PROPERTY OWNER	
Name	Kilada Walnut Village LLC
Address:	PO Box 61982
City/State/Zip:	Vancouver, WA 98666
Phone:	
E-mail:	

APPLICANT	
Name	Four Seasons Subdivision, LLC
Address:	7223 NE Hazel Dell Avenue
City/State/Zip:	Vancouver, WA 98665
Phone:	(360) 600-8813
E-mail (required):	Patrick@GinnRealtyGroup.com

ELECTRONIC PLANS SUBMITTER*	
Name	Lisa Harker
Address:	7223 NE Hazel Dell Avenue
City/State/Zip:	Vancouver, WA 98665
Phone:	(360) 768-5034
E-mail (required):	projects@ginndevelopment.com
ePermits Username (if existing account)	dhaake

Additional Information		
Special Review Type: (if applicable)	☐ Tenant Improvement ☐ Other	
	☐ Unoccupied Commercial/Utility Structure	
Plan Approval Type: (if applicable)	☐ Conceptual	☐ Detailed ☐ Hybrid
	Sewage Disposal: ☐ Septic ☒ Public	
Water Source:	☐ Private Well ☒ Public	
# of Units:		
# of Proposed Lots:	70	
# of Acres:	9.47	
Size:	☒ Up to 25 acres ☐ Over 25 acres	
Impervious Area sf:	222,592	
Square Feet:	Ground Floor:	
	Upper Floor:	

Notice
<i>I/we understand that per VMC 20.210.090 (Review for Counter Complete Status), if it is determined that the application is not complete, the City shall immediately reject and return the application.</i>
<i>If submitting electronically, I/we understand that if my electronic plan submission is deemed to be incomplete I will receive notification after the prescreening process and review will not begin.</i>
<i>I/we agree that City of Vancouver staff may enter upon the subject property at any reasonable time to consider the merits of the application, to take photographs and to post public notices.</i>

Required Signatures	
Applicant signature:	
Print name:	Patrick Ginn
Date:	9-26-2018
Property Owner signature:	
Print name:	GEORGE FASSILIS
Date:	9/18/18

* Please note that the contact listed as "Electronic Plans Submitter" should be the individual responsible for accessing ePlans, (electronic plan review software), and will receive all ePlans correspondence.



**PROJECT NARRATIVE
FOUR SEASON SOUTH PLANNED DEVELOPMENT**

Project Name:

Four Seasons South (a 55 and older planned development community)

Proposal:

The objective for the project is to create a seniors-oriented, 70-lot development. The site consists of 4 parcels and is zoned both R-9 and R-22.

The proposal includes some zero lot line attached and a majority of zero lot line detached single-family dwelling units. The design incorporates alley access for most lots, and designated guest parking areas are provided in addition to on-street parking.

A 20-foot wide trail, running north-south is proposed through the project connecting NE 16th Street to the north boundary of the project at the Bonneville Power Administration (BPA) Powerlines right-of-way.

Two private open spaces and storm tracts are proposed one each on the west side.

The applicant is requesting, subdivision and conceptual and detailed planned development approval. As part of the planned development application, an adjustment to the maximum lot coverage standard is requested.

Applicant/Contact

Ginn Development, LLC
c/o Phil Wuest
7223 NE Hazel Dell Ave.
Vancouver, WA 98665

Property Owner

Parcel 110235-000
Joe and Gayle Beaudoin
701 NE 112th Avenue
Vancouver WA 98684

Parcels 110250-000, 110251-000, 110252-000
Kilada Walnut Village, LLC
PO Box 61982
Vancouver WA 98666

Background

The site is located on the east side of NE 112th Avenue, north of NE 16th Street and south of the BPA right of way, which is located south of NE 18th Street. The site consists of parcels 110250-000, 110251-000, 110252-000 and 110235-000. The site contains several outbuildings, field grasses, bushes, an orchard and a few mature trees.

The proposed project contains a total of 9.47 acres. 4.68 acres are zoned R-22 (Parcels 110250-000, 110251-000, 110252-000) and 4.79 acres are zoned R-9 (parcel 110235-000). However, the gross site development will only be 8.47 acres. A one-acre parcel for the existing home will be removed via a boundary line adjustment prior to subdivision, pursuant to VMC 20.410.040.2.b. The zoning is divided at the approximate midpoint between the parcels from east to west. The entire site is within the NE 112th Avenue Corridor Plan District.

**PROJECT NARRATIVE
FOUR SEASON SOUTH PLANNED DEVELOPMENT**

Project Name:

Four Seasons South (a 55 and older planned development community)

Proposal:

The objective for the project is to create a seniors-oriented, 70-lot development. The site consists of 4 parcels and is zoned both R-9 and R-22.

The proposal includes some zero lot line attached and a majority of zero lot line detached single-family dwelling units. The design incorporates alley access for most lots, and designated guest parking areas are provided in addition to on-street parking.

A 20-foot wide trail, running north-south is proposed through the project connecting NE 16th Street to the north boundary of the project at the Bonneville Power Administration (BPA) Powerlines right-of-way.

Two private open spaces and storm tracts are proposed one each on the west side.

The applicant is requesting, subdivision and conceptual and detailed planned development approval. As part of the planned development application, an adjustment to the maximum lot coverage standard is requested.

Applicant/Contact

Ginn Development, LLC
c/o Phil Wuest
7223 NE Hazel Dell Ave.
Vancouver, WA 98665

Property Owner

Parcel 110235-000
Joe and Gayle Beaudoin
701 NE 112th Avenue
Vancouver WA 98684

Parcels 110250-000, 110251-000, 110252-000
Kilada Walnut Village, LLC
PO Box 61982
Vancouver WA 98666

Background

The site is located on the east side of NE 112th Avenue, north of NE 16th Street and south of the BPA right of way, which is located south of NE 18th Street. The site consists of parcels 110250-000, 110251-000, 110252-000 and 110235-000. The site contains several outbuildings, field grasses, bushes, an orchard and a few mature trees.

The proposed project contains a total of 9.47 acres. 4.68 acres are zoned R-22 (Parcels 110250-000, 110251-000, 110252-000) and 4.79 acres are zoned R-9 (parcel 110235-000). However, the gross site development will only be 8.47 acres. A one-acre parcel for the existing home will be removed via a boundary line adjustment prior to subdivision, pursuant to VMC 20.410.040.2.b. The zoning is divided at the approximate midpoint between the parcels from east to west. The entire site is within the NE 112th Avenue Corridor Plan District.

The site has access to NE 18th Street to the north via NE 16th Street east to NE 118th Avenue. The site also has access to NE 112th Avenue via NE 16th Street.

The zoning on the property to the north is R-9 and R-22 and aligns with the zoning districts of the site. However, it is owned by BPA and is vacant except for cultivated tree and vegetables, which is allowed under an agricultural easement benefitting the property proposed for development.

The property to the south of the R-22-zoned portion of the project, on the south side of NE 6th Street, is also zoned R-22. There are two parcels. One is owned by Marjory Leggett. County records show there are no structures on that parcel. However, the county aerial photos appear to indicate a house near NE 112th Avenue. That site forested.

The remainder of the R-22-zoned land adjacent to the project site is owned by the City of Vancouver and is the location of a municipal water station.

Along the R-9 southern boundary, on the south side of NE 16th Street, the area is developed as the Cascade Crest Subdivision recorded in 1993. This is a single-family residential development.

The property east of the site is zoned R-6. The land use is single-family residential. The site was subdivided as Evergreen Meadows in 1969.

The area to the west, on the west side of NE 112th Avenue is zoned R-22. County records indicate there are no buildings of any value on the site.

VMC Title 20 Land Use and Development Code

Chapter 20.210 Decision-Making Procedures

Response

The applicant is proposing a planned development subdivision. Per Table 20.210.020 – 1, Summary of Development Applications by Type of Decision-Making Procedure, subdivisions are subject to a Type III review process and Planned Developments are subject to a Type IV process.

Subsection 20.210.220.D indicates when more than one application is submitted for a given development, and those applications are subject to different types of procedure, then all of the applications are subject to the highest type of procedure that applies to any of the applications...

As such, the application is subject to the Type IV process, and, because it is less than 25 acres, the final City decision will be rendered by the City's hearing examiner.

Chapter 20.260 Planned Developments

20.260.010 Purpose

Response

This proposal seeks to create a cohesive planned community for adults 55 and over that desire to live close to live in the Four Seasons activity center in the heart of east Vancouver. The community is planned to provide single-level housing, two-car garages, well designed and finished homes with on-site open space amenities and convenient proximity to groceries, retail opportunities and health care services.

20.260.020 Applicability

A. Applicable in all zones.

The planned development is a development vehicle that may be used in all base zoning districts except in the Park, Greenway and Natural Area districts.

Response

The applicant is proposing a planned development on land with both R-9 and R-22 zones. Planned developments may be allowed each of these zones.

B. Permitted uses

The applicability provisions at 20.260.020.B.1.a.(1) and (2) indicate single-family detached residential units and two or more single-family attached residential units are allowed by right within planned developments in the R-9 zone. This section also indicates a 5% density bonus is allowed per the provision of 20.260.060 (D).

20.260.020.B.2.a.(1) and (2) indicate single-family detached residential units and two or more single-family attached residential units are allowed by right within planned developments in the R-22 zone. The section also states a 5% density bonus is allowed per the provision of 20.260.060 (D).

Response

Planned development may be allowed on the subject site. Also, the applicant is allowed a 5% density bonus. Per 20.260.020.B, single-family detached and single-family attached are permitted by right in both the R-9 and the R-22 zones.

Eighteen attached single-family residential units and 52 detached single-family unit are proposed. Associated with the planned development, an adjustment is requested to the maximum lot coverage standards allowed in both the R-9 and R-22 zone.

Because the site is proposed for narrow lots and more than 50% of the lots will be provided alley access (discussed in more detail below), the base zone lot coverage is 55% on the R-9 portion and 65% on the R-22 portion of the site. This Planned Development proposal requests an adjustment to 75% lot coverage. The purpose of the lot coverage request is to accommodate the planned 55 and older community. This development will consist exclusively of single-level two-car-garage homes. Including two-car garages and all living space on a single floor to provide accessibility for an aging population takes more space on each lot. At the same time, some outside area is preserved on each lot for pleasant landscaping, without a heavy ongoing maintenance burden for the future owners.

C. More than one base zone.

20.260.020.C addresses applications involving more than one zoning district. It states "When a site contains land that is in more than one zoning district, the allowed and conditional uses at the required minimum and maximum densities, if applicable, shall be proportionate to the land within the development site devoted to each zoning district. The zoning may be shifted around the site provided that the same proportion acreage of each zoning district is retained. The concept and detailed plans shall explicitly illustrate such physical reconfiguration of the site and shall be used as the basis for all subsequent land use reviews."

Response

The proposal contains 4.79 acres are zoned R-9 (although, as mentioned above, this parcel will be reduced to 3.79 acres via a boundary line adjustment prior to subdivision) and 4.68 acres zoned R-22. The gross site acreage after the BLA will be 8.47. The minimum and maximum densities in the R-9 zone are 5.9 to 8.7 dwelling units per acre. In the R-22 zone the allowed densities range from 18.1 - 22 units per acre. These are based on net density.

The proposed density related to the R-9 zoned area is 12.61 units per acre. The proposed density related to the R-22 zoned area is 12.8 units per acre.

The maximum net density allowed in the R-9 zone is 8.7 units per acres. The minimum net density allowed in the R-22 zone is 18.1 units per acre.

The minimum number of units allowed in the R-9 portion of the site is 14. The maximum number of units is 20.

In the R-22 zoned area the minimum number of units allowed is 58 and the maximum number of units allowed is 70.

For the entire proposal, the combined minimum number of units is 72. The combined maximum number of units allowed is 90. The applicant proposes 70 units

20.260.030 Approval Process.

A. Elements of approval process.

The 20.260.030.A describes the approval process for planned developments. It indicates the two elements of the planned development approval process are:

1. Approval of the planned development concept development plan which contains a substantial level of detail for the whole project; and
2. Approval of the detailed site plan(s) to be constructed in one or more phases that provide all of the additional detail not contained in the concept plan.

Response

Although the code indicates there two elements of the planned development approval process, 20.260.030.C Concurrent reviews, indicates an applicant may file two or more related requests concurrently. The applicant is filing for concept development plan, detail site plan and subdivision approval.

B. Decision-making process

Response

20.260.030.B describes the decision-making process. The applicant is aware of the decision-making process. No further response is required.

C. Concurrent reviews.

An applicant may file two or more related requests concurrently. These concurrent reviews will be reviewed by the procedure type of the higher/highest level, that is, if one review is subject to a Type III process and the other a Type II process, both will be subject to a Type III review process.

Response

As indicated above, the requested action is approval of a concept development plan, detail site plan and subdivision approval concurrently. The proposal includes a planned development, planned development require a Type IV review process. Therefore, the entire application is subject to the Type IV review standards.

D. Adjustments.

20.260.030.D addresses adjustments. It states adjustments to numerical development standards in the underlying zoning district shall meet the criteria contained in Section 20.260.050(B) VMC below in lieu of requirements for variances contained in Chapter 20.290 VMC. The exception to this is a request to exceed the maximum height permitted in the underlying zone, which will require a concurrent variance request per 20.290 VMC.

Response

The applicant is requesting an adjustment to the maximum lot coverage standard. Under the narrow lot standards, the maximum allowed lot coverage is 55% in the R-9 zone and 65% in the R-22 zone. The applicant is requesting a maximum lot coverage of 75% for the entire development. This is addressed fully in response to 20.260.050.B.

The applicant is also requesting an adjustment to the minimum required lot area in the R-9-portion of the proposal.

20.260.040 Time Limits

Response

The applicant is aware of the time limits associated with the planned development process. No comments from the applicant are required at this time.

20.260.050 Approval Criteria

A. Concept development plan approval criteria. To receive approval for a planned development, the applicant shall demonstrate compliance with all of the following criteria:

1. Content. The concept plan contains all of the components required in Section 20.260.070. Compliance with all applicable standards. The proposed development and uses comply with all applicable standards of the Title, except where adjustments are being approved as part of the concept plan application, pursuant to Section 20.260.030 (D)(2).

Response

Compliance with the provisions of 20.260.070 are addressed under the response to that subsection on page #

2. Architectural and site design. The proposed development demonstrates the use of innovative, aesthetic, energy-efficient and environmentally-friendly architectural and site design.

Response

Within the application materials at Section 10, the applicant has submitted detailed drawings addressing the architecture and site design.

3. Transportation system capacity. There is either sufficient capacity in the transportation system to safely support the development proposed in all future phases or there will be adequate capacity by the time each phase of development is completed.

Response

The applicant has submitted a traffic study prepared by Kittleson and Associates, Inc. addressing trip generation, trip distribution and traffic impacts prepared pursuant to City-required traffic study standards (See Section 7)

4. Availability of public services. There is either sufficient capacity within public services such as water supply, police and fire services, and sanitary waste and storm water disposal, to adequately serve the development proposed in all future phases, or there will be adequate capacity available by the time each phase of development is completed.

Response

The pre-application conference report dated Aug. 23, 2018, indicated public utilities were available or could be extended to the site. Stormwater facilities will be required to meet the standards contained in VMC 14.25.

5. Protection of designated resources. City-designated resources such as historic landmarks, significant trees and sensitive natural resources are protected in compliance with the standards in this and other Titles of the VMC.

Response

The pre-application report indicated, no resources designated for protection on the project site. However, although the site is not within an area of high probability of encountering artifact, an archaeological predetermination is required as the site contains more than 5 acres.

Archaeological Services of Clark County completed an archaeological predetermination of the site. Their findings no further action is required (see Section 11).

6. Compatibility with adjacent uses. The concept plan contains design, landscaping, parking/traffic management and multi-modal transportation elements that limit conflicts between the planned development and adjacent uses. If zoning districts are shifted per Section 20.260.020(C) VMC, there shall be a demonstration that the reconfiguration of uses is compatible with surrounding uses by means of appropriate setbacks, design features or other techniques.

Response

To the east, the land uses are residential. One tier of the proposed residential development abuts the existing residential. To the south the land uses are single-family residential, the city of Vancouver water station and a vacant tract. To the west is NE 112th Avenue. This major arterial separates the proposal from the land to the west, to the north is the BPA right-of-way. This approximately 340-foot-wide right-of-way separates the proposed development from the higher density residentially zoned to the north.

The proposed use is single-family residential. The current uses to the east and south of the project are single-family residential.

7. Mitigation of off-site impacts. All potential off-site impacts including litter, noise, shading, glare and traffic, will be identified and mitigated to the extent practicable.

Response

The proposal is for single-family residential development. Litter, noise shading glare and traffic are not generally off-site impacts associated with single-family dwellings.

The proposal is required to meet concurrency standards, including demonstration of compliance with City transportation concurrency and safety standards which is established in the Applicant's traffic study. Areas for solid waste disposal and recycling collection will be provided. Access for collection vehicle access will also be provided.

The proposed structures will be single level. Significant shading is not anticipated. Related to glare, lighting is anticipated to be typical of a residential neighborhood.

- B. Adjustment approval criteria. Adjustments to numerical development standards may be processed as part of the request for concept if the applicant can demonstrate compliance with all of the following approval criteria:

1. The adjustment(s) is warranted given site conditions and/or characteristics of the design.
2. The benefits accruing from the implementation of the adjustment outweigh any potential adverse impacts.
3. Any impacts resulting from the adjustment are mitigated to the extent practical.

Response

The applicant requests two adjustments. The first is to the maximum lot coverage standard. The second is to the minimum lot area requirement,

Maximum lot coverage adjustment request

The site has two zoning designations; R-9 and R-22. In each zone, the maximum lot coverage allowed 50% (Tables 20.410.050– 1 and 20.420.050– 1).

The proposal is also subject to the narrow lot standards. Section 20.927.050, Incentives for Providing Alleys states any development subject to this chapter which provides alley access to at least 50 percent of the total number of lots shall qualify for the following modifications to development standards:

Subsection B states the maximum lot coverage may be increased as follows:

- 1. In lower density residential districts, maximum lot coverage shall be 55%.*
- 2. In higher density residential districts, maximum lot coverage shall be 65%.*

The proposal provides alley access to 48 of the proposed 70 lots. This exceeds the 50% criterion. Per the provisions of Section 20.260.050.B, the applicant requests an adjustment to increase the allowed maximum lot coverage to 75% for each residential lot.

The adjustment is warranted given the characteristics of the design. The project will be limited to residents ages 55 and older by covenant. The proposal provides modest single-story homes on smaller lots with less need of maintenance.

The design includes 33,653 square feet of common open space, including recreational open space and passive open space including slope and storm tracts/slope easements.

The proposal is not expected to have any adverse impacts. The required setbacks of the underlying zones will be met. Storm drainage will be addressed. All required utilities and facilities will be provided. The residential density is within the allowed range. Parking and landscaping standards will be met.

The proposal allows for the housing type most appropriate for an older population. Because the community is proposed to be limited to owners 55 years of age and older, single level structures will allow for long-term aging in place. Building a home on one-story requires more floor space and, therefore, more lot coverage. At the same time, less landscaping reduces the burden of ongoing yard maintenance.

As indicated above, no adverse impacts are anticipated. Except for lot coverage adjustment, all standards are met.

Minimum lot area standard adjustment request

The minimum lot area standard in the R-9 zone is 5,000 square feet. The minimum lot area standard in the R-22 zone is 1,500 square feet. The site contains 3.79 gross acres of R-9 zoned land and 4.68 gross acres of R-22 zoned land.

The proposed lots range from 2,450 square feet to 3,858 square feet. The average lot area is 2,881.34 square feet. The applicant is requesting the minimum lot area required be reduced to 2,400 square feet.

The adjustment is warranted as the average lot areas within the proposal exceed the blended average minimum lot area requirements to create a cohesive community design for a 55 and older community.

The proposal is not anticipated to have any adverse impacts. The total number of residential units will be less than the maximum number of units allowed by the current zoning districts.

The required setbacks of the underlying zones will be met. Storm drainage will be addressed. All required utilities and facilities will be provided. The residential density is within the allowed range. Parking and landscaping standards will be met.

The proposal allows for an innovative approach to single-family residential development.

- C. Conditions of approval. The review authority shall impose any conditions of approval necessary to mitigate potentially adverse impacts on surrounding properties to the greatest extent practicable.

Response

The applicant recognizes the review authority can impose conditions necessary to address potentially adverse impacts. However, as indicated above, no adverse impacts are anticipated.

- D. Detailed site plan approval criteria. During the site plan review process, the Planning Official shall approve the detailed development plan for one or more phases of the development upon finding that

the final plan conforms to the approved conceptual development plan, including all conditions of approval, unless the modification of the concept plan is sought concurrently as described in 20.260.030 (C)(6) VMC.

Response

The applicant requests concept development plan approval, detailed site plan approval of the entire development and preliminary land division approval as allowed by 20.260.030.D.

20.260.060 Development Standards.

- A. Minimum development size. There shall be no minimum site size for any type of planned development.

Response

The total post BLA site area is 8.47 acres.

- B. Applicability of base zone development standards. The provisions of the base zone are applicable as follows. When the zoning districts within the planned development have been shifted as permitted in Section 20.260.020 (C) VMC, the applicable development standards for the underlying zones shall shift accordingly.

1. Lot dimensional standards: The minimum lot depth and lot width standards shall not apply.

Response

No response required

2. Lot coverage: The site coverage provisions of the base zone shall apply.

Response

The proposal has two zoning designations. The western portion is zoned R-22 and the eastern portion R-9. In each zone, the maximum lot coverage allowed 50% (Tables 20.410.050– 1 and 20.420.050– 1).

The proposal is also subject to the narrow lot standards. Section 20.927.050, Incentives for Providing Alleys states any development subject to this chapter which provides alley access to at least 50 percent of the total number of lots shall qualify for the following modifications to development standards:

Subsection B states the maximum lot coverage may be increased as follows:

1. *In lower density residential districts, maximum lot coverage shall be 55%.*
2. *In higher density residential districts, maximum lot coverage shall be 65%.*

The proposal provides alley access to 48 of the proposed 70 lots. This exceeds the 50% criterion. Per the provisions of Section 20.260.050.B, the applicant requests an adjustment to increase the allowed maximum lot coverage to 75% for each residential lot.

3. Setbacks

- a. Front and rear yard setbacks for structures at the perimeter of the project shall be the same as required by the base zone except when an adjustment is approved, per Section 20.260.030(D).

Response

Per Table 20.410.050-1, the minimum front yard setback in the R-9 zone is 10 feet, except for garages/carports which required 18 feet. The rear yard setback is 5 feet.

Per Table 20.420.050– 1, the minimum front yard setback in the R-22 zone is 10 feet, except for garages/carports which required 18 feet. The rear yard setback is 0 feet or 5 feet

The site is also subject to the narrow lot standards. Under incentives for alleys, at 20.927.050.F.2 the code allows the minimum rear yard setback from edge of alley pavement to garage or carport may be either 4' or at least 18'. Lots with alley access will have 4-foot rear yard setbacks. Lots without alley access will have 5-foot rear yard setbacks.

Lots with the garage fronting public street will have the garages setback 18 feet from the right-of-way. The minimum front setback for house is 10 feet in the R-9 and R-22 zones. The Applicant anticipates using the setback exception provided for in VMC 20.927.050.F.3, so that front porches can be integrated into the building and community design.

- b. The side yard setback provisions shall not apply except that all detached structures shall meet the City's adopted building code requirements for type of construction.

Response

The project incorporates the zero lot line provisions contained in 20.910.050. 20.910.050.A states the minimum setback on the adjacent lot to the zero-setback side yard lot shall be either zero or 5 feet. The proposal will meet the requirement of that code section by recording the required easements and covenant and incorporating the required building design provisions.

- c. Front yard and rear yard setback requirements in the base zone setback shall not apply to structures on the interior of the project except that any garage facing a street shall be set back a minimum of 18 feet from the front or side street property line.

Response

All buildings will meet the front and rear yard setback standards as modified by the narrow lot standards (including allowance of front-porch encroachment into the setback) and the zero lot line standards.

- d. All other provisions of the base zone shall apply except as modified pursuant to this Chapter, except for maximum height for which a variance shall be sought, as governed by Chapter 20.290 VMC.

Response

The minimum lot area standards apply unless modified by an adjustment. The minimum lot area requirement in the R-9 zone is 5,000 square feet. The minimum lot area standard in the R-22 zone is 1,500 square feet. The applicant requests an adjustment under the planned development process.

The applicant also requests approval of an adjustment to the maximum allowed lot coverage. As addressed above, the request is to allow up to 75% lot coverage on all residential lots in the development for a uniform range of lot sizes throughout the planned development.

4. The Planning Commission or Hearings Examiner can reduce the minimum lot size requirement for attached single family residential uses in planned developments.

Response

The applicant has requested approval of an adjustment to the minimum lot size standard and the maximum lot coverage standards in order to provide a uniform range of lot sizes for single story homes.

- C. Common open space. In exchange for the approval of higher residential densities, smaller lots and relaxed development standards, the developer of a planned development is required to provide common open space for the active and passive recreational activities of residents, employees and visitors. Such space will be aggregated wherever feasible and shall consist of a combination of landscaped and paved (hardscaped) areas. Such common open space shall include some combination of the following: plazas, arbors, sitting areas, picnic areas, playing fields and trails to accommodate a variety of active and passive activities and promote visual interest.

1. In planned developments, the following requirements shall apply.
 - a. At least 10% of the gross area of the site must be devoted to such open space. Such space must be fully accessible to the residents, employees, visitors and/or other users of the site. Reduction of this standard in PDs of two acres or more is prohibited. A reduction of this standard in PDs of less than two acres is subject to an adjustment per Section 20.260.030(D) VMC using approval criteria in Section 20.260.050(B) VMC.

Response

The site has a gross area of 8.47 acres. Therefore, 0.847 acres must be open space.

- b. Fenced yards associated with buildings immediately adjacent to designated open space and landscaping in parking lots shall not count toward the total requirement.
- c. Environmentally-constrained land within the planned development, including wetlands, geologically hazardous areas, sensitive wildlife habitats, pursuant to Section 20.740 VMC or native vegetation and healthy soil preservation pursuant to 20.770 VMC or stormwater facilities pursuant to Chapter 14.25 VMC; may be used to meet up to 50% of the total requirement specified in Subsection (a) above, provided that these areas are not fenced and are either accessible to pedestrians to the extent practical or are visually accessible from adjacent and adjoining common open space.

Response

0.849 acres of open space are incorporated into the design.

2. The common open space designated to meet this requirement shall be permanently maintained by and conveyed to one of the following:
 - a. A homeowners' or property owners' association as regulated by State law.
 - b. A public agency that agrees to maintain the common open space and any buildings, structures or improvements placed within it.

Response

The open space, trail tract and front yards of each home will be maintained by the homeowners' association.

3. The applicant may not seek a variance or adjustment to reduce the minimum open space requirement specified in Subsection (2)(a) above.

Response

The applicant is not seeking a variance or adjustment to reduce the minimum open space requirement.

5. The open space created under this provision is not subject to the Park Impact Fee (PIF) credit unless so authorized by the Vancouver-Clark Parks Department.

Response

The applicant is aware of this provision and has not requested the City of Vancouver Parks and Recreation Department to authorize Park Impact Fee Credits.

D. Residential density

1. On-site density transfers. An applicant for a planned development may shift allowed residential densities around the site to protect and preserve critical or sensitive areas while providing the overall maximum density permitted by the underlying zoning district.
2. Density bonuses. An applicant for a planned development shall be entitled to an automatic residential density bonus of 5% above the maximum density allowed in the underlying base zone on the portions of the site devoted to housing.

Response

Proposed residential density calculations are provided above and meet overall density requirements. (see discussion under 20.260.020.C, above.

20.260.070 Concept Development Plan Submission Requirements.

- A. Existing conditions. An application for a planned development shall contain the following information related to existing conditions on the site, presented in narrative, tabular and/or graphic formats:

1. Vicinity map that identifies surrounding uses within 400 feet of the site boundary.

Response

A vicinity map, meeting this requirement is included in the application plan set.

2. Zoning map that identifies base and overlay zoning designations for the site and surrounding properties uses within 400 feet of the site boundary.

Response

The zoning map is included in the plan set.

3. Site description including the following information provided in narrative, tabular and/or graphic formats:
 - a. Topography and natural resources including 100-year flood plain; natural drainage patterns and courses; wetlands, rivers, springs, seeps, closed depression areas, and other water bodies; aquifer and wellhead protection areas; professional survey of existing vegetation and significant stands of trees and individual trees with a caliper greater than 6"; significant fish

and wildlife habitat, and professional soils report including hydraulic conductivity, groundwater depths and geological hazards such as steep slopes greater than 15%, unstable, impermeable or weak soils. Exhibit must include a site plan with no greater than five- (5) foot contours for slopes of 0– 10% and no greater than two-(2) feet for slopes greater than 10%.
20.260 - 11

Response

*The topography is shown on the existing conditions plan of the engineering plan set (see plan set)
The site is not impacted by the 100-year flood plain; natural drainage patterns and courses; wetlands, rivers, springs, seeps, closed depression areas, and other water bodies; aquifer or wellhead protection areas.*

The Existing Conditions plan sheet also locates the existing trees and structures on the site and indicates existing contours at 1-foot intervals. There are not slopes greater than 15%. A geotechnical report was prepared by Columbia West Engineering (See Section 5).

- b. Open space inventory including all natural and landscaped areas.

Response

The existing open space areas are indicated on the Existing Conditions plan (see plan set).

- c. Inventory of cultural, historic and/or archaeological resources on the site, if any.

Response

As the site contains more than 5 acres, the applicant has submitted an archaeological predetermination report prepared by Archaeological Services of Clark County. The findings of the report were no additional review is required.

- d. Existing buildings, if any, including use, location, size and date of construction.

Response

The Existing Conditions plan sheet indicates the existing buildings; showing their location and size. Clark County GIS records indicate several out buildings were constructed in 1995. These records, however, do not indicate the construction date for others.

- e. Existing on-site pedestrian, bicycle and vehicular circulation system, if any.

Response

The Existing Conditions plan sheet of the submitted plans addresses this (see preliminary plan set).

- f. Inventory of existing vehicular and bicycle parking spaces and location of surface and structured parking facilities, if any.

Response

There are no formal designated vehicle or bicycle parking space on the site. There are no parking structures.

- g. Location and size of all public and private utilities on the site including water, sanitary sewer, storm water retention/treatment facilities, and electrical, telephone and data transmission lines.

Response

The Existing Conditions plan sheet addresses this.

- h. Location of all public and private easements.

Response

The Existing Conditions plan sheet (see plan set) addresses this requirement.

- i. A description of the type, design and characteristics of surrounding properties.

Response

The area to the north is the BPA powerline right-of-way. This site is currently cultivated under an agricultural easement benefitting the development properties. To the west is NE 112th Avenue. The development on the west side of NE 112th consists of the BPA right-of way, a large wooded lot which the Clark County GIS indicates has no structures and the Salvation Army facility.

To the south the land uses include a large wooded lot with a residence, a City of Vancouver water tower and the Cascade Crest Subdivision which is a single-family detached residential subdivision developed in the mid-1990s.

To the west is the Evergreen Meadows subdivision. Approved in 1969 and developed over the following years as a single-family detached subdivision.

- 4. Detailed description of the transportation system within and adjacent to the site including:
 - a. Street classification of all internal and adjacent streets.

Response

The adjacent streets include:

- *NE 112th Avenue, a 4-lane designated Principal Arterial,*
- *NE 16th Street, a designated Local Access street; and*
- *NE 115th Avenue, a designated Local Access street.*

All internal streets, including alleys, will be public streets. The Existing Conditions plan depicts the improvements to the existing streets. The preliminary engineering plans depict the proposed street improvements.

- b. Transit service availability.

Response

C-TRAN Route 177, Evergreen Express to Portland, runs along NE 18th Street. However, the only stop is at the Evergreen Park and Ride on 138th Avenue. C-TRAN Routes 80 and 30 run through the intersection of NE 28th Street and NE 112th Avenue, a little over ½ mile from the site

- c. Baseline traffic impact study prepared by a licensed engineer to include information as required by the City's Traffic Engineer.

Response

A traffic study has been prepared by Kittelson & Associates, Inc. Transportation Engineering & Planning December 22, 2017 with an updated letter dated September 27, 2018 (see Section 7)

6. Analysis of existing infrastructure capacity on and in the vicinity of the site.

Response

The city of Vancouver provided comments regarding the existing infrastructure at the pre-application conference on August 23, 2018 (PIR-156552). The conference report indicated public infrastructure was available or could be made available to service the requirements of this development.

7. SEPA checklist.

Response

The SEPA Checklist has been completed and is attached as Section 4 of this application..

8. Applicable review fees.

Response

Review fees will be determined during the pre-submittal review process and paid at the time of submittal.

- B. Planning history. Summary of all previous known land use cases affecting the applicant's property and a list of all outstanding conditions of approval that either have not been addressed in the past and/or that remain in force at the time of the application.

Response

The site was the subject of a pre-applicating conference on August 23, 2018 (PIR-156552). County GIS records indicate two other pre-applications; PIR-52386 on March 30, 2016 and PIR-64574 on Sep. 18, 2017.

No development requests were processed associated with the 2016 and 2017 Pre-Application conferences.

C. Proposed development plan.

1. Description of all proposed development within the planned development, presented in narrative, tabular and graphic formats:
 - a. Underlying zoning district boundaries. If these are shifted around the site as permitted by Section 20.260.020, the existing and proposed configuration of zoning districts shall be illustrated.

Response

The site has two zoning districts; R-9 and R-22. The applicant does not intend to shift the zoning districts. Rather the applicant requests to blend the zoning districts via the requested adjustment.

Both the R-9 and the R-22 zone allow single-family detached and attached dwelling units (Table 20.410.030 – 1. Single-family attached dwelling unit in the R-9 zone are subject to Section 20.260.020.B.1.a(2), Planned Development and subject to Section 20.910.050 VMC, zero lot line requirements). The R-22 zone also allows single-family attached and detached dwelling units Provided the minimum required residential density is met, on an overall project basis.

Each zone allows attached and detached single-family dwellings. There are caveats relating to density and planned unit development. The difference between what is allowed in the two zones is density.

The applicant proposes to blend the densities of the two zones and apply it to the entire development.

- b. Description of the mix of uses, including number of units and/or total gross square feet devoted to each, and approximate location on the site.

Response

The proposal consists of 70 attached and detached single story single-family residential dwelling units intended for households of individuals 55 years of age and older. Included in the design is open space, designated guest parking, and storm facilities (see preliminary plan set).

- c. All other site improvements including the approximate size and location of walls, barriers and fences; surface and structured parking facilities; bicycle parking facilities; on-site pedestrian, transit and vehicular circulation; transit stops and pedestrian/transit amenities; and open space and landscaped areas.

Response

The proposed concept plan addresses each of these facets related to the development (see preliminary plan set).

- d. The conceptual location of new and/or expanded existing public and private infrastructure including water, sanitary sewer, stormwater management facilities; and electrical, telephone and data transmission lines. This includes wireless telecommunications facilities.

Response

The proposed concept plan addresses each of these facets related to the development (see preliminary plan set).

- 2. Phasing plan for implementation of the proposed development.

Response

The development will not be phased.

- 3. Summary of development intensity at full build-out including average floor area ratio and lot coverage.

Response

Lot coverage will range from 68% to 75%, depending on final lot size and product type mix. Because these will be single-story structures, FAR will be the same as the percentage of lot coverage.

- 4. Summary of transportation facilities including:
 - a. Traffic impact study prepared by a licensed engineer that describes traffic impacts associated with each phase of development and at full build-out of the project, and a plan for accommodating this traffic in compliance with Title 11. The specific content of the traffic impact study shall be determined by the City's Traffic Engineer.

Response

A traffic study was prepared by Kittelson & Associates (see Section 7)

- b. Parking impact study describing the parking demand associated with each phase of the development and at full build-out of the project, and a mitigation plan for accommodating parking demand on the site.

Response

The proposal is for 70 single-family dwellings. The standard parking requirement for single-family residential development is 1 parking space per dwelling unit (Table 20.945.070-2). The project must also meet the standards for narrow lot developments. The narrow lot standards require designated guest parking at a rate of one guest parking space for every three narrow lots in the development (Section 20.927.030.B).

Each home is currently intended to have a two-car garage. The project plans submitted with this development illustrate available parking on NE 16th Street, the proposed NE 17th Street, and in two parking tracts located within the development and to be maintained by an owners' association. A total of 46 off-site parking spots are provided (including allowed parking on NE 16th Street and the new NE 17th Street), which exceeds the 23 off-site spaces required by the City's narrow lot code

- c. Concurrent or proposed street vacations, with a description of potential parking and traffic/pedestrian impacts, if any, and appropriated measures to mitigate these impacts.

Response

No street vacations are requested.

5. Plan for protecting designated environmental, historic/cultural and open space resources.

There are no designated environmental, historic/cultural and open space resources associated with the site.

6. Design standards that will govern the orientation and design of buildings and other improvements include but are not limited to the following. Applicants for planned developments shall be encouraged to use building techniques and materials that result in projects that architecturally attractive, durable and energy-efficient.

- a. Architecture, including design standards and building materials board(s), for buildings, fences, walls and other structures.

Response

The Applicant intends to build a development that is architecturally attractive, durable and energy efficient. Lot width, product type, and product placement on each lot is intended to be varied to create variety and interest. Front porches and architectural detail on each structure will enhance the curb appeal for individual homes and the attractiveness of the community overall. The CCRs governing the community will include design standards and a mechanism for review and approval of improvements of changes to building design after initial construction.

The application includes architectural design elements for the development.

- b. Landscaping, including design standards and standard plant list. Native plant materials are preferred.

Response

Landscaping, consistent with city standards, will be professionally designed, installed and maintained in all common areas and for the front yard of each home. The applicant has provided a programmatic landscaping plan depicting the general design concepts and potential list of plant materials.

- c. Pedestrian circulation, including development standards, amenities and materials.

Response

The proposal includes standard street frontage throughout for pedestrian circulation and includes a recreational trail connection and two open spaces that will be available for use by residents.

- d. Bicycle parking facilities, including specifications.

Response

These are single family homes. It is anticipated that all bicycle parking will be at each residence

- e. Signs.

Response

No monument signs are anticipated

- f. Lighting.

Response

Lighting will be installed consistent with City requirements.

Response. The applicant has provided a conceptual plan addressing the above enumerated design elements (see preliminary plans)

Section 20.260.080 Detailed Development Plan Submission Requirements.

A. **Submission requirements.** At the time of construction of a project or phase of development that was approved as part of the concept development plan, the applicant shall submit the following documentation demonstrating that the proposed project or phase is in substantial compliance with that contained in the original approval by means of a site plan review, using procedures contained in 20.270 VMC. An application submitted for a detailed development shall include the following:

1. Detailed site plan.
2. Elevations of all buildings.
3. Landscape plan.
4. Erosion control plan.
5. Stormwater management plan including low impact development site analysis determining feasibility of using LID techniques.
6. Narrative documenting the following:
 - a. Compliance with all development and design standards in the base zone, as modified in the initial concept plan approval.

- b. Compliance with all relevant conditions of approval.
 - c. Consistency with traffic, parking and infrastructure plans contained in the initial concept plan approval.
- A. Submission requirements. At the time of construction of a project or phase of development that was approved as part of the concept development plan, the applicant shall submit the following documentation demonstrating that the proposed project or phase is in substantial compliance with that contained in the original approval by means of a site plan review, using procedures contained in 20.270 VMC. An application submitted for a detailed development shall include the following:
- 1. Detailed site plan.
Section 20.270.040.C, a proposed site development plan must include the following:
 - 1. The proposed site and its dimensions and area, orientation relative to north.
 - 2. Abutting properties or, if abutting properties extend more than 100' from the site, the portion of abutting properties within 100' of the site, and the approximate location of structures and uses on abutting property or portion of the abutting property.
 - 3. The location and dimensions of proposed development, including the following:
 - a. Streets and other rights-of-way and public or private access easements on and adjoining the site;
 - b. Vehicle, pedestrian and bicycle parking and circulation areas, including handicapped parking stalls and disembarking areas, accessible route of travel, proposed ramp and signage as required by WAC 51-40;
 - c. Loading and service areas;
 - d. Active or passive recreational or open space features;
 - e. Above-ground utilities;
 - f. Existing structures to be retained on the site and their distance from property lines;
 - g. Proposed structures on the site, including signs, fences, etc., and their distance from property lines;
 - h. The location and type of proposed outdoor lighting and existing lighting to be retained; and
 - i. The size and location of solid waste and recyclables storage areas.

Response

The applicant has provided a detailed site plan, prepared by SGA Engineering & Design, addressing all the applicable information for this proposal.

- 2. Elevations of all buildings.

Response

Architectural elevations have been provided by Boulevard Homes shown in section 10

- 3. Landscape plan.

Response

A landscape plan, prepared by SGA is included in the plan set.

- 4. Erosion control plan.

Response

An erosion control plan, prepared by SGA Engineering & Design, is included in the civil plan submittal.

5. Stormwater management plan including low impact development site analysis determining feasibility of using LID techniques.

Response

A stormwater management plan, prepared by SGA & Associates is, include in the civil plan submittal.

6. Narrative documenting the following:
 - a. Compliance with all development and design standards in the base zone, as modified in the initial concept plan approval.
 - b. Compliance with all relevant conditions of approval.
 - c. Consistency with traffic, parking and infrastructure plans contained in the initial concept plan.

Response

The applicant is requesting both conceptual and detailed approval of the proposed planned development. The narrative is included in the application is applicable to both the concept and detailed planned development application.

Section 20.260.090 Vesting.

- A. Applicability. A planned development shall be reviewed under this Chapter and the zoning, development and other land use control ordinances contained in Titles 11, 12, 14, and 20 of the Vancouver Municipal Code, and any uncodified ordinances modifying the same, in effect on the date a concept plan application has been deemed fully complete by the City. For the purposes of this section, a vested concept plan application shall mean that the applicant is entitled to implement the planned development or any portion of it described in the application under the zoning, development and land use ordinances applied by the City in its review of the planned development application.

Response

The applicant is aware of the planned development vesting provisions.

- B. Subsequent Regulations. An applicant may have the option of subjecting its development to any subsequently enacted land use ordinances. However, should an applicant choose to subject its development to a subsequently enacted land use ordinance, this shall have the effect of subjecting the development to all land use ordinances enacted after the application is vested, unless the city and applicant agree otherwise. In order for the Planning Official to grant such a request, the applicant must demonstrate how later enacted ordinance(s) will benefit both the project and the City while maintaining consistency with the comprehensive plan. Applicant must also demonstrate that use of later enacted ordinances will not conflict with other ordinances the development remains subject to and will not be significantly detrimental to the health, safety, or general welfare of the City. Planning Official shall review and either approve the request or determine if a new application must be submitted.

Response

The applicant is aware of the subsequent regulations provision.

20.260.100 Concurrency.

- A. **Applicability.** An applicant for a planned development shall be entitled to reserve capacity in the transportation system for the proposed development's trip generation and shall be deemed to have achieved transportation concurrency, under the concurrency rules and regulations in effect at the time that the concept plan application is vested under 20.260.090 VMC above, if (1) the applicant obtains a certificate of concurrency for all or any portion of its proposed development under Chapter Title 11 VMC, Transportation Concurrency; or (2) the applicant and the City enter into a development agreement as regulated by State statute (36.70B.170 et seq. RCW), which by its terms reserves capacity in the transportation system and includes a finding of transportation concurrency. The term for the concurrency determination shall be set as the term in the certificate of concurrency or the development agreement.

Response

The applicant is aware of the concurrency applicability provision. A traffic impact analysis, prepared by Kittelson & Associates, Inc. Transportation Engineering & Planning, is included in the application materials (Exhibit) The traffic Impact analysis provides the information required for the City to render a concurrency determination.

Chapter 20.320 Subdivisions

20.320.015 Applicability.

All divisions of land except those listed in Subsection (D) below, shall be subject to the requirements of this Section.

- A. Short subdivisions. A short subdivision is a land partition containing nine (9) or fewer lots.
B. Subdivisions. A subdivision is a land partition containing ten (10) or more lots.
C. Infill Subdivisions and Short Subdivisions, pursuant to additional requirements of Section 20.920 VMC.

Response.

The application is for approval of a 70-lot subdivision with additional tracts for open space, storm facilities, parking and slopes. The subdivision process is applicable to this request.

- D. Exemptions. The provisions of this Chapter shall not apply to the following:
1. Cemeteries and burial plots while used for that purpose.
 2. Divisions of land into lots or tracts, each of which is 1/64 of a section of land or larger, or 10 acres or larger, if the land is not capable of description as a fraction of a section of land. For purposes of computing the size of any lot under this item which borders on a street or road, excluding limited-access streets or roads, the lot size shall be expanded to include that area which would be bounded by the centerline of the road or street, and the side lot lines of the lot running perpendicular to such centerline.
 3. Divisions and/or acquisitions of land pursuant to condemnation or threat of condemnation by a government agency public purposes.
 4. Divisions of land made by testamentary provisions, or the laws of descent.
 5. Divisions of land made by subjecting a portion of a parcel or tract of land to Chapter 64.34 RCW (Condominiums) if the Planning Official has approved a binding site plan in accordance with Chapter 20.330 VMC.
 6. Divisions of land into lots or tracts classified for industrial or commercial use, when the Planning Official has approved a binding site plan for use of the land in accordance with Chapter 20.330 VMC.

7. A division made for the purpose of adjusting boundary lines which does not create any additional lots, tracts, parcels, sites or divisions, nor any lots, tracts, parcels, sites or divisions which contain insufficient area and/or dimensions to meet the minimum requirements for width, depth and/or area for a lot.
8. Divisions created by a court order that result in lots that conform to the requirements of this Title.

Response

None of the above-described exemptions apply.

Section 20.320.020 Approval Process.

A. Decision-making process

1. Short subdivisions. The Planning Official shall approve, approve with conditions or deny an application for a short subdivision preliminary plat by means of a Type II procedure, pursuant to 20.285.050 VMC, using approval criteria contained in Section 20.320.040 VMC, and additional requirements of 20.920 VMC if a qualifying infill development, and 20.927 VMC if a qualifying narrow lot development.
2. Subdivisions. The Hearings Examiner shall approve, approve with conditions or deny an application for a subdivision preliminary plat by means of a Type III procedure, pursuant to 20.210.060 VMC, using approval criteria contained in Section 20.320.040 VMC, and additional requirements of 20.920 VMC if a qualifying infill development or 20.927 if a narrow lot development.

Response

The application includes a planned development approval request as well as a preliminary subdivision plat request. The planned development contains less than 25 acres. Therefore, both requests will be considered by the Hearings Examiner.

Also, as the application includes a planned development and planned developments are considered by the city council, the preliminary plat will also be considered by the city council. The preliminary subdivision is subject to a Type IV application process.

- B. Term of preliminary plat approval. Approval of a preliminary short subdivision or subdivision shall be valid for a period of seven years, except as provided by RCW 58.17.140(3)b, subject to verification of utility availability, during which time an application for final plat meeting all the requirements of this Chapter and all conditions of preliminary plat approval shall be made; provided, that extensions of preliminary short subdivision or subdivision plat approval may be granted in accordance with the procedures and criteria set forth in Section (D) below.

Response

The applicant is aware of the term of preliminary plat approval.

- C. Phasing. The developer may develop the short subdivision or subdivision in phases. Any phasing proposal shall be submitted with application materials for the preliminary plat and approved by the Review Authority, except that the Planning Official may approve a phasing plan for an approved

short subdivision or subdivision by means of a Type I procedure, governed by 20.210.040 VMC Type I Applications upon finding that:

1. The phasing plan includes all land identified within the legal notice of the approval hearing;
2. The sequence of phased development is identified by map;
3. Each phase shall constitute an independent project meeting all of the requirements for density, open space, public and private infrastructure, landscaping, pedestrian and vehicle circulation etc.; and
4. The Director of Public Works and Transportation Manager have approved the necessary documents to determine that all streets, sanitary and storm sewers, water and other public improvements, including but not limited to drainage improvements, and erosion control measures are assured.

Response

The applicant is not requesting phasing.

D. Extensions. Extension requests shall be reviewed in accordance with the following criteria:

1. An initial one-year extension request, which has been filed at least 30 days prior to the expiration of the seven-year period, shall be reviewed by the Planning Official by means of a Type I procedure, as governed by Section 20.210.040 VMC, upon showing that the applicant has attempted in good faith to meet the conditions for the final plat within the seven-year period.
2. Two additional two-year extension requests may be granted by the Planning Official by means of a Type II procedure, as governed by Section 20.210.050 VMC, providing the applicant demonstrates compliance with all of the following criteria:
 - a. The applicant has pursued compliance with all conditions of preliminary plat approval and submitting the final plat in good faith; and
 - b. There have been no changes to the Comprehensive Plan, zoning ordinance, development standards or other applicable codes that are inconsistent with the approved preliminary plat.

Response

The applicant is aware of the preliminary plat extension provisions.

3. Short subdivisions or subdivisions that have been approved for phased development pursuant to Subsection (C) above may receive subsequent two-year extensions in accordance with the criteria of Subsection (D)(2) above so long as at least one phase received final plat approval and was properly recorded within four years prior to each such subsequent extension request.

Response

The application does not include a short plat.

- E. Transportation concurrency. The approval of extensions notwithstanding, the applicant shall comply with the provisions of Chapter 11.95 VMC, Transportation Concurrency.

Response

Included in the application is a traffic impact analysis prepared by Kittelson & Associates, Inc. Transportation Engineering & Planning. The traffic Impact analysis provides the information required for the City to make a concurrency determination.

- F. Land transfer agreements. Agreements to transfer land prior to final plat are authorized, provided, that the performance of an offer or agreement to sell, lease or otherwise transfer a lot, tract or parcel of land following preliminary plat or short plat approval is expressly conditioned on the recording of the final plat or short plat containing the lot, tract or parcel and shall comply with the requirements of 58.17.205 RCW.

Response

The applicant is aware of the preliminary plat land transfer agreements provisions.

Section 20.320.030 Preliminary Plat Application Requirements.

- A. Application. The applicant shall provide one original and eight copies of the application for a preliminary plat of a short subdivision or subdivision consisting of the following information:
1. Subdivision or short subdivision name that must be other than the name of an existing subdivision, addition or plat recorded in Clark County Washington.
 2. Name, mailing address, and telephone number of the owner and/or developer;
 3. Name, mailing address, telephone number, and signature of person preparing the application
 4. Date;
 5. Location, including $\frac{1}{4}$ of $\frac{1}{4}$ section, section, township, range and, as applicable, donation land claim and/or subdivision;
 6. Total parcel area in acres and square feet;
 7. Comprehensive Plan and zoning designations;
 8. Existing and proposed land uses;
 9. Number and size of residential, commercial and industrial lots;
 10. Names of all utility purveyors;
 11. Signatures of all property owners; and
 12. Fee, as governed by Chapter 20.180 VMC.

Response

The applicant has submitted the form required. All application materials area provided in electronic format as required.

- B. Preliminary plat information. The applicant shall provide one original and eight copies of the following information. Drawings shall be on sheets not larger than 24" X 36". Preliminary plats shall be drawn at a scale of 1" = 50' or larger. Plans for the preliminary plat will not be accepted if they are not collated and folded.
1. Existing conditions plan. The preliminary plat application shall include the following information on one or more to-scale drawings:
 - a. A vicinity map showing streets and access points, pedestrian and bicycle pathways, transit stops and utility locations within a 500' radius of the site;
 - b. The site size, dimensions and orientation relative to true north;

- c. Remaining easements
- d. The location, name and dimensions of public and private streets adjoining the site, identifying whether the streets are public or private;
- e. Location, dimension, and purpose of existing easements;
- f. The location of existing structures and other improvements on the site, including buildings, driveways, parking, loading, pedestrian and bicycle paths, passive or active recreational facilities or open space and utilities;
- g. Elevation of the site at 2' contour intervals for grades 0% to 10% and at 5' contour intervals for grades more than 10%;
- h. The location of natural conditions such as:
 - 1. Waterbodies, the 100-year floodplain, aquatic habitats, natural drainage courses, wetlands, springs, seeps, closed depression areas, groundwater elevations, aquifers, and wellhead protection areas;
 - 2. Geological hazard areas such as slopes in excess of 15%, unstable or weak soils, soils with high erosion potential, rock outcroppings, and areas of healthy native soils and hydraulic conductivity;
 - 3. Existing vegetation including stands of trees and individual trees with a caliper greater than 6", additional information necessary to comply with VMC 20.770 Tree, Vegetation, and Soil Conservation, and areas of wildlife habitat.

Response

The applicant has provided an Existing Conditions Plan, prepared by SGA Engineering & Design. The plan addresses all the applicable existing conditions elements.

- 2. Preliminary plat. The proposed preliminary plat shall include the following information presented on one or more drawings. Plans shall be on sheets not larger than 24" x 36". Preliminary plats shall be drawn at a scale of 1" = 50' or larger. Other scales may be used with the approval of the Planning Official. Plans for the preliminary plat will not be accepted if they are not collated and folded.
 - a. The proposed site and its dimensions and area.
 - b. Proposed lots, tracts and easements including dimensions individual lot areas and total acreage.
 - c. Abutting properties or, if abutting properties extend more than 100' from the site, the portion of abutting properties within 100' of the site, and the approximate location of structures and uses on abutting property or portion of the abutting property.
 - d. The location and dimensions of development, including but not limited to the following:
 - 1. Streets and other rights-of-way and public or private access easements on and adjoining the site;
 - 2. Vehicle, and bicycle parking and pedestrian bicycle and vehicular circulation areas;
 - 3. Loading and service areas;
 - 4. Active or passive recreational or open space features;
 - 5. All utilities;
 - 6. Existing structures to be retained on the site and their distance from proposed property lines;
 - 7. Proposed structures on the site, including signs and fences, and their distance from property lines if known at time of land division;
 - 8. The location and type of proposed outdoor lighting and existing lighting to be retained if known at time of land division.; and

9. Boundary delineation of any wetlands including required buffers and shoreline setback lines if applicable

Response

The applicant has submitted a preliminary plat prepared by SGA Engineering & Design addressing each of applicable elements describe above.

3. Narrative. A Preliminary plat application shall include the following:
 - a. A comprehensive narrative addressing how the development complies with the technical standards in Section 20.320.080 VMC; other applicable standards of this Title and the policies of the Comprehensive Plan outlined by staff as being applicable to the proposed development

Response

Please see detailed narrative related to 20.320.080 below

- b. Description of the uses proposed for the site;

Response

The application is for approval of a planned development subdivision. The applicant proposed to develop 70 single-family attached and detached dwellings for residents 55 and over. The development will contain open spaces, a north-south trail through the development and tracts for storm facilities and sloped areas.

- c. Phasing plan, if applicable;

Response

Phasing is not requested.

- d. Construction schedule;

Response

Construction will begin in spring 2019.

- e. Any variances requested pursuant to the regulations in Chapter 20.290 VMC;

Response

The applicant has not requested any variances under 20.290. The applicant has requested two adjustments. One to the maximum lot coverage standards and the other the minimum lot area requirements in R-9 zone. These are requested pursuant to the provisions of 20.260.050.B, relating to planned developments.

The applicant is also using the provision of the narrow lot standards to allow for encroachments in to front yard setback as allowed by 20.927.050.F.3.k

- f. Existing covenants or restrictions and easements, if applicable; and

Response

County GIS indicates easements.

- g. History of any previous subdivisions and short subdivisions of the property.

Response

The proposal is within the Northwestern Home Lots recorded Aug. 9, 1909

- 4. Supplementary information. One original and eight copies, collated and folded, of the following supplemental information shall also be submitted unless otherwise indicated in parentheses:
 - a. Environmental checklist that complies with Chapter 20.790 VMC, SEPA Regulations,
 - b. Legal description;
 - c. Reproducible copies of all plans identified in 8 1/2 x 11" format;
 - d. Assessor's map(s) showing all properties within 1,000' of the plat boundary;
 - e. Results of any completed percolation tests, if applicable (four copies);
 - f. 1 copy of the proposed plat map, reduced to fit on either 8-1/2" X 11" or 11" X 17" paper;
 - g. Geotechnical/soils survey (four copies), if applicable;
 - h. Tree, vegetation, and soil plan that complies with the requirements of Chapter 20.770 VMC, Tree, Vegetation, and Soil Conservation;
 - i. Preliminary grading, erosion prevention and stormwater plans
 - 1. Grading Plan indicating areas of soil protection and compaction prevention.
 - 2. Erosion Prevention measures as required in VMC 14.24, and
 - 3. Stormwater Site Plan as required in VMC 14.25,
 - j. Archaeological Pre-Determination Report, if applicable, that complies with the requirements of Chapter 20.710 VMC, Archaeological Resource Protection (four copies);
 - k. Sales history. A deed history of all applicable properties dating back to 1969 or to the date when a legal lot determination was made (one copy);
 - l. Clark County Health Department Review Evaluation Form or copy of application to the Clark County Health Department (four copies);
 - m. Pre-application conference notes; and
 - n. Certified mailing list. Current Clark County Assessor map(s) showing the property(ies) within a 500' radius of the site, per the requirements in Chapter 20.210.050 and 20.210.060 VMC, Decision-Making Procedures, and two sets of mailing labels with the names and addresses of owners of all properties within the 500' radius. Such list shall be certified as accurate and complete by the Clark County Assessor, a title company. For non-owner occupied properties, provide mailing labels addressed to "occupant" as can be determined from available County Assessor records (two copies).
 - o. Request for Certificate of Concurrence or Certificate of Concurrence Survey and applicable traffic studies.

Response

With the exception of the archaeological predetermination report, all materials will submitted electronically.

Section 20.320.040 Preliminary Plat Approval Criteria.

Approval criteria. To grant approval of a preliminary short subdivision or subdivision, the applicant must demonstrate compliance with all of the following criteria:

- A. Public facilities provision. Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for transportation, water, storm drainage, erosion control and

sanitary sewage disposal methods that are consistent with the City's current ordinances, standards and plans;

Response

The applicant has submitted preliminary civil engineering plans and reports addressing for transportation, water, storm drainage, erosion control and sanitary sewage disposal. The plan submittal includes:

- *A traffic impact analysis prepared by Kittelson & Associates;*
- *Preliminary street engineering plans;*
- *Preliminary water extension plans;*
- *Preliminary stormwater report;*
- *Preliminary grading plans which also address stormwater control;*
- *Preliminary erosion control plans; and*
- *Preliminary sanitary sewer engineering plans.*

- B. Proposed improvements. Appropriate provisions have been made for proposed streets, alleys and public ways, utilities and other improvements that are consistent with the City's current ordinances, standards and plans, and Department of Health and/or Washington State Department of Transportation standards and plans, where applicable;

Response

The improvement will be based on the plans approved by the city of Vancouver. The applicant has received a review from the Clark County Health Department relating the existing septic tanks or wells on the site.

- C. Open space and dedications. Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for open space, parks, schools, dedications, easements and reservations;

Response

The applicant does not propose to dedicate land for open space, public parks, or public schools. The development will pay park and school impact fees.

The proposal does include dedication of a public pathway, running north-south approximately at the midpoint of the development. The development will provide private open space for the residents and their guests.

- D. Physical characteristics. The design of the proposed short subdivision or subdivision site has taken into consideration the physical features of the site, including but not limited, to: topography, soil conditions, susceptibility to flooding, inundation or swamp conditions, steep slopes or unique natural features such as wildlife habitat or wetlands;

Response

As shown on the existing conditions plans and the preliminary grading plans, the site is not encumbered by its physical conditions.

- E. Re-platting of existing subdivisions. When re-platting an existing subdivision, the short subdivision or subdivision shall comply with all of the terms and conditions of the existing subdivision's conditions of approval;

Response

The proposal is within the Northwestern Home Lots recorded Aug. 9, 1909

- F. Compliance with all requirements of this title. The proposed short subdivision or subdivision complies with all applicable requirements of this title unless modified through the approval; and

Response

This narrative indicates the proposal complies with the applicable requirements of this title. No variances have been requested.

- G. Compliance with State requirements. That the proposed short subdivision or subdivision complies with the requirements of RCW 58.17.110.

Response

the requirements of RCW 58.17.110 are addressed as follows:

- (1) The city, town, or county legislative body shall inquire into the public use and interest proposed to be served by the establishment of the subdivision and dedication. It shall determine: (a) If appropriate provisions are made for, but not limited to, the public health, safety, and general welfare, for open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and schoolgrounds, and shall consider all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school; and (b) whether the public interest will be served by the subdivision and dedication.

Response

The applicant has demonstrated appropriate provisions can be made for all required public utilities. The development is designed meet the public safety provisions of Building and Fire Codes. The Clark County Health Department has completed and evaluation of the site relating to wells and septic tanks.

As indicated in the traffic impact analysis, this development will not have a significant impact on the level of service.

Parks and schools will receive impact fees from the development. The development is in the Evergreen School District. The impacted schools include Fircrest Elementary School, located at 12001 NE 9th St., Cascade Middle School, located at 13900 NE 18th Street and Evergreen High School, located at 14300 NE 18th St.(see Section 8).

The site is zoned for residential use. The use conforms to the comprehensive plan and complies with the various city of Vancouver zoning standards. Development of this site as proposed will not degrade the environment and will provide a needed, innovative, housing type. The proposal is in the public interest.

- (2) A proposed subdivision and dedication shall not be approved unless the city, town, or county legislative body makes written findings that: (a) Appropriate provisions are made for the public health, safety, and general welfare and for such open spaces, drainage ways, streets or roads, alleys,

other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and schoolgrounds and all other relevant facts, including sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school; and (b) the public use and interest will be served by the platting of such subdivision and dedication. If it finds that the proposed subdivision and dedication make such appropriate provisions and that the public use and interest will be served, then the legislative body shall approve the proposed subdivision and dedication. Dedication of land to any public body, provision of public improvements to serve the subdivision, and/or impact fees imposed under RCW 82.02.050 through 82.02.090 may be required as a condition of subdivision approval. Dedications shall be clearly shown on the final plat. No dedication, provision of public improvements, or impact fees imposed under RCW 82.02.050 through 82.02.090 shall be allowed that constitutes an unconstitutional taking of private property. The legislative body shall not as a condition to the approval of any subdivision require a release from damages to be procured from other property owners.

Response

The applicant has shown the subdivision will be developed in conformance with all applicable regulations. The hearing examiner's Final Order will contain finds address addressing these standards.

- (3) *If the preliminary plat includes a dedication of a public park with an area of less than two acres and the donor has designated that the park be named in honor of a deceased individual of good character, the city, town, or county legislative body must adopt the designated name.*

Response

The proposal does not include public park dedication.

- (4) *f water supply is to be provided by a groundwater withdrawal exempt from permitting under RCW 90.44.050, the applicant's compliance with RCW 90.44.050 and with applicable rules adopted pursuant to chapters 90.22 and 90.54 RCW is sufficient in determining appropriate provisions for water supply for a subdivision, dedication, or short subdivision under this chapter.*

Response

Water will be provided by the city of Vancouver.

- H. Narrow Lot Additional Criteria. Land divisions which contain one or more residential lots having a width of less than 40 feet shall meet additional criteria of VMC 20.927.030 A, B and C.

Response

The project includes narrow lots. Compliance with the narrow lot standards is addressed later in this narrative.

Section 20.320.050 Final Plat Application.

Response

Not applicable currently.

Section 20.320.060 Final Plat Approval.

Response

Not applicable currently.

Section 20.320.070 Technical Standards.

A. Subdivision Layout and Required Improvements

1. Principles of acceptability. The short subdivision or subdivision shall conform to the Comprehensive Plan. The short subdivision or subdivision shall conform to the requirements of the state law and to the standards established by this Title.

Response

The comprehensive plan designations for this site are Urban Low Density Residential (UL) and Urban Higher Density Residential (UH). The zoning of the site reflects the comprehensive plan designations. The UL area is zoned R-9 and the UH area is zoned R-22.

As shown throughout this narrative, the proposed uses are allowed in both zoning designations. As the use is based on the zoning and the zoning is based on the comprehensive plan, proposed subdivision will conform to the comprehensive plan.

- a. Street improvement standards. All proposed streets and street improvements shall comply with the provisions of Title 11 and approved transportation standards details on file with the Public Works Department.

Response

Engineering plans addressing street improvements have been submitted for review and comment. These plans address the standards set forth in Title 11. The city has the authority to approve as submitted, require revisions needed for approval or deny the application.

Once completed, the proposed will comply with all applicable provisions of Title 20.

- b. Blocks. The length, width and shape of blocks shall be designed with due regard to providing adequate building sites for the use contemplated; consideration of the needs for convenient access, circulation, control, safety of motor vehicular, bicycle and pedestrian traffic and recognition of limitations and opportunities of topography.

Response

There are two blocks surrounded by streets. The distance between the centerline of proposed NE 113th Avenue and proposed NE 115th Avenue is approximately 580 feet. The distance between the centerline of proposed NE 15th Avenue and the at the eastern edge of the project is approximately 520 feet. The distance from the centerline of Ne 16th street and the centerline of proposed NE 17th Street is approximately 220 feet.

The layout allows for building lots that range from 2,450 square feet to 3,858 square feet. Street and alley access are provided. A trail runs north-south through the development.

The site is relatively flat and is not a limitation on the site's development.

- c. Blocks shall not exceed 1,300' in length between street lines, except blocks adjacent to arterial streets or unless a previous adjacent layout or topographical conditions justify variation. The recommended minimum distance between intersections of arterial streets is 1,800'. Minimum length of a block shall not be less than 180'.

Response

All blocks are less than 1,300 feet between streets. All blocks are greater than 180 feet between streets.

NE 112th Avenue is a Principal Arterial. No additional intersections with NE 112th Avenue are proposed.

d. Easements

1. Utility lines. Easements for sewers, drainage, water lines, electric lines or other public use utilities shall be provided. The size and location of the easement shall be reviewed and approved by the appropriate utility provider.

Response

Locations of utility lines will be determined during the engineering review process. Each provider must approve the utility location prior to receiving engineering approval.

2. Watercourses. If a subdivision is traversed by a watercourse, such as a drainageway, channel or stream, there shall be provided a stormwater easement for the width of the watercourse plus 15' on each side of the watercourse. Streets or parkways parallel to a major watercourse may be required.

Response

There are no watercourses on the site.

3. Pedestrian/bicycle ways in and through residential subdivisions. In blocks over 800' in length, a pedestrian/bicycle way with a minimum width of 16' shall be required through the middle of the block when required by the Transportation Manager for public convenience and safety; 12' of the 16' corridor shall be paved in a durable material. If unusual conditions require blocks longer than 1,200' in length, two pedestrian/bicycle ways shall be required. When required by the Transportation Manager for public convenience and safety, pedestrian ways shall be required to connect cul-de-sacs or to pass through unusually shaped lots.

Response

Although no lots exceed 800 feet, a pedestrian/bike path is proposed running north-south through the development. It runs from NE 16th Street to the BPA right-of-way. The trail easement is 20-feet wide.

- e. Flag lots. Flag lots may be permitted, provided that the minimum width of the flag stem be 15' for a single lot and 20' for a shared flag access, and it is in compliance with fire access standards contained in VMC 16.04.150. No more than four lots may be accessed from a single flag stem. A private maintenance agreement shall be recorded for driveways which serve more than one lot.

Response

No flag lots are proposed.

- f. Lot side lines. Side lines, as far as practical, shall run at right angles to the street on which the lot faces.

Response

All lot side lines run at approximately right angle to the existing and proposed streets.

- g. Lot frontage. With the exception of flag lots, all lots shall abut on a public or private street with a minimum frontage of not less than 20'.

Response

All proposed lot have frontages greater than 20 feet on public street or private road.

- h. Lot depth and setbacks. Lots fronting or accessing on primary or secondary arterials shall be avoided when possible. If lots front on arterials, the lots shall have an average minimum depth of 100'.

Response

None of the proposed lots front or have access to an arterial.

- i. Parks and playgrounds. The Review Authority shall see that appropriate provision is made for parks and playgrounds to serve the proposed subdivision.

Response

No public parks or playgrounds are proposed on the site. The applicant is aware Park Impact Fees will be required to address the need for public parks.

- j. Narrow Lot Land Divisions. Land divisions which contain one or more residential lots having a width or less than 40 feet shall meet the development standards of VMC 20.927.040.

Response

The development does contain residential lots having a width or less than 40 feet. This narrative addresses the development standards of VMC 20.927.040 related to this application.

- k. Existing trees. All subdivision developments shall comply with the tree and vegetation management provisions contained in Chapter 20.770 VMC, Tree Conservation.

Response

A tree plan has been prepared. it addresses the provisions of 20.770 that apply to this application (see preliminary plan set).

- 2. Procedure for installation. In addition to other requirements, improvements installed by the developer of the short subdivision or subdivision, either as a requirement of these regulations or at his own option, shall conform to the requirements of this Title and improvement standards, specifications, inspections and procedures as set forth by the city and administered by the Department of Public Works and Community and Economic Development Department, and shall be installed in accordance with the following procedures:
 - a. Public work shall not commence until civil engineering plans, prepared in accordance with the requirements of the city, have been approved by the city: all required permits have been obtained and a pre-construction conference has been conducted. Public work shall not be commenced until the city has been notified in advance.
 - b. If work has been discontinued for any reason, it shall not be resumed until the city has been notified.

- c. Public improvements shall be constructed under the inspection and to the satisfaction of the Director of Public Works or their designee. The city may require changes in typical sections and details in the public interest if unusual conditions arise during construction to warrant the change.
- d. All underground utilities, sanitary sewers and storm drains installed in the streets by the developer of the short subdivision or subdivision shall be constructed prior to the surfacing of streets. Stubs for service connections and underground utilities and sanitary sewers shall be placed to a length precluding the necessity for disturbing the street improvements when surface connections are made.
- e. A plan showing all improvements "as built" shall be filed with the Development Review Services upon the completion of the improvements.
- f. Public improvements required. Improvements to be installed at the expense of the owner of the short subdivision or subdivision are as follows:
 - 1. All full-width streets, sidewalks, curbs and gutters, including alleys, within or adjacent to the subdivision or short subdivision; streets adjacent but only partially within the short subdivision or subdivision; and the extension of short subdivision or subdivision streets to the intercepting paving line of existing streets with which short subdivision or subdivision streets intersect shall be graded for the full right-of-way width and improved to the city's improvement standards and specifications.
 - 2. Half-width roads. In situations where the property being developed does not permit full-width public streets, half roads having a minimum right-of-way or easement and roadway improvement width of 1/2 of the design width may be permitted when placed adjacent to adjoining property so long as there is no physical obstruction or development constraint prohibiting the completion of the street on such adjoining property; provided, that public street half-width shall be a minimum of 20' wide. Public half-width streets serving six or more parcels shall be required to dedicate additional right-of-way as necessary to provide for a minimum of 1' of right-of-way beyond the edge of the sidewalk. Further, additional right-of-way or easement may be required between the edge of the roadway and the property line for construction clearance, slopes or other features. Half-width public streets shall serve a maximum of 200 ADT. If the number of trips generated is greater than 200 ADT, the street shall be widened to full-width standards. Parking shall be prohibited along any half-width street and necessary signs and pavement markings shall be the responsibility of the developer.
 - 3. Bench marks. Elevation bench marks shall be established within the subdivision with elevations to U.S. Geological Survey datum.
 - 4. Surface drainage systems shall be provided within the subdivision or short subdivision. The design of the drainage system within the short subdivision or subdivision shall be in accordance with the standards set forth by VMC 14.25, as administered by the Department of Public Works.
 - 5. Erosion control and stormwater quality. Facilities shall be provided within the short subdivision or subdivision to enhance stormwater runoff and protect existing and future drainage facilities. The design of the erosion control and stormwater quality system shall be in accordance with the standards set forth by the city, pursuant to VMC 14.24 and 14.25, as administered by the Department of Public Works.
 - 6. Sanitary sewers. Sanitary sewers shall be installed to serve the short subdivision or subdivision and to connect the short subdivision or subdivision to existing mains. In the event that it is impractical to connect the short subdivision or subdivision to the city trunk sewer system, the Review Authority may authorize the use of septic tanks if the

- lot area is adequate, taking into consideration the physical characteristics of the area determined by the County Health Department.
7. Water system. Water lines with valves and fire hydrants serving the short subdivision or subdivision and connecting the subdivision or short subdivision to the city mains shall be installed according to specifications of the city, pursuant to Title 14 VMC, Water and Sewer Facilities, as administered by the Department of Public Works.
 8. Sidewalks. Sidewalks shall be installed along both sides of each street within and/or adjacent to the short subdivision or subdivision, unless exempted by approval of a Roadway Modification, by the Review Authority and along pedestrian ways of the short subdivision or subdivision. Sidewalks shall be installed according to the specifications of the city, pursuant to Title 11 VMC, Streets and Sidewalks, as administered by the Department of Public Works.
 9. Street trees. Street trees shall be planted along both sides of each street within the short subdivision or subdivision and along any portion of the short subdivision or subdivision that fronts upon an existing street. Street trees shall be planted 30' on-center and be of a species approved by the city Planning Official.
 10. Other. When special conditions are encountered in the plans for improvements such as fill section requiring the placement of guardrails, ditches requiring drainage appurtenances, or other protection against erosion such as slopes requiring use of sod and/or seeding, such improvements shall be considered as an integral part of the improvement construction. Such special improvements shall be approved by the Director of Public Works or Transportation Manager prior to commencement of construction.

Response

The applicant is aware of procedures for installation and will adhere to them as required.

g. Conditions of agreements

1. Subdivisions. Before the City Council approval is certified on the plat of a subdivision, the developer shall either install required improvements and repair any damage to the existing streets or other facilities damaged due to the development of a the subdivision, or at the city's discretion execute and file with the City Clerk an agreement between herself/himself and the city specifying a period not to exceed two years in which the required improvements and repairs shall be completed and providing that if work is not completed within the period specified, the city may complete the work and recover the full cost and expense from the subdivider.
2. Short subdivisions. Before the Planning Official's approval is certified on the plat of a short subdivision, the developer shall either install the required improvements and repair any damage to the existing streets or other facilities damaged due to the development of a the short subdivision, or at the city's discretion execute and file with the City Clerk an agreement between himself and the city specifying a period not to exceed two years in which required improvements and repairs shall be completed and providing that if work is not completed within the period specified, the city may complete the work and recover the full cost and expense from the developer of the short subdivision.
3. Escrow or other form of security acceptable to the city required – Public Improvements. The city may accept from the developer of any short subdivision or subdivision, in lieu of completion and acceptance of certain approved required public improvements prior to

approval of a final plat, an escrow agreement or other form of security acceptable to the city which secures and provides for the actual construction and installation of the improvements of the conditions of plat approval and subject to the following:

- a. Use of escrow or other form of security acceptable to the city in lieu of completion and acceptance of such required private improvements shall include:
 1. Approved public transportation system improvements, including sidewalks and streetlights, provided emergency access improvements are constructed on-site as needed;
 2. Approved water system improvements;
 3. Approved sanitary sewer improvements;
 4. Approved public stormwater collection and management facilities; and
 5. Approved landscaping and street trees, including installation and maintenance costs.
 - b. The developer shall submit a written request and the appropriate forms to the Development Review Services, and the Director of Public Works, or designee, for review, which shall include the following information:
 1. A scheduled unit cost breakdown for project work to be completed presented as Exhibit "A", an agreement will not be accepted without an approved unit cost breakdown for the project.
 2. The executed escrow agreement in a form approved by the city.
 3. Any other documents deemed necessary by the city.
 4. Applicable processing fee.
 - c. Upon approval of an escrow or other form of security acceptable to the city, recording of the final plat is allowed, provided all other conditions to be met prior to final plat approval have been satisfied.
4. Escrow or other form of security acceptable to the city required – Private Improvements. The city may accept from the developer of any subdivision or short subdivision, in lieu of completion and acceptance of certain approved required private improvements prior to approval of a final plat, an escrow agreement or other form of security, acceptable to the city, which secures and provides for the actual construction and installation of the private improvements or the performance of the conditions of agreement for plat and subject to the following:
- a. Use of escrow or other form of security acceptable to the city in lieu of completion and acceptance of such required private improvements shall be limited to:
 1. Approved private transportation system improvements, including sidewalks and streetlights, provided emergency access improvements are constructed on-site as needed;
 2. Approved private stormwater collection and management facilities;
 3. Approved landscaping and trees to meet minimum on-site tree density, including installation and maintenance costs.
 - b. The developer shall submit a written request along with the appropriate forms to the Planning Official for review.
 - c. Each escrow or other form of security acceptable to the city request shall include the following:
 1. A scheduled cost breakdown for project work to be completed presented as Exhibit "A", an escrow agreement shall not be accepted without an approved unit cost breakdown for the remaining improvements.

2. A draft escrow agreement in a form provided by the city.
3. An irrevocable license signed by the owner of subject property to run with the property which provides the city with the right to allow the employees, agents, or contractors of the city to go on access the subject property for the purpose of inspecting and, if necessary, doing completing the work or making the improvements covered by the escrow or other form of security acceptable to the city.
4. Any other documents deemed necessary by the city.
5. Applicable processing fee.
- d. Upon approval of an escrow or other form of security acceptable by to the city, recording of the final plat is allowed, provided all other conditions required to be met prior to the final plat approval have been satisfied.
5. Amount of escrow or other form of security acceptable to the city. Such assurance of full and faithful performance shall be for a sum approved by the Planning Official as sufficient to cover the cost of the improvements and repairs, including related engineering and incidental expenses.
6. Failure to carry out agreement. In the event the developer of the short subdivision or subdivision fails to carry out provisions of the agreement and the city has un-reimbursed costs or expenses resulting from such failure, the escrow or other form of security acceptable to the city shall be forfeited and the money shall be paid to the city to defray its costs. If the amount of the escrow or other form of security acceptable to the city exceeds the cost and expense incurred by the city, the city shall release the remainder and if the amount of the escrow or other form of security acceptable to the city is less than the cost and expense incurred by the city, the subdivider shall be liable to the city for the difference.
7. Guarantee of workmanship and materials. It shall be required that a 110% maintenance bond or bonds be posted to guarantee all workmanship and material for a period of one year from the date of the acceptance of the improvements by the city. This is provided that in the judgment of the Director of Public Works any defects are not the result of public abuse, misuse or acts of God. City inspection does not give relief from the one-year guarantee on workmanship.
8. Release of escrow or security. Upon completion of required improvements, the subdivider shall request in writing that the Planning Official or Director of Public Works release all or a portion of the funds held in escrow. Such improvements shall be inspected and accepted as complete by the city prior to the release of any such escrow funds, or portion thereof.

Response

The applicant is aware of the conditions of agreement provisions and will comply during the final plat approval process.

- B. Public improvements plan. Where public improvements are required, plans for such improvements shall be submitted to the Director of Public Works. Public improvements shall be designed by or under the direct supervision of a licensed professional civil engineer as required by statute, pursuant to 18.08, 18.43, and 18.96 RCW, and shall meet, as a minimum, the requirements of Section 20.320.080(A) VMC. The engineer shall certify the plans by seal and signature. Such certification shall contain the following: (1) subdivision name; (2) name, mailing address, and telephone number

of engineer preparing the plan; and (3) date, including month and year. All public improvement plans shall be submitted for review and approval by the Director of Public Works.

Response

All public improvement plans will be designed under the guidance of licensed professional engineer. That engineer will certify the plans by their seal and signature. All public improvement plans will be submitted for review and approval by the city of Vancouver.

- C. Monument-setting. All monuments set in subdivisions shall be at least ½" X 24" steel bar or rod, or equivalent, with durable cap imprinted with the license number of the land surveyor setting the monument.
1. Centerline monument-setting After paving, except as provided in, Subsection (4) below, monuments shall be driven flush with the finished road surface at the following intersections:
 - a. Street centerline intersections;
 - b. Points of intersection of curves if placement falls within the paved area or otherwise, at the beginnings and endings of curves;
 - c. Intersections of the plat boundaries and street centerlines.
 2. Property line monument-setting. All front corners, rear corners, and beginnings and endings of curves shall be set with monuments, except as provided in Subsection (4) below. In cases where street curbs are concentric and/or parallel with front right-of-way lines, front property-line monuments may be provided by brass screws or concrete nails with the surveyor's license number at the intersections of curb lines and the projections of side property lines. If curb monuments are used, it shall be noted on the plat, and also that such monuments are good for projection of line only and not for distance.

Response

All required monumentation will be completed prior to final plat recordation.

3. Post-monument-setting. All monuments for the exterior boundaries of the short subdivision or subdivision shall be set and referenced on the plat prior to plat recording. Interior monuments need not be set prior to recording if the developer certifies that the interior monuments shall be set within 90 days of final short subdivision or subdivision construction inspection by the Director of Public Works, and if the developer guarantees such interior monument-setting.
4. Post-monument-setting bonds. In lieu of setting interior monuments prior to final plat recording as provided in Section 20.320.080 (C)(2) VMC, the Director of Public Works may accept a bond in an amount and with surety and conditions satisfactory to him/her, or other secure method as the Director of Public Works may require, providing for and securing to the city the actual setting of the interior monuments as provided in Section 20.320.080 (C)(2) VMC and to be enforced by the Director of Public Works by appropriate legal and equitable remedies.

Response

All required monumentation will be completed prior to final plat recordation. Post-monumentation is not proposed.

- D. Survey standards. All surveys shall comply with standards set forth by state statutes, drafting standards of this Title, and WAC 332-130, except that linear closures after azimuth adjustment shall be at least a ratio of 1:10,000 for WAC 332-130-090. Where conflicts are identified, the most restrictive standard shall prevail.

1. Elevations of vertical information. Where required, any elevations or vertical information shall have an accuracy of third-order specifications as published by the U.S. Department of Commerce in a bulletin entitled "Classification, Standards of Accuracy, and General Specifications of Geodetic Control Surveys," and bench marks with the datum used shall be shown on the plat.

Response

The survey for the final plat is required to meet these standards.

E. Drafting standards

1. Preferred scale proportions. The preferred scale proportions for preliminary and final plat are ratios as follows:
 - a. 1:600 or 1"=50'
 - b. 1:1,200 or 1" = 100' and 1:2,400; or 1" = 200'; but in no case shall the proportion exceed 1:2,400.
2. Final plat drawing requirements. The final plat shall be drawn with ink upon three-mil mylar film, or equivalent; said sheets to be 30" X 21", with a 1" border on each side.
3. Lettering. Lettering shall be at least 0.08" high, and the perimeter of the final plat shall be depicted with heavier lines (dashed) than the remaining portion of the plat.
4. Location. All data necessary for the location in the field of all points within the plat shall be shown. Straight lines shall be designated with bearing and distance; curves shall be designated by arc length, central angle and radius. All dimensions shall be in feet or meters, and decimals thereof to the nearest 1/100 of a foot, or 5/1,000 of a meter; except that angles shall be in degrees to the nearest second.

Response

The drafting standards are a requirement. The applicant is aware of the standards and the need to comply with those standards to receive final plat approval.

Section 20.320.080 Other Provisions.

- A. Variances. One or more variances may be requested relating to any of the design or development standards contained within Section 20.320.070 VMC except those for which variances are expressly prohibited, as listed in Chapter 20.290.010 VMC. These shall be requested concurrently subject to the procedural requirements and approval criteria contained in Chapter 20.290.040 VMC. No variances to procedural regulations are permitted.

Response

The applicant has not requested a variance to any standard contained in 20.320.070.

B. Proximity to agricultural and mineral activities

1. All plats or development approvals under this Title issued for residential development activities within 1/4 mile of lands zoned agricultural or from existing agricultural or mineral resource operations shall be accompanied by a notice provided by the Planning Official. Said notice shall include the following disclosure:
 - a. The subject property is within 1/4 mile of designated agricultural land or mineral resource land as applicable, on which a variety of commercial activities may occur that are not compatible with residential development for certain periods of limited duration. Potential discomforts or inconveniences may include, but are not limited to: noise, odors, fumes,

dust, smoke, insects, operation of machinery, including aircraft, during any hour period, storage and disposal of manure, and the application by spraying or otherwise of chemical fertilizers, soil amendments, herbicides and pesticides.

- b. In the case of subdivision plats, short subdivision plats or recorded binding site plans, such notice shall also be recorded separately with the Clark County Auditor.

Response

The site abuts the BPA right-of-way. Although zoned the same as the proposal, it is used currently for agriculture, under an agricultural easement benefitting the development properties. As such, the Planning Official is required to provide the notice as outlined above and record the notice separately with the Clark County Auditor

2. All plats or development approvals under this Title issued for residential development activities shall provide a barrier such as fencing or vegetation between the immediately-adjacent residential lots and agricultural and mineral resource activities. A natural buffer, such as a wetland, swale or berm, may substitute for the barrier upon approval of the Planning Official. Lots with street frontage are not required to provide a barrier between residential uses and an adjacent agricultural or mineral resource activity across the street.

Response

The proposal includes a trail connecting to the BPA right-of-way. Other than the connection, fences will be provided along the norther boundary of the project.

C. Subdivisions of commercially and industrially zoned properties

Response

The site is not zoned commercial. This provision is not applicable to this development.

- D. **Revisions of recorded plats**. The subdivider shall file the final short plat or plat and attached documents for record with the Clark County Auditor. Any alteration or modification of a short subdivision or subdivision plat shall be undertaken pursuant to all applicable development standards including regulations established in 58.17.215-220 RCW by a Type II or Type III process, respectively.

Response

The proposal is within the Northwestern Home Lots recorded Aug. 9, 1909

The adjustment is warranted given the site characteristics of the design. The applicant is proposing uniform density across the development site.

Chapter 20.410 Lower Density Residential Districts

20.410.030 Uses

Table 20.410.030-1 indicates single dwelling detached units are permitted in the R-9 zone. It also indicates attached units are a Limited Use. The footnote 18 indicates these uses are allowed subject to Section 20.260.020.B.1.a(2), Planned Development and subject to Section 20.910.050 VMC, zero lot line requirements.

Response

The application includes a planned development application and will incorporate zero lot line developments. The single dwelling attached, and detached uses are allowed as incorporated into the applicant's proposal.

20.410.040 Minimum and Maximum Densities.

Table 20.410.040-1

The following is an excerpt of Table 20.410.040-1 relating to the R-9 zone:

Table 20.410.040-1 Minimum and Maximum Densities and Lot Sizes ¹				
Zone	Minimum Lot Size	Maximum Net Density	Maximum Average Size	Minimum Net Density
R-9	5,000 square feet	8.7 units per acre	7,400 square feet	5.9 units per acre

Response

The development site is subject to 2 zoning classifications. It is zoned both R-9 and R-22. The applicant proposes to blend the zones to meet the density. How the overall development meets the applicable provisions is specifically addressed above in the planned development portion of this report (see response to 20.260.020.C)

20.410.050 Development Standards

Table 20.410.050-1 contains the development standards applicable to the R-9 zone. The following is an excerpt of Table 20.410.050-1; Development standards.

Development Standards in Lower-density Residential Zones	
STANDARD	R-9 ZONE
Minimum Lot Sizes	5,000 square feet
Maximum Lot Size	7,400 square feet
Maximum Lot Coverage	50%
Minimum Lot Width ⁵	45 feet
Minimum Lot Depth ⁵	
Minimum Setbacks	
Front yard	10 feet
Rear and through yards ⁴	5 feet
Side yard	0' ¹ / ₅ ' ²
Street side yard	10 feet
Garage/Carport from public/private street right of way or sidewalk easement	18 feet
Garage/Carport from alley ³	5 feet
Maximum Height	35 feet
Minimum Off-Street Parking Spaces	1
Minimum Landscaping Requirement (percentage of total net area)	10%

¹ Subject to Chapter 20.910.050 VMC.

² For each additional 10 feet of building height, or fraction thereof, over 25 feet, add 2 feet to the setback to a maximum of 10 feet on each side or rear yard.

³ There must be a minimum of 20' maneuvering space from entrance edge of the carport or garage to opposite edge of the alley.

⁴ A through lot will be treated as an interior rear yard, especially with respect to placement of principal and accessory structures, location of parking and height of fences only when there is no vehicular access to the abutting street. If access occurs then the through lot yard will be treated in all respects as a front yard.

⁵ Smaller lot sizes and dimensions may be allowed subject to VMC 20.920, Infill Development Standards.

Response

The applicant is requesting a planned development. Under the provisions of 20.260.060, development standards may be modified. Compliance is addressed in this narrative in response to the planned development provisions. In addition, the proposed development is being reviewed under the City's narrow lot code, which varies some of the lot standards set forth above, particularly lot coverage and setbacks. These items are addressed in detail above.

Chapter 20.420 Higher Density Residential Districts

20.420.030 Uses.

Table 20.420.030–1 indicates single dwelling units, attached are permitted in the R-22 zone, provided the minimum required residential density is met, on an overall project basis. The table also indicates single dwelling units, detached are permitted in the R-22 zone, provided the minimum required residential density is met, on an overall project basis.

Response

The application includes a planned development application and will incorporate zero lot line developments. The single dwelling attached, and detached uses are allowed as incorporated into the applicant's proposal.

20.420.040 Minimum and Maximum Densities.

The following is an excerpt from Table 20.420.040-1 relating to the R-22 zone.

Table 20.420.040-1 Minimum and Maximum Densities	
Zone District	Minimum and Maximum Net Density
R-22	18.1 - 22 units per acre

Response

The development site is subject to 2 zoning classifications. It is zoned both R-9 and R-22. The applicant proposes to blend the zones, through the Planned Development process, to meet overall site density. How the overall development meets the applicable provisions is specifically addressed above in the planned development portion of this report (see 20.260.020.C).

20.420.050 Development Standards.

Table 20.420.050-1 contains the development standards applicable to the R-22 zone. The following is an excerpt of Table 20.420.050-1; Development standards.

Table 20.420.050 – 1 - Development Standards	
Standard	R-22 Zone
Minimum Lot Size	1,500 sf ¹
Maximum Lot Coverage	50%
Minimum Lot Width	20 feet
Minimum Lot Depth	50 feet
Minimum Setbacks	

Front yard	10 feet
Rear and Through lot yard	0 feet ² /5 feet
Side yard	0 feet ² /5 feet
Street side yard	10 feet
Garage/carport from public/private street right of way or sidewalk easement	18 feet
Garage/carport from alley	5 feet ⁴
Maximum Height	50 feet
Minimum Landscaping Requirement (percentage of total net area)	10%

¹ Provided the required residential density is met on an overall project basis.

² See requirements for zero lot line developments pursuant to Section 20.910.050 VMC.

³ This footnote has been deleted.

⁴ There must be a minimum of 20' maneuvering space from entrance edge of garage/carport to approved edge of alley

Response

The applicant is requesting a planned development. Under the provisions of 20.260.060, development standards may be modified. Compliance is addressed in this narrative in response to the planned development provisions. The proposal is also governed by the City's Narrow Lot Code, which modifies some provisions of the base zone, including lot coverage and setbacks. This is discussed in detail above.

Chapter 20.691 112th Avenue Corridor Plan District.

20.691.020 112th Avenue Corridor Plan District Area.

Per Figure 20.691-1, the proposal is within the 112th Avenue Corridor Plan District Area, General, Figure 2, Plan Concept

Response

Figure 2, Plan Concept, indicates the site is in an area designated as support urban agriculture. The plan does not describe the concept of "support urban agriculture" or provide guidelines relating to uses adjoining agricultural use.

The development does not support urban agriculture. Agriculture may continue within the BPA property and the proposed approximately 1-acre parcel. Per Tables 20.410.030 – 1 and Table 20.420.030–1, both the R-9 and the R-22 zone allow agricultural uses.

The use of the BPA property for cultivating trees and vegetables, is allowed under an agricultural easement benefitting the property proposed for development. The applicant is proposing an urban residential development.

Figure 2, Plan Concept, also indicates trails across this site to provide pedestrian and bicycle travel. This proposal will have such a trail running north-south through the site. This conforms to the Plan Concept (Figure 2) on page 5 of the Design Guidelines.

Development within the Plan District shall be subject to the development standards contained in Sections 20.410, 20.420, 20.430, and 20.450 except as modified herein.

20.691.030 Allowed Uses.

- A. Development Agreements in existence on the effective date of this ordinance control the uses and development standards of some of the properties in the Plan District. In order to protect the investments made in reliance upon such agreements, improvements made, existing uses or site plans approved consistent with these agreements are not non-conforming.

Response

There are no development agreements with the city related to this property.

- B. Zoning designation. Properties within the Plan District shall comply with their respective code requirements and the development standards and meet the intent of the 112th Avenue Corridor Design Guidelines.

Response

The applicant through various applications and plans has demonstrated the proposed development complies with respective code requirements.

- C. Properties with recorded Development Agreements prior to the adoption of this District, may follow the provisions of this Plan District related to allowed uses and development standards. Properties with such Development Agreement shall develop under one of the following options:

1. Under the provisions for uses and standards determined by the recorded Development Agreements, or
2. Under the provisions of the zoning code including uses and standards as it exists on the date of development application, or
3. Under the provisions for uses determined by the Development Agreements and code standards existing on the date of vested application as provided for under VMC 20.210.110, Vesting of Applications.

Response

There are no recorded development agreements regarding this site

- D. Drive-up uses - Properties zoned Community Commercial located east of the existing Four Seasons Safeway development, west of Four Seasons Lane, north of Angelo Drive and south of NE 28th Avenue, as depicted in Figure 20.691-2, shall be allowed uses under VMC 20.430.030 except that automobile service stations are prohibited and that only two drive-through facilities shall be allowed.

Response

The site is zoned R-9 and R-22; it is not zoned commercial. Drive-up uses re not proposed.

20.691.040 Development Standards and Guidelines.

Development within the Plan District shall be subject to the development standards contained in Sections 20.410, 20.420, 20.430, and 20.450 except as modified herein.

Response

The applicant has provided findings related to compliance with the applicable standards contained in 20.410 and 20.420.

- A. All new development, streets, and street improvements shall meet the intent of the adopted 112th Avenue Corridor Design Guidelines (Ordinance M-4005).

Response

Relating to sidewalks, C.2 Pedestrian Amenities outlines the following guidelines:

- B. All new development shall meet the intent of the connecting streets, trails and open spaces illustrated on the Conceptual Site Plan within the 112th Avenue Corridor Design Guidelines.

C.2.1 Durable Pedestrian Furniture

Pedestrian furniture provided in public spaces should be made of durable, vandal and weather-resistant materials that do not retain rainwater and can be reasonably maintained over an extended period of time.

Response

The applicant is not proposing and pedestrian furniture.

C.2.2 Pedestrian Amenities

Pedestrian amenities should be included along all street frontages featuring non-residential and mixed-use development (this includes internal streets and walkways in front of commercial, office or mixed use. ...

Response.

This a residential non-mixed-use development. This section does not apply.

C.3 Gateways/Street Corners

C.3.1 Gateway/Street Corners

Development at the highly visible gateway/street corner sites should provide decorative design elements at the street corner. Applicable corners include the 9th and 18th Street intersections along 112th Avenue plus the corners highlighted in Figure 13 along NE 28th Street.

Response.

This is not applicable to this application as the project does not include any of the listed intersections.

C.4 Open Space

C.4.1 Trail Corridors

Large site development (greater than 2 acres) should incorporate a connected system of attractive trail corridors upon which developments can be structured around. The site plan in Figure 3 and Figure 14 illustrates an example of how such a trail system could be integrated with developments in the area between NE 18th and 28th Streets, east of NE 112th Avenue.

Response

Figure 2, Plan Concept, indicates a trail across this site to provide pedestrian and bicycle travel. This proposal will have such a trail running north-south through the site. This conforms to the Plan Concept (Figure 2) on page 5 of the Design Guidelines.

D. Access, Circulation and Parking

Response

Streets and sidewalks are designed to the meet the applicable standards of this section as indicated on the civil engineering plans. Parking will be provided by residential garages. Guest parking will be provide on-street and in guest parking areas.

E. Building Design
E.1 Architectural Scale and Building Mass

Response

This section does not apply to single-family residential uses.

F. Landscaping and Screening

Response

The applicant has provided a landscaping plan.

Relating Section E. Building Design Standards, there are no standards addressing single-family buildings.

Response

Figure 20.691-1 indicates the proposal is located within the 112th Avenue Corridor Plan District, As such the proposal is subject applicable provision of the plan district.

Chapter 20.927 NARROW LOT DEVELOPMENTS

20.927.020 Applicability

The approval criteria and development standards of this chapter shall apply to any residential short subdivision or subdivision, including infill development, which has one or more narrow lots, defined as a lot with less than 40 feet in width, exclusive of flag lots. Compliance with applicable standards shall be determined at the time of preliminary plat approval, in accordance with VMC 20.320, Subdivisions. (M-3778, Added, 12/04/2006, Sec 2)

20.927.030 Narrow Lot Development Approval Criteria

Approval criteria. In order for the City to grant approval of a preliminary short subdivision or subdivision, the applicant shall demonstrate compliance with the following criteria, which shall be in addition to the preliminary subdivision approval criteria of VMC 20.320.040 A-G:

- A. Conflicts on narrow lots shall be eliminated. The development has been designed to eliminate conflicts between on-site and off-site improvements and features associated with narrow lots. Specifically, the location, size, and design of features including driveways, public and private utilities (water, fire hydrants, sewer, roof infiltration, gas, cable, phone, electricity, etc.), on-street parking spaces, street trees, existing trees, light poles, common mailboxes, street signs, etc., shall be considered in the design of the development and coordinated to eliminate conflicts with one another and meet minimum spacing requirements.
- B. Adequate guest parking shall be provided. The development has been designed to provide for at least one guest parking space for every three narrow lots in the development. Such spaces may be located on-street (on local access or loop classification roadways only) or in common parking areas subject to the development standards of 20.927.040A2.
- C. Solid waste and recycling collection and access shall be provided. The development shall be designed to provide for safe access and maneuvering by solid waste and recycling collection vehicles to designated collection points for each lot.

Section 20.927.040 Narrow Lot Development Standards

A. Implementation of Performance Standards. Various design options may be proposed to address the approval criteria of Section 20.927.030 A-C. For example, the use of alleys, narrow driveways, or shared driveways - either separately or in combination – are considered to be effective solutions to many identified conflicts. In addressing the above criteria, the following development standards shall apply:

1. On-site and off-site improvements plan required. A development plan that demonstrates that utilities, driveways, street trees, etc., have been located and designed to minimize conflicts with one another shall be submitted with the preliminary land division application and incorporated into the civil engineering plan set. Such plan shall, at a minimum, show all of the following features:
 - a. Proposed location and width of streets, sidewalks, and landscape strips;
 - b. Proposed location, species, and size of required street trees;
 - c. Proposed guest parking spaces as required by VMC 20.927.030B and .040A2;
 - d. Proposed location of other infrastructure including light poles, fire hydrants, and community mailboxes (may be reserved areas) and existing overhead lines;
 - e. Proposed location and width of driveways (narrow lots only);
 - f. Proposed location of public water line, water meter, and sewer line to serve each narrow lot;
 - g. Proposed location and dimensions of areas reserved on each narrow lot for private utilities (phone, cable, gas, electric, etc.) and roof infiltration systems;

Response

The applicant has provided plans and documents addressing the features

2. Standards for guest parking in common areas.
 - a. Common areas reserved for guest parking shall have no more than five (5) parking stalls in each area unless applicant demonstrates required parking cannot otherwise be provided.
 - b. Common guest parking areas shall be improved to City parking lot standards including a permanent surface, striping, curbing, 3' tall screening, and treatment of storm water runoff. Use of pervious paving is encouraged.
 - c. Such spaces may be designed to allow for backing movements directly into local access or loop streets only.
 - d. Common parking areas shall be maintained by a homeowners' association according to a maintenance agreement to be recorded with the plat.

Response

The applicant has provided plans and documents addressing the features

3. Standards for solid waste and recycling access and collection.
 - a. An access plan for solid waste and recycling collection service to all lots in the development shall be submitted with the land division application.
 - b. The access and collection plan shall show a designated collection point for each lot and the ability of collection vehicles to maneuver safely to all points of collection, based on a 35' long by 10' wide vehicle.
 - c. Where collection is not feasible on each lot, a designated common collection point to serve up to four lots, located no further than 150 feet from any lot it serves, may be provided. Common collection points shall be shown on the solid waste and recycling plan, and sized to accommodate the carts and bins associated with the city's garbage, yard debris and

recycling collection system. System specifics may be obtained from the City's Solid Waste Services department.

- d. Designated collection points shall be located adjacent to alleys or streets but shall not obstruct sidewalks, bike lanes, or vision clearance triangles.

Response

The applicant has provided plans and documents addressing these standards.

3a. Standards for alleys and lots with alley access. Lots with access from side or rear alleys are highly effective in addressing conflicts at the front street. Where provided, alleys and lots served by alleys shall meet the following standards:

- a. Alleys shall consist of 16' paved width within a 20' public right-of-way or private easement, and shall be constructed in accordance with approved City standards. Width of alleys designated as fire apparatus access lanes shall be as approved by the Fire Marshal.
- b. All lots adjacent to an alley, existing or proposed, shall provide access to the garage or parking space from the alley, not the adjacent street. Residences with access from alleys shall be oriented to face the public or private street, not the alley.
- c. Alleys shall connect with a public or private street at both ends, unless otherwise approved by the Transportation Manager.
- d. Maintenance of private alleys shall be the responsibility of the homeowner's association, and a maintenance agreement shall be recorded with the plat.
- e. Subdivisions which provide access from alleys to at least 50% of lots shall be eligible for modifications to certain development standards, as specified in VMC 20.927.050.

Response

The applicant has provided plans and documents addressing these standards.

4. Shared driveways. Where provided for narrow lots, shared driveways shall meet the following requirements:

- a. Shared driveways serving two adjacent lots shall be no wider than 30', measured at the driveway throat, unless the applicant demonstrates on the development plan that a wider driveway will not result in conflicts.
- b. Shared driveways which provide access to more than two lots shall be no wider than 18', measured at the driveway throat, and shall be within a 20' minimum wide easement.
- c. Only one curbcut is permitted per shared driveway.
- d. Shared driveways shall be constructed in accordance with approved shared driveway standards.
- e. Garages accessed from shared driveways shall be either single car-width and located no closer to the street than the front wall (not porch) of the residence or, if wider than a single car garage, set back at least 5' from the front wall (not porch) of the residence.

Response

The applicant has provided plans and documents addressing these requirements.

5. Narrow driveways. Where provided for a narrow lot, narrow driveways shall meet the following requirements:

- a. Narrow driveways shall be no wider than 10' measured at the driveway throat, unless the applicant demonstrates on the development plan that a wider driveway will not result in conflicts.
- b. Where possible, narrow driveways on adjoining lots shall be grouped in close proximity to create space along the frontage for parking, trees, utilities, etc.
- c. Narrow driveways shall be constructed in accordance with adopted narrow driveway standards.
- d. Garages accessed from narrow driveways shall be either single car-width and located no closer to the street than the front wall (not porch) of the residence or, if wider than a single car garage, set back at least 5' from the front wall (not porch) of the residence.

Response

The applicant has provided plans and documents addressing these requirements

SUPPLEMENTAL PROJECT NARRATIVE FOUR SEASON SOUTH PLANNED DEVELOPMENT

Project Name:

Four Seasons South (a planned development community)

Summary:

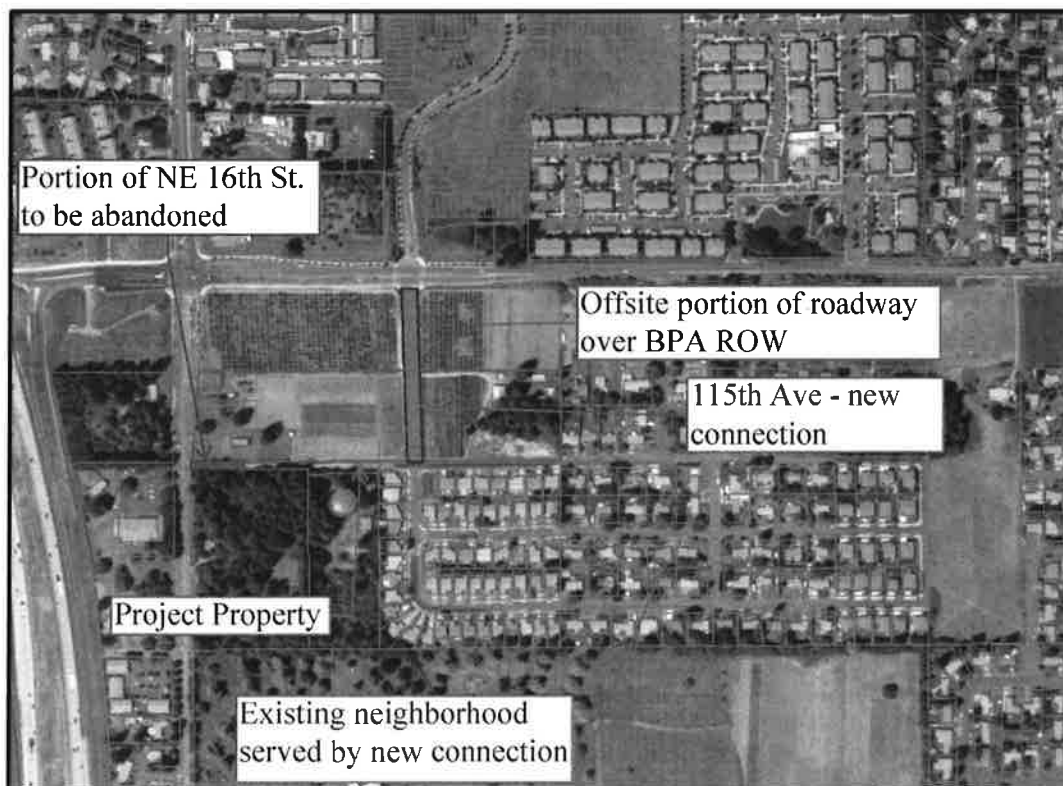
This supplemental narrative is submitted in response to changed project conditions arising from the City of Vancouver Transportation Department's request to abandon NE 16th Street altogether and to build a new offsite roadway connecting the proposed development to the existing signal at NE 18th Street and Four Seasons Lane.

It also addresses the change from an exclusively 55+ community to one available to all buyers in the market for new homes, a potential modification to product type, and lot coverage.

Background:

The general objective and design theme for the project remains the same: to create a seniors-oriented, 70-lot development. The site consists of 4 parcels and is zoned both R-9 and R-22.

In response to the Applicant's proposal, the City has requested the Applicant's cooperation to abandon NE 16th Street (to improve the safety and operation of NE 112th Avenue in the vicinity of the Project) and to create a new off-site connection to the existing signal on NE 18th Street. The proposed changes are roughly illustrated in Ex. A, attached hereto, and below.



There are two effects of the change on the Project. First, the new connection will create an attractive route through the proposed development to an existing signal. Because access/circulation for nearby neighborhoods to the south and east is somewhat constrained, it is expected that this new connection to the City's arterial system will see significant amounts of daily local through traffic generated from existing surrounding neighborhoods. This type of through traffic is not ideal and may not have the same market appeal as the Applicant's original proposal, which would not have had any through traffic, at least for the homes close to the proposed NE 115th Avenue. The second effect is to increase the cost of construction of the project. The change will benefit the City in terms of increased operational efficiency of the NE 18th Street / NE 112th Avenue intersection.

Because of the potential for both reduced desirability of the homes for sale to buyers that are 55 and older (because of increased levels of through traffic) and the increased cost associated with building 300' of additional roadway, the Applicant is seeking minor changes to the community design to both accommodate the City's request for the off-site connection and to keep the project on equivalent financial footing.

Proposed Changes:

As mentioned above, the Applicant would like to open the project for sale to all potential buyers rather than limiting sales to just those 55 and older. The Applicant believes that the proposed product type will have high appeal and will attract a majority of 55 and older buyers but there is no need artificially limit the pool of potential buyers of relatively affordable single level homes to those buyers. Other, younger buyers may also desire, for various reasons, to purchase smaller, single level homes with limited yard area to maintain and should not be excluded from that opportunity.

An associated change would be to allow up to 20% of the units (14 units of the proposed 70) to be two-stories to provide an option for additional living space and introduce additional architectural variety to the Project. This would allow the Applicant some flexibility to respond to market conditions while maintaining the overall concept of a small-lot, primarily single-level home development.

Modifications/Additions to the Original Narrative:

Chapter 20.260 Planned Developments

20.260.010 Purpose

Response

This proposal seeks to create a cohesive planned community ~~for~~ attractive to adults 55 and over that desire to live close to live in the Four Seasons activity center in the heart of east Vancouver. The community is planned to provide single-level housing, two-car garages, well designed and finished homes with on-site open space amenities and convenient proximity to groceries, retail opportunities and health care services. The homes may be purchased by any buyer and will not be exclusively for older buyers, but the Applicant believes that the homes will be particularly attractive to older buyers seeking to downsize and live closer to urban services and amenities.

Planned Developments, Applicability:

A. Applicable in all zones.

The planned development is a development vehicle that may be used in all base zoning districts except in the Park, Greenway and Natural Area districts.

Response

The applicant is proposing a planned development on land with both R-9 and R-22 zones. Planned developments may be allowed each of these zones. The changes proposed in this supplemental narrative, offered in response to the City's request for a new offsite roadway connection, do not affect the applicability of the Planned Development ordinance. This proposal still includes higher than average open space, smaller lots with primarily single level homes and proposed amenities that will appeal to a range of buyers. The Project, with various lot sizes and configurations (alley load, single level, two level, etc.) will include higher than average architectural variability. Front porches will aid in creating and maintaining community as owners take possession of homes and get to know their neighbors.

Planned Developments, Permitted Uses:

B. Permitted uses

The applicability provisions at 20.260.020.B.1.a.(1) and (2) indicate single-family detached residential units and two or more single-family attached residential units are allowed by right within planned developments in the R-9 zone. This section also indicates a 5% density bonus is allowed per the provision of 20.260.060 (D).

20.260.020.B.2.a.(1) and (2) indicate single-family detached residential units and two or more single-family attached residential units are allowed by right within planned developments in the R-22 zone. The section also states a 5% density bonus is allowed per the provision of 20.260.060 (D).

Response

Planned development may be allowed on the subject site. Also, the applicant is allowed a 5% density bonus.

Per 20.260.020.B, single-family detached and single-family attached are permitted by right in both the R-9 and the R-22 zones.

Eighteen attached single-family residential units and 52 detached single-family unit are proposed. Associated with the planned development, an adjustment is requested to the maximum lot coverage standards allowed in both the R-9 and R-22 zone.

Because the site is proposed for narrow lots and more than 50% of the lots will be provided alley access (discussed in more detail below), the base zone lot coverage is 55% on the R-9 portion and 65% on the R-22 portion of the site. This Planned Development proposal requests an adjustment to 75% lot coverage. The purpose of the lot coverage request is to accommodate the single level housing that will be attractive to buyers that are planned-55 and oldercommunity. This development will consist ~~exclusively~~ primarily (at least 80%) of single-level two-car-garage homes. The single level homes will include two-car garages and all living space on a single floor to provide accessibility for an aging population takes more space on each lot. At the same time, some outside area is preserved on each lot for pleasant landscaping, without a heavy ongoing maintenance burden for the future owners.

Lot Coverage Adjustment:

The requested adjustment would increase lot coverage from the base zone amount to 75% to provide for sufficient ground-floor building area for single-level dwellings and to provide additional amenities that will enhance the community. Specifically, a portion of the increased lot coverage will be allocated to inclusion of front porches which are allowed under City code in the front yard setback area where homes are alley loaded. This supplemental narrative includes an exhibit showing a typical plan view and how the porch will be incorporated into the building and community design.

There are two base zoning districts included in the proposed Planned Development, R-9 and R-22. Both zoning districts have a maximum lot coverage of 50% but both are also modified by VMC 20.927.050 to allow 60% lot coverage as of right where more than fifty percent of the proposed homes on narrow lots will be served by alleyways. More than fifty percent of the proposed lots will be accessed via alleys, so the applicable base lot coverage is 60%. The applicant is seeking 75% lot coverage to accommodate single-level primarily detached homes on narrow lots.

The site design is based on meeting the minimum allowable density (70 lots) on the combined site (R-9 & R-22) on smaller lots and targeting the underserved market segment for single-level homes for entry level buyers and/or homes for downsizing baby boomers. As can be seen on the proposed preliminary plat, lot sizes vary from 2450 square feet to 3400-3800 square feet. These lot sizes will accommodate a home for single level living with a two-car garage and three bedrooms, but only at 70% to 75% lot coverage. Conditioned living space for a three bedroom home will typically be about 1550-2260 square feet (average of around 1800) and a two-car garage (necessary, we believe, due to the location of the property) will be approximately 460 square feet. Thus, the combined ground floor area for a three bedroom, single level home is 2200 square feet. Because the lots vary between 2450 to around 3500, 75% lot coverage will allow for around 2000 square feet buildings, including garages, which allows for a reasonable home design. Finally, the Applicant also wants to include front porches on the alley load lots as an additional community amenity and to create character and livability and the front porches will count against allowable lot coverage.

Because the Applicant is seeking to both meeting minimum density and provide housing in an underserved market segment, the adjustment is warranted to accommodate the proposed community design.

The use of maximum lot coverage percentages in the zoning code is interesting in light of minimum and maximum lot dimensions, densities and setbacks. It is an issue that is not addressed in the City's narrow lot code but probably should be. More affordable housing for both those entering the housing market for the first time and for those families downsizing from larger homes is lacking in Vancouver. In this case, higher lot coverage will allow for a lower price point in exchange for smaller individual yards.

Through the Planned Development ordinance, we are proposing to build homes with smaller yards but more community open space and off-site guest parking. The proposed development includes 10% open space on three separate tracts and a trail tract that provides access through the site to the BPA right-of-way on the north side of the development site. The project also proposes off-site guest parking in three separate areas and significant opportunities for on-street parking in front of homes because of the alley-load design.

The combination of community open space, off-site parking and homes with single-level living, smaller yards and 2-car garages outweighs the proposed increase in lot coverage from 60% to 75%. 75% would be a maximum. In most cases we believe that lot coverage will be between 68%-72%. All homes will still meet all required setbacks and heights will be limited due to the single level living design.

As noted above, the community design includes significant open space and parking and will meet all setback requirements under the code. The goal of increasing lot coverage is to build homes for single

level living that include a similar level of functionality to traditional two-level homes, and to do so on smaller, more urban lots. In this context, the impact of smaller yards is mitigated by including more community space and parking. The benefit is a housing product in very short supply in the City of Vancouver.

Transportation System Capacity:

Transportation system capacity. There is either sufficient capacity in the transportation system to safely support the development proposed in all future phases or there will be adequate capacity by the time each phase of development is completed.

Response

The applicant has submitted a traffic study prepared by Kittleson and Associates, Inc. addressing trip generation, trip distribution and traffic impacts prepared pursuant to City-required traffic study standards. This study can be updated with revised trip generation to reflect the all-ages nature of the proposed development. The Applicant has been working closely with the City of Vancouver Transportation and does not anticipate any additional traffic impacts.

Mix of Uses:

- b. Description of the mix of uses, including number of units and/or total gross square feet devoted to each, and approximate location on the site.

Response

The proposal consists of 70 attached and detached primarily single story single-family residential dwelling units intended for any buyer but particularly attractive to households of individuals 55 years of age and older. Included in the design is open space, designated guest parking, and storm facilities (see preliminary plan set).

Development Intensity:

3. Summary of development intensity at full build-out including average floor area ratio and lot coverage.

Response

Lot coverage will range from 68% to 75%, depending on final lot size and product type mix. Because these will be primarily single-story structures, FAR will mostly be the same as the percentage of lot coverage.

4. Summary of transportation facilities including:
 - a. Traffic impact study prepared by a licensed engineer that describes traffic impacts associated with each phase of development and at full build-out of the project, and a plan for accommodating this traffic in compliance with Title 11. The specific content of the traffic impact study shall be determined by the City's Traffic Engineer.

Response

A traffic study was prepared by Kittelson & Associates (see Section 7) and will be updated as may be required by the transportation department to reflect higher trip generation associated with open market housing.

- c. Concurrent or proposed street vacations, with a description of potential parking and traffic/pedestrian impacts, if any, and appropriated measures to mitigate these impacts.

Response

No street vacations are necessarily requested although, in response to the City's request, the Applicant will submit a request for vacation of NE 16th Street west of the proposed NE 113th Avenue serving the Project. The street vacation is not necessary to the Project but can be incorporated, either as additional yard space for proposed lots 1-4 or maintained by the HOA as open space with a pedestrian connection to 112th Avenue.

- a. Architecture, including design standards and building materials board(s), for buildings, fences, walls and other structures.

Response

The Applicant intends to build a development that is architecturally attractive, durable and energy efficient. Lot width, product type, and product placement on each lot is intended to be varied to create variety and interest. Front porches (included in the front yard setbacks as allowed under the City's narrow lot code for projects served more than 50% by alley access, which contributes to lot coverage) and architectural detail on each structure will enhance the curb appeal for individual homes and the attractiveness of the community overall. The CCRs governing the community will include design standards and a mechanism for review and approval of improvements of changes to building design after initial construction.

The application includes architectural design elements for the development.

Concurrency:

20.260.100 Concurrency.

- A. Applicability. An applicant for a planned development shall be entitled to reserve capacity in the transportation system for the proposed development's trip generation and shall be deemed to have achieved transportation concurrency, under the concurrency rules and regulations in effect at the time that the concept plan application is vested under 20.260.090 VMC above, if (1) the applicant obtains a certificate of concurrency for all or any portion of its proposed development under Chapter Title 11 VMC, Transportation Concurrency; or (2) the applicant and the City enter into a development agreement as regulated by State statute (36.70B.170 et seq. RCW), which by its terms reserves capacity in the transportation system and includes a finding of transportation concurrency. The term for the concurrency determination shall be set as the term in the certificate of concurrency or the development agreement.

Response

The applicant is aware of the concurrency applicability provision. A traffic impact analysis, prepared by Kittelson & Associates, Inc. Transportation Engineering & Planning, is included in the application materials (Exhibit) The traffic Impact analysis provides the information required for the City to render a

concurrency determination. The traffic study will be updated as may be required by the City to account for additional trip generation from a standard (rather than 55 and older) community.

Proposed Improvements:

- B. Proposed improvements. Appropriate provisions have been made for proposed streets, alleys and public ways, utilities and other improvements that are consistent with the City's current ordinances, standards and plans, and Department of Health and/or Washington State Department of Transportation standards and plans, where applicable;

Response

The improvement will be based on the plans approved by the city of Vancouver. The applicant has received a review from the Clark County Health Department relating the existing septic tanks or wells on the site. The project will include a new section of offsite roadway connecting the Project and existing roadway network to NE 18th Street.

Open Space and Dedications:

- C. Open space and dedications. Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for open space, parks, schools, dedications, easements and reservations;

Response

The applicant does not propose to dedicate land for open space, public parks, or public schools. The development will pay park and school impact fees.

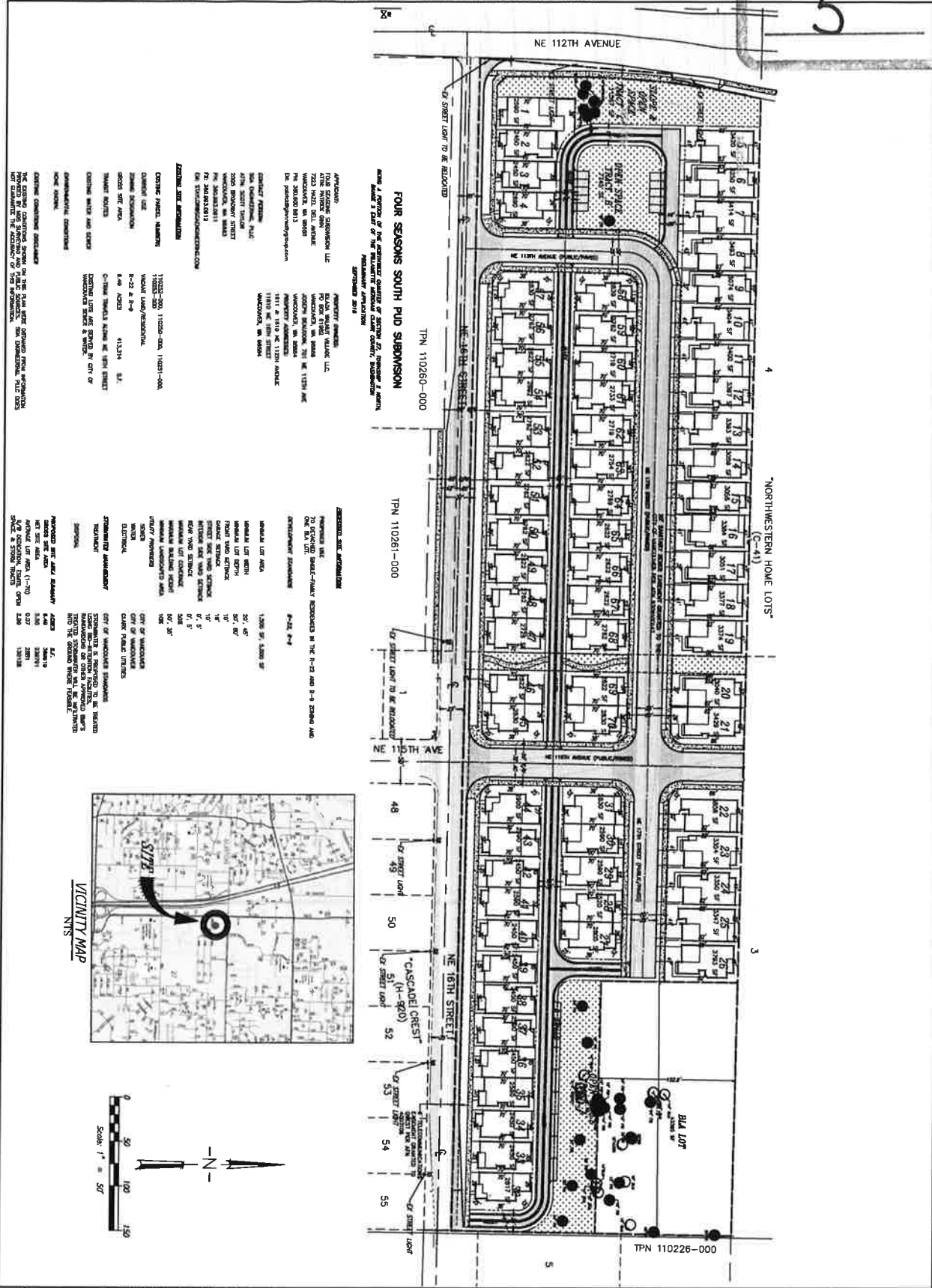
The proposal does include dedication of a public pathway, running north-south approximately at the midpoint of the development. The development will provide private open space for the residents and their guests. The development may include an open space tract and pedestrian connection along the existing NE 16th Street ROW, if vacated by the City of Vancouver.

Barriers between Homes and Agricultural Uses:

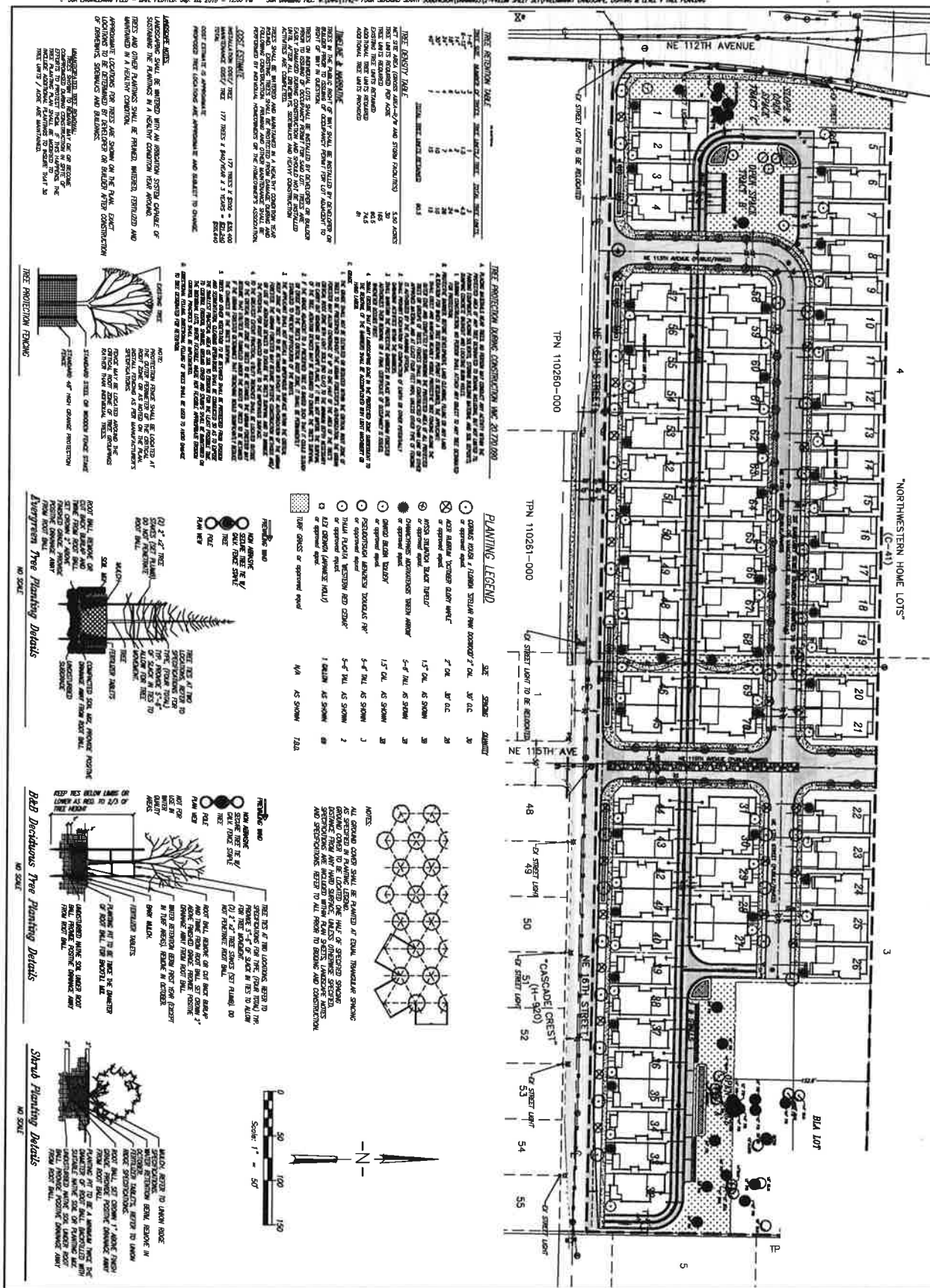
2. All plats or development approvals under this Title issued for residential development activities shall provide a barrier such as fencing or vegetation between the immediately-adjacent residential lots and agricultural and mineral resource activities. A natural buffer, such as a wetland, swale or berm, may substitute for the barrier upon approval of the Planning Official. Lots with street frontage are not required to provide a barrier between residential uses and an adjacent agricultural or mineral resource activity across the street.

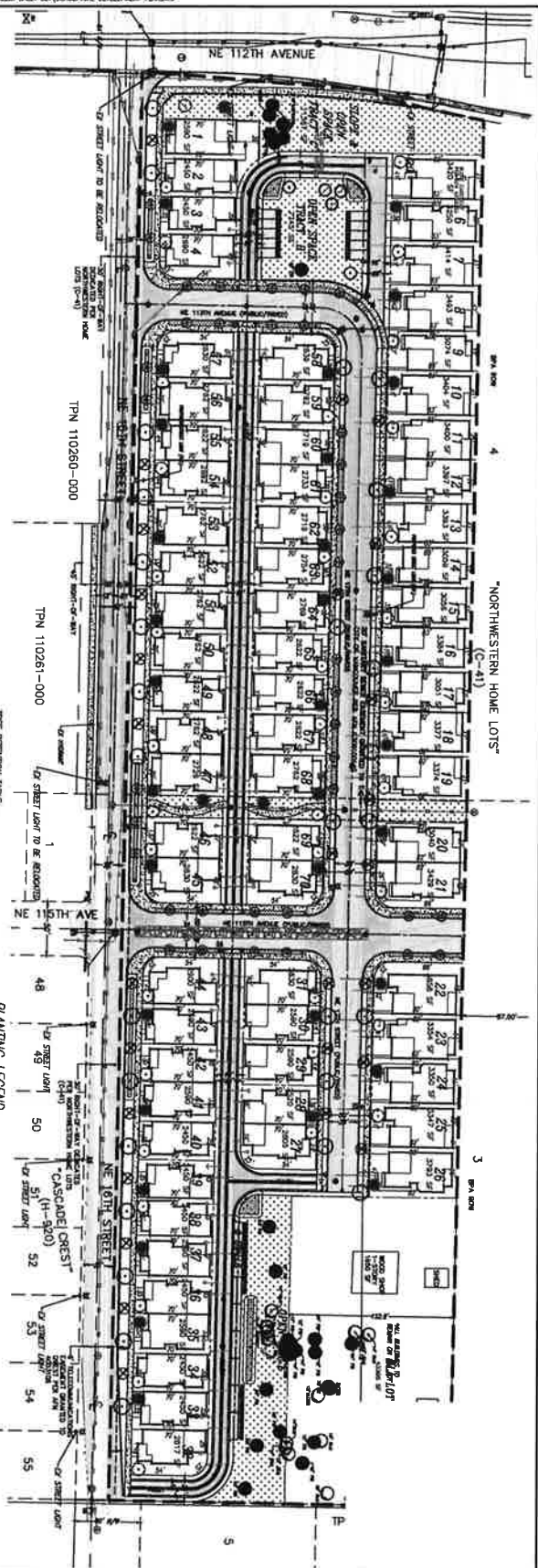
Response

The proposal includes a trail connecting to the BPA right-of-way and new roadway connection to and through the BPA ROW to NE 18th Street. Other than these connections, fences will be provided along the norther boundary of the project.



SGA ENGINEERING - LAND PLANNING DEVELOPMENT SERVICES LANDSCAPE ARCHITECTURE 3005 BROADWAY VANCOUVER, BC V6K 3P1 PHONE (604) 983-8911 FAX (604) 983-8912	DATE: 09/06/2018 DRAWN BY: SGA/SMH CHECKED BY: JTM/SAT SCALE: 1" = 50'	PRELIMINARY REVISIONS FOUR SEASONS SOUTH P.U.D. SUBDIVISION CITY OF VANCOUVER WASHINGTON	JOB NUMBER: 1942 SHEET: PREL.0
--	---	--	---





FOUR SEASONS SOUTH PUD SUBDIVISION

DATE: 1/20/2018
DRAWN BY: J. H. HARRIS
CHECKED BY: J. H. HARRIS
SCALE: 1" = 50'

PRELIMINARY APPLICATION

APPLICANT:
FOUR SEASONS SUBDIVISION LLC
1725 WEST 10TH AVENUE
VANCOUVER, WA 98106
TEL: 206.461.1111
WWW.FOURSEASONSUBDIVISION.COM

PROPERTY ADDRESS:
FOUR SEASONS SUBDIVISION LLC
1725 WEST 10TH AVENUE
VANCOUVER, WA 98106
TEL: 206.461.1111
WWW.FOURSEASONSUBDIVISION.COM

CONTACT PERSON:
J. H. HARRIS
1725 WEST 10TH AVENUE
VANCOUVER, WA 98106
TEL: 206.461.1111
WWW.FOURSEASONSUBDIVISION.COM

EXISTING ZONE: R-100
PROPOSED ZONE: R-100
EXISTING LOT AREA: 1.0000 ACRES
PROPOSED LOT AREA: 1.0000 ACRES

EXISTING ZONE: R-100
PROPOSED ZONE: R-100
EXISTING LOT AREA: 1.0000 ACRES
PROPOSED LOT AREA: 1.0000 ACRES

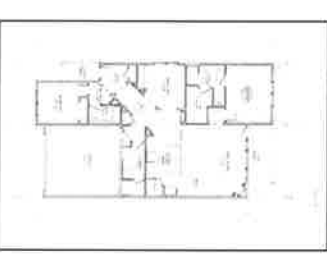
EXISTING ZONE: R-100
PROPOSED ZONE: R-100
EXISTING LOT AREA: 1.0000 ACRES
PROPOSED LOT AREA: 1.0000 ACRES

EXISTING ZONE: R-100
PROPOSED ZONE: R-100
EXISTING LOT AREA: 1.0000 ACRES
PROPOSED LOT AREA: 1.0000 ACRES



PLANNING LEGEND

- 1. LOT AREA: 1.0000 ACRES
- 2. LOT AREA: 1.0000 ACRES
- 3. LOT AREA: 1.0000 ACRES
- 4. LOT AREA: 1.0000 ACRES
- 5. LOT AREA: 1.0000 ACRES
- 6. LOT AREA: 1.0000 ACRES
- 7. LOT AREA: 1.0000 ACRES
- 8. LOT AREA: 1.0000 ACRES
- 9. LOT AREA: 1.0000 ACRES
- 10. LOT AREA: 1.0000 ACRES
- 11. LOT AREA: 1.0000 ACRES
- 12. LOT AREA: 1.0000 ACRES
- 13. LOT AREA: 1.0000 ACRES
- 14. LOT AREA: 1.0000 ACRES
- 15. LOT AREA: 1.0000 ACRES
- 16. LOT AREA: 1.0000 ACRES
- 17. LOT AREA: 1.0000 ACRES
- 18. LOT AREA: 1.0000 ACRES
- 19. LOT AREA: 1.0000 ACRES
- 20. LOT AREA: 1.0000 ACRES
- 21. LOT AREA: 1.0000 ACRES
- 22. LOT AREA: 1.0000 ACRES
- 23. LOT AREA: 1.0000 ACRES
- 24. LOT AREA: 1.0000 ACRES
- 25. LOT AREA: 1.0000 ACRES
- 26. LOT AREA: 1.0000 ACRES
- 27. LOT AREA: 1.0000 ACRES
- 28. LOT AREA: 1.0000 ACRES
- 29. LOT AREA: 1.0000 ACRES
- 30. LOT AREA: 1.0000 ACRES
- 31. LOT AREA: 1.0000 ACRES
- 32. LOT AREA: 1.0000 ACRES
- 33. LOT AREA: 1.0000 ACRES
- 34. LOT AREA: 1.0000 ACRES
- 35. LOT AREA: 1.0000 ACRES
- 36. LOT AREA: 1.0000 ACRES
- 37. LOT AREA: 1.0000 ACRES
- 38. LOT AREA: 1.0000 ACRES
- 39. LOT AREA: 1.0000 ACRES
- 40. LOT AREA: 1.0000 ACRES
- 41. LOT AREA: 1.0000 ACRES
- 42. LOT AREA: 1.0000 ACRES
- 43. LOT AREA: 1.0000 ACRES
- 44. LOT AREA: 1.0000 ACRES
- 45. LOT AREA: 1.0000 ACRES
- 46. LOT AREA: 1.0000 ACRES
- 47. LOT AREA: 1.0000 ACRES
- 48. LOT AREA: 1.0000 ACRES
- 49. LOT AREA: 1.0000 ACRES
- 50. LOT AREA: 1.0000 ACRES
- 51. LOT AREA: 1.0000 ACRES
- 52. LOT AREA: 1.0000 ACRES
- 53. LOT AREA: 1.0000 ACRES
- 54. LOT AREA: 1.0000 ACRES
- 55. LOT AREA: 1.0000 ACRES
- 56. LOT AREA: 1.0000 ACRES
- 57. LOT AREA: 1.0000 ACRES
- 58. LOT AREA: 1.0000 ACRES
- 59. LOT AREA: 1.0000 ACRES
- 60. LOT AREA: 1.0000 ACRES
- 61. LOT AREA: 1.0000 ACRES
- 62. LOT AREA: 1.0000 ACRES
- 63. LOT AREA: 1.0000 ACRES
- 64. LOT AREA: 1.0000 ACRES
- 65. LOT AREA: 1.0000 ACRES
- 66. LOT AREA: 1.0000 ACRES
- 67. LOT AREA: 1.0000 ACRES
- 68. LOT AREA: 1.0000 ACRES
- 69. LOT AREA: 1.0000 ACRES
- 70. LOT AREA: 1.0000 ACRES
- 71. LOT AREA: 1.0000 ACRES
- 72. LOT AREA: 1.0000 ACRES
- 73. LOT AREA: 1.0000 ACRES
- 74. LOT AREA: 1.0000 ACRES
- 75. LOT AREA: 1.0000 ACRES
- 76. LOT AREA: 1.0000 ACRES
- 77. LOT AREA: 1.0000 ACRES
- 78. LOT AREA: 1.0000 ACRES
- 79. LOT AREA: 1.0000 ACRES
- 80. LOT AREA: 1.0000 ACRES
- 81. LOT AREA: 1.0000 ACRES
- 82. LOT AREA: 1.0000 ACRES
- 83. LOT AREA: 1.0000 ACRES
- 84. LOT AREA: 1.0000 ACRES
- 85. LOT AREA: 1.0000 ACRES
- 86. LOT AREA: 1.0000 ACRES
- 87. LOT AREA: 1.0000 ACRES
- 88. LOT AREA: 1.0000 ACRES
- 89. LOT AREA: 1.0000 ACRES
- 90. LOT AREA: 1.0000 ACRES
- 91. LOT AREA: 1.0000 ACRES
- 92. LOT AREA: 1.0000 ACRES
- 93. LOT AREA: 1.0000 ACRES
- 94. LOT AREA: 1.0000 ACRES
- 95. LOT AREA: 1.0000 ACRES
- 96. LOT AREA: 1.0000 ACRES
- 97. LOT AREA: 1.0000 ACRES
- 98. LOT AREA: 1.0000 ACRES
- 99. LOT AREA: 1.0000 ACRES
- 100. LOT AREA: 1.0000 ACRES



PRELIMINARY

REVISIONS

NO.	DATE	DESCRIPTION
1	04/25/2018	ISSUED FOR REVIEW
2	04/25/2018	ISSUED FOR REVIEW
3	04/25/2018	ISSUED FOR REVIEW
4	04/25/2018	ISSUED FOR REVIEW
5	04/25/2018	ISSUED FOR REVIEW
6	04/25/2018	ISSUED FOR REVIEW
7	04/25/2018	ISSUED FOR REVIEW
8	04/25/2018	ISSUED FOR REVIEW
9	04/25/2018	ISSUED FOR REVIEW
10	04/25/2018	ISSUED FOR REVIEW
11	04/25/2018	ISSUED FOR REVIEW
12	04/25/2018	ISSUED FOR REVIEW
13	04/25/2018	ISSUED FOR REVIEW
14	04/25/2018	ISSUED FOR REVIEW
15	04/25/2018	ISSUED FOR REVIEW
16	04/25/2018	ISSUED FOR REVIEW
17	04/25/2018	ISSUED FOR REVIEW
18	04/25/2018	ISSUED FOR REVIEW
19	04/25/2018	ISSUED FOR REVIEW
20	04/25/2018	ISSUED FOR REVIEW
21	04/25/2018	ISSUED FOR REVIEW
22	04/25/2018	ISSUED FOR REVIEW
23	04/25/2018	ISSUED FOR REVIEW
24	04/25/2018	ISSUED FOR REVIEW
25	04/25/2018	ISSUED FOR REVIEW
26	04/25/2018	ISSUED FOR REVIEW
27	04/25/2018	ISSUED FOR REVIEW
28	04/25/2018	ISSUED FOR REVIEW
29	04/25/2018	ISSUED FOR REVIEW
30	04/25/2018	ISSUED FOR REVIEW
31	04/25/2018	ISSUED FOR REVIEW
32	04/25/2018	ISSUED FOR REVIEW
33	04/25/2018	ISSUED FOR REVIEW
34	04/25/2018	ISSUED FOR REVIEW
35	04/25/2018	ISSUED FOR REVIEW
36	04/25/2018	ISSUED FOR REVIEW
37	04/25/2018	ISSUED FOR REVIEW
38	04/25/2018	ISSUED FOR REVIEW
39	04/25/2018	ISSUED FOR REVIEW
40	04/25/2018	ISSUED FOR REVIEW
41	04/25/2018	ISSUED FOR REVIEW
42	04/25/2018	ISSUED FOR REVIEW
43	04/25/2018	ISSUED FOR REVIEW
44	04/25/2018	ISSUED FOR REVIEW
45	04/25/2018	ISSUED FOR REVIEW
46	04/25/2018	ISSUED FOR REVIEW
47	04/25/2018	ISSUED FOR REVIEW
48	04/25/2018	ISSUED FOR REVIEW
49	04/25/2018	ISSUED FOR REVIEW
50	04/25/2018	ISSUED FOR REVIEW
51	04/25/2018	ISSUED FOR REVIEW
52	04/25/2018	ISSUED FOR REVIEW
53	04/25/2018	ISSUED FOR REVIEW
54	04/25/2018	ISSUED FOR REVIEW
55	04/25/2018	ISSUED FOR REVIEW
56	04/25/2018	ISSUED FOR REVIEW
57	04/25/2018	ISSUED FOR REVIEW
58	04/25/2018	ISSUED FOR REVIEW
59	04/25/2018	ISSUED FOR REVIEW
60	04/25/2018	ISSUED FOR REVIEW
61	04/25/2018	ISSUED FOR REVIEW
62	04/25/2018	ISSUED FOR REVIEW
63	04/25/2018	ISSUED FOR REVIEW
64	04/25/2018	ISSUED FOR REVIEW
65	04/25/2018	ISSUED FOR REVIEW
66	04/25/2018	ISSUED FOR REVIEW
67	04/25/2018	ISSUED FOR REVIEW
68	04/25/2018	ISSUED FOR REVIEW
69	04/25/2018	ISSUED FOR REVIEW
70	04/25/2018	ISSUED FOR REVIEW
71	04/25/2018	ISSUED FOR REVIEW
72	04/25/2018	ISSUED FOR REVIEW
73	04/25/2018	ISSUED FOR REVIEW
74	04/25/2018	ISSUED FOR REVIEW
75	04/25/2018	ISSUED FOR REVIEW
76	04/25/2018	ISSUED FOR REVIEW
77	04/25/2018	ISSUED FOR REVIEW
78	04/25/2018	ISSUED FOR REVIEW
79	04/25/2018	ISSUED FOR REVIEW
80	04/25/2018	ISSUED FOR REVIEW
81	04/25/2018	ISSUED FOR REVIEW
82	04/25/2018	ISSUED FOR REVIEW
83	04/25/2018	ISSUED FOR REVIEW
84	04/25/2018	ISSUED FOR REVIEW
85	04/25/2018	ISSUED FOR REVIEW
86	04/25/2018	ISSUED FOR REVIEW
87	04/25/2018	ISSUED FOR REVIEW
88	04/25/2018	ISSUED FOR REVIEW
89	04/25/2018	ISSUED FOR REVIEW
90	04/25/2018	ISSUED FOR REVIEW
91	04/25/2018	ISSUED FOR REVIEW
92	04/25/2018	ISSUED FOR REVIEW
93	04/25/2018	ISSUED FOR REVIEW
94	04/25/2018	ISSUED FOR REVIEW
95	04/25/2018	ISSUED FOR REVIEW
96	04/25/2018	ISSUED FOR REVIEW
97	04/25/2018	ISSUED FOR REVIEW
98	04/25/2018	ISSUED FOR REVIEW
99	04/25/2018	ISSUED FOR REVIEW
100	04/25/2018	ISSUED FOR REVIEW

FOUR SEASONS SOUTH P.U.D. SUBDIVISION

CITY OF VANCOUVER WASHINGTON

SEA ENGINEERING

2000 BROADWAY
VANCOUVER, WA 98101
TEL: 206.461.1111
WWW.SEAENGINEERING.COM



Affidavit of Mailing
FOUR SEASONS SOUTH PUD
PRJ-156552/LUP-70974

This is to certify that I, Clarissa Bowen, caused to have mailed copies of the NOA-DNS for the above-named project to those persons or agencies listed on the attached list.

Signature _____

Date Mailed 11/30/2018

STATE OF WASHINGTON
County of Clark

I certify that I know, or have satisfactory evidence that Clarissa Bowen signed this instrument and acknowledged it to be a free and voluntary act for the uses and purposes mentioned in the instrument.



Date 11-30-18

Johnnie L. Hildreth

Signature of Notary Public

Title: Notary Public

h:\templates\affidavit



P.O. Box 1995 • Vancouver, WA 98668-1995
www.cityofvancouver.us

Nov. 30, 2018

**Notice of Application, Public Hearing and
Optional SEPA Determination of Nonsignificance (DNS)
Four Seasons South PUD
PRJ-156552/LUP-70974**

Request: A planned unit development to create a senior-oriented 70-lot single-family subdivision and a boundary line adjustment.

Application was submitted Oct. 3, 2018, and deemed fully complete Nov. 16, 2018.

Location: Tax Lots 110251000, 110252000, 110250000, and 110235000 located in the NW Quarter of Section 27, Township 2N, Range 2E of the Willamette Meridian.

Applicant/Contact: Patrick Ginn, Four Seasons Subdivision LLC. 800 Tenney Road #110-348 Vancouver, Washington 98671

Property

Owners: Kilada Walnut Village LLC. PO Box 61982, Vancouver, Washington 98666
Joseph and Gayle Beaudoin 701 NE 112th Ave., Vancouver, Washington 98684

Public Hearing Scheduled: Land Use Hearing conducted by the Hearing Examiner
Tuesday, February 19, 2019 6 p.m.
Council Chambers, 2nd Floor of City Hall
415 W. 6th St., Vancouver, Washington

Under the authority of VMC 20.790.230, the City of Vancouver will use the optional combined determination of nonsignificance (DNS) and notice of application process. Based on the initial review of the proposed project, the City of Vancouver expects to issue a DNS on the proposal, finding the project will not create probable significant adverse environmental impacts.

The comment period for the notice of application may be the only opportunity to comment on the environmental impacts of the proposal. The proposal may include mitigation measures under applicable codes, and the review process may incorporate or require mitigation measures regardless of whether an environmental impact statement is prepared.

Comments on the project received before 4 p.m., Jan. 2, 2019, will be incorporated into the staff report; comments received after that date will be presented at the hearing.

This notice is intended to inform potentially interested parties about the threshold determination and the public hearing, and to invite them to appear before the hearing examiner, to offer oral testimony, or to submit written statements for the record. A decision by the hearing examiner may be appealed to City Council by the applicant or any aggrieved person. Such an appeal must be in writing and be filed with Community and Economic Development Department within 14 calendar days after the hearing examiner's decision is mailed. In the absence of such appeal, the examiner's decision shall be final and conclusive.

Procedural appeals to the SEPA determination shall be filed in writing within 14 calendar days following the last day of the comment period. The hearing examiner's decision of the SEPA procedural appeal shall be final and not subject to further administrative appeal.

Substantive SEPA appeals shall be filed in writing within 14 calendar days of the issuance of staff's decision approving, conditioning, or denying the project.

A copy of the final determination may be obtained upon written request. Please include any one of the project numbers listed.

Information regarding this application may be examined at the Permit Center, located at 415 W. 6th Street, Vancouver, WA, Monday through Friday between the hours of 8 a.m. and 12:30 p.m. and 1:30 p.m. and 4 p.m., except Wednesday, when Permit Center hours begin at 9 a.m.

Case Manager: Kristian Corbin, Associate Planner 360-487-7818

E-mail: kristian.corbin@cityofvancouver.us

Mailing Address: Community & Economic Development Dept., PO Box 1995, Vancouver, WA 98668


Name

11-30-18
Date

Coverage of this hearing is being cablecast live on Clark/Vancouver Television Channel 23, Comcast Cable Television System. For replay dates and times, please check newspaper listings or telephone 360-487-8703.

Vancouver City Hall is served by C-Tran Routes 2, 3, 4, 25, 30, 32, 37 and 105. For schedule information, telephone C-Tran, 360-695-0123.



SUBMIT TO:
City of Vancouver
Community & Economic Development
415 W. 6th ST
Vancouver, WA 98660
www.cityofvancouver.us

SEPA ENVIRONMENTAL CHECKLIST

WAC 197-11-960

Property Owner: Four Seasons Subdivision LLC Telephone: 360-600-8813
(Print or Type Name)

Mailing Address: 7223 NE Hazel Dell Ave Vancouver, WA 98665
(No., City, State, ZIP)

Applicant: Patrick Ginn Telephone: 360-600-8813
(Print or Type Name)

Mailing Address: 7223 NE Hazel Dell Avenue Vancouver, WA 98665
(No., City, State, ZIP)

Relationship to Owner: Same

Tax Assessor Serial Number(s): 110250-000, 110251-000, 110252-000, 110235-000

Legal description: Lot(s) N/A Block(s) Plat name N/A
(If a Metes and Bounds description, check here ☐, and attach narrative to this application.)

Site Address (if any): 1611 & 1619 NE 112th Avenue

☒ Include 8½" x 11" copies of ☒ Quarter Section Map, ☒ Topographic Map, ☒ Scaled Site Plan. Delineate site on maps.
Notice to Applicants: You must use the current revision of this form or your application will not be accepted. If you use our disk version of this form (MS Word 6.0) you may not alter the format. Make sure you have the current version before submittal.

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants: [\[help\]](#)

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 or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making 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 agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [\[help\]](#)

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections 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. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements -that do not contribute meaningfully to the analysis of the proposal.

A. BACKGROUND [\[help\]](#)

1. Name of proposed project, if applicable: [\[help\]](#)
Four Seasons South Subdivision
2. Name of applicant: [\[help\]](#)
Patrick Ginn
3. Address and phone number of applicant and contact person: [\[help\]](#)
7223 NE Hazel Dell Avenue Vancouver, WA. 98665
(360) 600-8813
4. Date checklist prepared: [\[help\]](#)
09/04/2018
5. Agency requesting checklist: [\[help\]](#)
City of Vancouver
6. Proposed timing or schedule (including phasing, if applicable): [\[help\]](#)
Spring 2019
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [\[help\]](#)
None known.
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [\[help\]](#)
The project will be designed and developed in accordance with state & local requirements for stormwater management, erosion control, and any other environmental standards.
9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [\[help\]](#) None known at this time.
10. List any government approvals or permits that will be needed for your proposal, if known. [\[help\]](#)
Clark County Health Department Review & City of Vancouver planning, engineering, and construction approvals and 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 on this page. (Lead agencies may modify this form to include additional specific information on project description.) [\[help\]](#)
This project proposes to develop 9.47 acres into 70 single-family, age 55 and over, residential lots.
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, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [\[help\]](#)
The project is located at 1611 & 1619 NE 112nd Avenue.
Parcel #'s: 110250-000, 110251-000, 110252-000, 110235-000

B. ENVIRONMENTAL ELEMENTS [\[help\]](#)**1. Earth**

- a. General description of the site [\[help\]](#)
(circle one): Flat, rolling, hilly, steep slopes, mountainous,
other _____
Most of the site contains moderate slopes. The site slopes from west to east.
- b. What is the steepest slope on the site (approximate percent slope)? [\[help\]](#)
15%
- 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. [\[help\]](#)
Wind River Gravelly Loam (WrB and WrF)
- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [\[help\]](#)
None known.
- 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. [\[help\]](#)
Grading for the development is estimated to move approx. 100,000 cubic yards of soil. More accurate quantities will be available following final engineering.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [\[help\]](#)
Yes, heavy rain or wind during construction could cause erosion. The project will implement appropriate erosion control measures.
- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [\[help\]](#)
Approximately 60%
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [\[help\]](#)
The project will comply with applicable city and state erosion control measures. Measures to control erosion may include but are not limited to: silt fencing, mulching, seeding, inlet protection etc...

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. [\[help\]](#)
Air may get dusty during construction when the weather is dry. Construction vehicles & equipment with gasoline powered engines will emit exhaust. Odorous fumes will be released from asphalt paving and
- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [\[help\]](#)
None known.
- c. Proposed measures to reduce or control emissions or other impacts to air, if any: [\[help\]](#)
Erosion control measures will help to control dust.

3. Water

a. Surface Water: [\[help\]](#)

- 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)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [\[help\]](#)
No.
- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [\[help\]](#)
No
- 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. [\[help\]](#)
N/A
- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [\[help\]](#)
No
- 5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [\[help\]](#)
No
- 6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [\[help\]](#)
No

b. Ground Water:

- 1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [\[help\]](#)
Ground water will not be withdrawn. Stormwater will be treated and infiltrated on site using approved BMP's. Quantity varies depending on rainfall.
- 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. [\[help\]](#)
N/A

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. [\[help\]](#)
The source of runoff is rainfall. Roof runoff will be infiltrated on site. Pavement runoff will be treated in rain gardens or other approved methods and infiltrated on site.

- 2) Could waste materials enter ground or surface waters? If so, generally describe. [\[help\]](#)
In large storm events that exceed the treatment thresholds, oils etc... from pavement may be discharged directly into the overflow system. Sewage will be discharged to public facilities.
- 3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. No
- 4) Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
Sewage will be discharged to public facilities. Storm water will be treated and discharged in accordance with the City and State water quality requirements.

4. Plants [\[help\]](#)

- a. Check the types of vegetation found on the site: [\[help\]](#)
☒ deciduous tree: alder, maple, aspen, other
☐ evergreen tree: fir, cedar, pine, other
☐ shrubs
☒ grass
☐ pasture
☐ crop or grain
☐ Orchards, vineyards or other permanent crops.
☐ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
☐ water plants: water lily, eelgrass, milfoil, other
☐ other types of vegetation
- b. What kind and amount of vegetation will be removed or altered? [\[help\]](#)
All vegetation in developing areas will be removed.
- c. List threatened and endangered species known to be on or near the site. [\[help\]](#)
None
- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [\[help\]](#)
The site will be fully landscaped during development. Native plants will be used when and where appropriate.
- e. List all noxious weeds and invasive species known to be on or near the site.
None

5. Animals

- a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include: [\[help\]](#)
 birds: hawk, heron, eagle, songbirds, other:
 mammals: deer, bear, elk, beaver, other:
 fish: bass, salmon, trout, herring, shellfish, other:
- b. List any threatened and endangered species known to be on or near the site. [\[help\]](#)
None known
- c. Is the site part of a migration route? If so, explain. [\[help\]](#)
The Pacific Flyway migration route stretches from north from Alaska, south to Mexico, west into the Pacific Ocean, and east to the Rocky Mountains. This site lies within that geographical area.

- d. Proposed measures to preserve or enhance wildlife, if any: [\[help\]](#)
Wildlife habitat on the site is extremely low. The landscape plantings, rain garden plantings, and slope stabilization plantings will provide food and cover for small birds, insects, mammals, and soil organisms.
- e. List any invasive animal species known to be on or near the site.
None known

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. [\[help\]](#)
Electricity will be used for powering wall outlets, appliances, and lights in the new homes.
Electricity or natural gas will be used to heat the units.
- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [\[help\]](#) No
- 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: [\[help\]](#)
Buildings will be designed and constructed to meet the most current standards for energy efficiency.

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? If so, describe. [\[help\]](#)
None known
 - 1) Describe any known or possible contamination at the site from present or past uses.
None known
 - 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.
None known
 - 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.
None known
 - 4) Describe special emergency services that might be required.
The project will be served by fire, police, and ambulance after completion.
 - 5) Proposed measures to reduce or control environmental health hazards, if any:
The site will be served by public water and sewer. Storm water will be treated before it is infiltrated on site.
- b. Noise
 - 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [\[help\]](#)
The site is bordered by NE 112nd Avenue and NE 16th Street.
Some background traffic noise will be ongoing.

- 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. [\[help\]](#)
In the short term, noise from construction will come from the site during allowed construction hours. In the long-term, traffic will add a small amount of noise.
- 3) Proposed measures to reduce or control noise impacts, if any: [\[help\]](#)
Construction noise will be limited to allowed hours. Ongoing noise is not expected to be significant.

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? If so, describe. [\[help\]](#)
The site has existing homes and outbuildings and is underdeveloped. The surrounding properties are single-family residences, zoned R-9, and R-22.
- b. Has the project site been used as working farmlands or working forest lands? If so, describe. 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? 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? [\[help\]](#) Yes, a portion of the project is a farm
- 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? If so, how:
No
- c. Describe any structures on the site. [\[help\]](#)
A single-family residence and several outbuildings.
- d. Will any structures be demolished? If so, what? [\[help\]](#)
Yes, the outbuildings will be demolished.
- e. What is the current zoning classification of the site? [\[help\]](#)
R-9 and R-22.
- f. What is the current comprehensive plan designation of the site? [\[help\]](#)
UL & UH
- g. If applicable, what is the current shoreline master program designation of the site? [\[help\]](#) N/A
- h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [\[help\]](#) No
- i. Approximately how many people would reside or work in the completed project? [\[help\]](#)
158
- j. Approximately how many people would the completed project displace? [\[help\]](#)
2

- k. Proposed measures to avoid or reduce displacement impacts, if any: [\[help\]](#)
N/A
- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [\[help\]](#)
The project will be designed to meet the requirements of the City of Vancouver.
- m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:
N/A

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [\[help\]](#)
70 new, age 55 and older residences, middle income.
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [\[help\]](#)
Two middle income homes.
- c. Proposed measures to reduce or control housing impacts, if any: [\[help\]](#)
N/A

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? [\[help\]](#)
Up to 35' R-9 and 50' R-22. The building material will be wood or composite siding. The two homes and outbuildings will be removed from the site.
- b. What views in the immediate vicinity would be altered or obstructed? [\[help\]](#)
None
- c. Proposed measures to reduce or control aesthetic impacts, if any: [\[help\]](#)
Landscaping will be used to soften and improve the aesthetics of the site.

11. Light and glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [\[help\]](#) The proposed roads will have lighting at night.
- b. Could light or glare from the finished project be a safety hazard or interfere with views? [\[help\]](#)
Not to be expected
- c. What existing off-site sources of light or glare may affect your proposal? [\[help\]](#)
NE 112th Avenue has existing street lighting.
- d. Proposed measures to reduce or control light and glare impacts, if any: [\[help\]](#)
Light fixtures will be shielded to reduce off-site glare.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?
[help] Burnt Bridge Creek Greenway/Trail is north of the site. There are city parks to the south and east.
- b. Would the proposed project displace any existing recreational uses? If so, describe.
[help] No
- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]
This project will pay park impact fees.

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 located on or near the site? If so, specifically describe. [help]
None known.
- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]
No
- 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 tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]
N/A
- 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.
N/A

14. Transportation

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.
[help]
NE 16th Street will serve the site.
- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]
There is a C-tran route #30 that runs along NE 28th Street to the north.
- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]
Approximately 280 new parking spaces, 2 will be eliminated

- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [\[help\]](#)
Yes, NE 16th Street will be improved on the south side as well as constructing full interior streets to connect to existing infrastructure adjacent to the site.
- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [\[help\]](#)
No
- f. How many vehicular 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? [\[help\]](#) 299 average daily 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? If so, generally describe.
No
- h. Proposed measures to reduce or control transportation impacts, if any: [\[help\]](#)
The project will pay traffic impact fees, and comply with transportation concurrency requirements.

15. Public Services

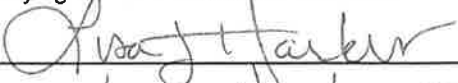
- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [\[help\]](#) The project will add to the need for all of the services mentioned.
- b. Proposed measures to reduce or control direct impacts on public services, if any. [\[help\]](#) The project will pay impact fees to offset the additional service costs. The project will also design the project to meet current fire safety regulations.

16. Utilities

- a. Circle utilities currently available at the site: [\[help\]](#)
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other
- 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. [\[help\]](#) Water & Sewer - City of Vancouver
Telephone - CenturyLink
Electricity - Clark PUD
Gas - NW Natural
Refuse - Waste Connections

C. SIGNATURE [\[HELP\]](#)

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: 

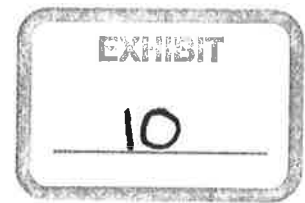
Name of signee: Lisa Harker

Position and Agency/Organization: Pre Development Project Manager

Date Submitted: 9/23/18

EXHIBIT 9
Geotechnical Report
Prepared By
Columbia West
Dated
Dec. 4, 2017

Because of the size of the exhibit, it is not included with this report. The document is available for review at Community & Economic Development Department, 415 W 6th Street, on the first floor. If you would like to review the document, check in at the reception area of the Permit Center between the hours of 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

January 2, 2019

Kristian Corbin, Associate Planner
City of Vancouver
Community & Economics Development
PO Box 1995
Vancouver, WA 98668

Dear Kristian Corbin:

Thank you for the opportunity to comment on the optional determination of nonsignificance/notice of application for the Four Seasons South Subdivision PUD Project (PRJ-156552 & LUP-70974) located at 1611 and 1619 Northeast 112th Avenue as proposed by Patrick Ginn, Four Seasons Subdivision LLC. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287

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 for proper management of these materials.

WATER QUALITY: Chris Montague-Breakwell (360) 407-6364

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and

2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
 - a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
 - a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
 - b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted.

You may apply online or obtain an application from Ecology's website at: <http://www.ecy.wa.gov/programs/wq/stormwater/construction/> - Application. Construction site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

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

(CC:201806680)

cc: Derek Rockett, SWM
Chris Montague-Breakwell, WQ
Patrick Ginn, Four Seasons Subdivision, LLC (Applicant)
Kilada Walnut Village, LLC (Owner)
Joseph and Gayle Beaudoin (Owner)



proud past, promising future

CLARK COUNTY
WASHINGTON

PUBLIC HEALTH
Environmental Public Health

August 21, 2017

Four Seasons Subdivision, LLC
C/O SGA Engineering
Attn: Lisa Harker
2005 Broadway
Vancouver, WA 98663

RE: **REVISED** Conditional Development Review Evaluation for "Four Seasons South Subdivision" located at 1611 NE 112th Avenue & 11610 NE 16th Street (SR 28692 & 27855; Tax Parcels 110235000, 11025000, 110251000 & 110252000; PRJ-156552/PIR-64574)

****Final approval by Health Department required**

Ms. Harker:

The Development Review Evaluation of the site described above has been completed. This evaluation is limited to the area of the proposed development. The findings are:

On-site Sewage Systems (CCC 24.17, WAC 246-272A, CCC 40.370, RCW 58.17):

The mobile home at 11610 NE 16th Street is served by an on-site sewage system (ON7839). The former residence at 1619 NE 112th Avenue was served by an on-site sewage system which may not have been properly abandoned when the house was demolished about 2010. There appears to have also been a residence at 1611 NE 112th Avenue that was removed after 1978 which would have been served by an on-site sewage system. Prior to final plat approval the sewage system at 11610 NE 16th Street and any other sewage systems found during development must be properly abandoned with written verification submitted to Public Health.

Proper system abandonment requires tank pumping and reporting by a Clark County Certified pumper, breaking in the tank lid, and filling the cavity with compacted soil. Please note that any pump chambers, cesspools, or drywells must also be abandoned in this manner.

The proposed development must connect to an approved public sewer system. A copy of the final acceptance letter from the purveyor shall be submitted along with the final plat (Mylar).

Water Systems (WAC 173-160, WAC 246-290, CCC 40.370, RCW 58.17):

There is a well on the west side of a small shed with an outside sink to the west of the mobile home at 11610 NE 16th Street. There is also a locked shed remaining on the middle parcel with the 1611 address that appears likely to be a well house.

P.O. Box 9825 • Vancouver, WA 98666-8825 • tel: [360] 397-8428 • fax: [360] 397-8084 • www.clark.wa.gov

Page 2

As per WAC 173-160-381; the well at 11610 plus any well found in the shed or any other well found during development must be properly decommissioned by a Washington State licensed well driller. If no well is found in the shed on the 1611 address parcel, photo documentation that no well is present in this shed is required prior to final plat approval.

The proposed development must connect to an approved public water system. A copy of the final acceptance letter or equivalent from the purveyor shall be submitted along with the final plat (Mylar).

Other Issues

All the existing structures will be removed according to the proposed preliminary plat. Demolition waste and debris must be disposed of appropriately according to city demolition permit requirements.

If you have any questions concerning this letter, please contact me at (360) 397-8428, ext. 7254.

Sincerely,



Carla Sowder, R.S.
Environmental Health Specialist

CC: City of Vancouver Community & Economic Development Dept., Attn: Kristian Corbin



City of Vancouver Transportation Services
Trip and Traffic Impact Fee Calculation Worksheet
Application Number: PRJ-156552



Project Name: ePlans Four Seasons South Subdivision	Date: 1/22/2019 12:00:00 AM
Project Address: 1611 NE 112TH AVE	TAZ: TA280
Project Number: PRJ-156552	Primary Corridor: 112TH #1
ENG Number:	Parcel 1 ID: 110250000
TIF District: Cascade	Parcel 2 ID:
TIF Overlay District: Overlay - Mill Plain / I-205	Parcel 3 ID:

Existing Site Trips ^^										
LU Description	ITE LU Code	Existing AM Peak Rate	Existing PM Peak Rate	Existing ADT Rate	Unit of Measure	Size**		Existing AM Peak Trips	Existing PM Peak Trips	Existing ADT
^^ equals zero if this is a new development on greenfield or if old use has been gone > 1 year.								Existing Trips Total		

New Trip Generation Calculation										
LU Description	ITE LU Code	AM Peak Rate	PM Peak Rate	ADT Rate	Unit of Measure*	Size**		New AM Peak	New PM Peak	New ADT
Senior Adult Housing--detached	251	0.22	0.27	3.68	1	70		42	34	258
*Unit of measure = ITE Unit by which total size is divided by in order to calc. trip generation								New Project Trips		
**Size - Total size of development, eg 10 dwelling units or 50,000 sqf.								42	34	258
***% reduction applied to trip generation, eg. .35 passby reduction for 100 trips - (1 - .35) * 100 = .65 - from approved traffic impact study only								Net New Project Trips (new trip = existing trips)		
****% reduction applied to trip generation, eg. .10 internal capture reduction for 100 trips - (1 - .10) * 100 = .9 * 100 = 90 - from approved traffic impact study only								42	34	258

Traffic Impact Fee Calculation									
LU Description	ITE LU Code	Proposed Project ADT	Net New Proj ADT	TIF Rate/Trip	TIF Overlay rate/trip	BEF Reduction = .3 for retail commercial uses & ITE LU 912	Tax Reduction	TIF Due	Overlay TIF Due
Senior Adult Housing--detached	251	258	258.00	223	10		0.15	\$48,903.90	\$2,193.00
Sum		258	258	TIF Totals:				\$48,903.90	\$2,193.00

Concurrency Monitoring Fees			
Corridor	PM Peak Trips	Cost/Trip	max. \$1500/corridor
NE 112th Ave to NE 138th Ave	7	\$48.00	\$336.00
Burton Rd: Andresen to NE 112th Ave	8	\$48.00	\$384.00
NE 112th Ave to NE 138th Ave	2	\$48.00	\$96.00
Mill Plain Blvd to NE 28th St	27	\$48.00	\$1,296.00
NE 138th Ave to NE 162nd Ave	2	\$48.00	\$96.00
NE 28th St to NE 51st St	17	\$48.00	\$816.00
Mill Plain Blvd to NE 28TH	1	\$48.00	\$48.00
Total Monitoring Fee =		\$3,072.00	

Total Modeling Fee = \$3,072.00

Disclaimer: This information is provided based on the TIF program in place as of the date shown above and is only an estimate of the fee. The fee will be recalculated based on approved development dimensions and reflecting any changes to the TIF program that are applicable. Per VMC20.97.060 B, ...for non-residential development, the impact fee shall be calculated at the time of site plan approval or building permit application if the proposed development is not sufficiently defined to permit such calculations. Notwithstanding the foregoing, the fee shall be re-calculated for building permit applications filed more than 3 years following the date of the applicable preliminary plat, preliminary short plat or site plan approval. See VMC20.97 for more information. Note: TIF Overlay fees cannot be paid with TIF Credits from a district other than the TIF Overlay district.



City of Vancouver Transportation Services
Trip and Traffic Impact Fee Calculation Worksheet

Application Number: PRJ-156552

Project Name:	ePlans Four Seasons South Subdivision	Date:	1/22/2019 12:00:00 AM
Project Address:	1611 NE 112TH AVE	TAZ:	TA280
Project Number:	PRJ-156552	Primary Corridor:	112TH #1
ENG Number:		Parcel 1 ID:	110250000
TIF District:	Cascade	Parcel 2 ID:	
TIF Overlay District:	Overlay - Mill Plain / I-205	Parcel 3 ID:	

Proportionate Shares				
Case Number	Project	Fee/Unit	Trips/Lots	Final Fee
Total Proportionate Share Fees =				

COMMENTS:

ePlans Four Seasons South Subdivision

District: Cascade	District TIF =	\$48,903.90
Overlay - Mill Plain / I-205	Overlay TIF =	\$2,193.00
	Total TIF =	\$51,096.90
SF Dwellings Fee per SFDU		

Disclaimer: This information is provided based on the TIF program in place as of the date shown above and is only an estimate of the fee. The fee will be recalculated based on approved development dimensions and reflecting any changes to the TIF program that are applicable. Per VMC20.97.060 B, ...for non-residential development, the impact fee shall be calculated at the time of site plan approval or building permit application if the proposed development is not sufficiently defined to permit such calculations. Notwithstanding the foregoing, the fee shall be re-calculated for building permit applications filed more than 3 years following the date of the applicable preliminary plat, preliminary short plat or site plan approval. See VMC20.97 for more information. Note: TIF Overlay fees cannot be paid with TIF Credits from a district other than the TIF Overlay district.

4783753 EAS

RecFee - \$123.00 Pages: 12 - CHICAGO TITLE INSURANCE CO
Clark County, WA 08/08/2011 11:27**When recorded return to:**Chris Malone
City of Vancouver
4400 NE 77th Avenue Ste. 350 / P.O. Box 1995
Vancouver, WA 98668

Filed for record at the request of:

CHICAGO TITLE
COMPANY1111 Main Street, Suite 200
Vancouver, WA 98660

Escrow No.: K159462

Real Estate Excise Tax

Ch. 11 Rev. Laws 1951

EXEMPT

Affd. #

Date

Affd. #

Doug Lasher

Clark County Treasurer

By

Deputy

DOCUMENT TITLE(S)

Slope Easement

REFERENCE NUMBER(S) OF DOCUMENTS ASSIGNED OR RELEASED: _____

Additional reference numbers on page _____ of document

GRANTOR(S)

Agnes Nuttman Family Limited Partnership, a Washington limited Partnership, et al

☒ Additional names on page 2 of document**GRANTEE(S)**

City of Vancouver, a Municipal Corporation

☐ Additional names on page _____ of document**ABBREVIATED LEGAL DESCRIPTION**

Lot 4, Block 4 - Homes Lots, Volume: C Page: 41

Complete legal description is on page 7-12 of document**TAX PARCEL NUMBER(S)**

110250-000, 110251-000 and 110252-000

Additional Tax Accounts are on page _____ of document

The Auditor/Recorder will rely on the information provided on this form. The staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

"I am signing below and paying an additional \$50 recording fee (as provided in RCW 36.18.010 and referred to as an emergency nonstandard document), because this document does not meet margin and formatting requirements. Furthermore, I hereby understand that the recording process may cover up or otherwise obscure some part of the text of the original document as a result of this request."

Signature of Requesting Party

Note to submitter: Do not sign above nor pay additional \$50 fee if the document meets margin/formatting requirements

SLOPE EASEMENT

Grantor(s): Agnes Nuttman Family Limited Partnership, a Washington Limited Partnership, et al
Grantee: City of Vancouver, a Municipal Corporation
Abbreviated Legal: Lot 4, Northwest Homes Lots, Volume: C Page: 41
Tax Parcel No.: 110250-000, 110251-000, and 110252-000
Project: NE 18th Street From 112th Ave. to Four Seasons Lane
Project Parcel: 82 and 83

THE GRANTORS, Agnes Nuttman Family Limited Partnership, a Washington Limited Partnership, their heirs, or assigns as to Parcel I, and Jeanne D. Wright, Trustee of the Agnes M. Nuttman Living Trust, dated December 29, 1997 and David L. Nuttman, Jeanne D. Wright and Judy A. Nuttman, who acquired title as Judy A. McIntyre, each as their separate estate, for and in consideration of mutual benefits and in further consideration of the general public welfare and of the peculiar and special benefits to accrue to us therefrom, do(es) by these presents grant and convey to the City of Vancouver, a Municipal Corporation, for the use of the public, an easement and privilege to construct and maintain cuts and/or fills for slopes occasioned by the original grading and maintenance of grades for street purposes along, across, and upon the following described real property situated in the City of Vancouver, together with the right to enter upon said premises at any time with all necessary men, material, and equipment for the purposes of constructing, inspecting, repairing, and maintaining the same, to wit:

See Exhibits "A", "B", "C", and "D" attached hereto and incorporated by reference and made part of this document as though fully incorporated herein.

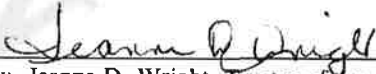
It is understood and agreed that, in the event the grantor, their heirs, or assigns, shall excavate and/or place an embankment upon the area covered by this slope easement to the level of the grade abutting thereon, all rights of the grantee herein shall cease and terminate.

It is understood and agreed that, the City of Vancouver shall maintain all improvements within the slope easement until such time that the slope easement is requested to be relinquished by the grantor(s) unless the slope is damaged by actions of the grantor(s), their heirs, or assigns.

It is understood and agreed that, the rights of the grantee herein shall cease and terminate in the event that the grantor(s), their heirs, or assigns, request in writing that the slope easement be terminated and the grantee confirms in writing that the slope can safely be maintained in perpetuity by the grantor(s), their heirs, or assigns without causing harm to the traveling public.

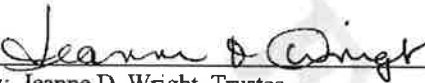
GRANTOR(s), as to parcel 1

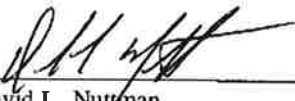
Agnes Nuttman Family Limited Partnership

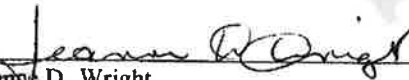

By: Jeanne D. Wright, Trustee of the Agnes M. Living Trust, dated December 29, 1997,
General Partner

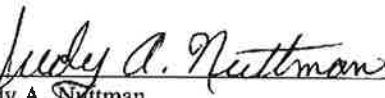
GRANTOR(s), as to parcel 2

Agnes M. Nuttman Living Trust, dated December 29, 1997

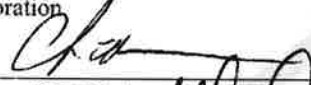

By: Jeanne D. Wright, Trustee

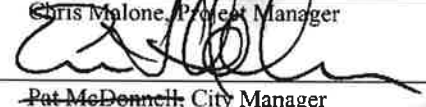

David L. Nuttman


Jeanne D. Wright

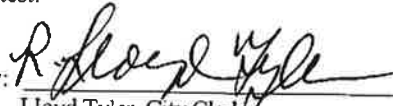

Judy A. Nuttman

Accepted on behalf of the
CITY OF VANCOUVER, a municipal
corporation

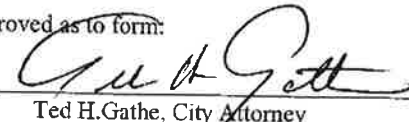
By: 
Chris Malone, Project Manager

By: 
Pat McDonnell, City Manager
ERIC HOLMES

Attest:

By: 
Lloyd Tyler, City Clerk
By: ~~Carrie Lewellen, Deputy City Clerk~~

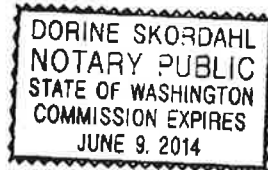
Approved as to form:


Ted H. Gathe, City Attorney

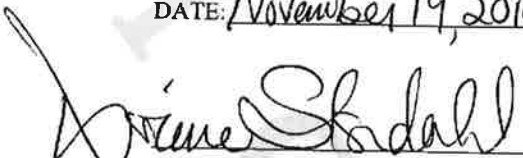
STATE OF WASHINGTON

COUNTY OF CLARK

I hereby certify that I know or have satisfactory evidence that David L. Nuttman, Jeanne D. Wright and Judy A. Nuttman appeared before me, and said persons acknowledged that they signed this instrument and acknowledged it to be their free and voluntary act for the uses and purposes mentioned in this instrument.



DATE: November 19, 2010


Notary Public in and for State of WA
residing at Vancouver
My commission expires 6-9-2014

STATE OF WASHINGTON

ss.

COUNTY OF CLARK

On this day 19th of November, 2010, before me, the undersigned, A Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Jeanne D. Wright, to me known to be the Trustee of Agnes M. Nuttman Living Trust dated December 29, 1997 as General Partner for the Agnes Nuttman Family Limited Partnership, a Washington limited liability partnership, the entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the said entity, for the uses and purposes therein mentioned, and on oath stated that she is authorized to execute the said instrument on behalf of the said entity.

WITNESS my hand and official seal hereto affixed the day and year in the certificate above written.

Dorine Skordahl
Signature of Notary Public

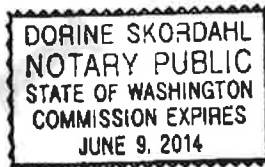
Notary Public in and for the State of Washington

Residing at

Vancouver

My Commission Expires:

6-9-2014



Acknowledgment - Corporation - Trust or - Partnership

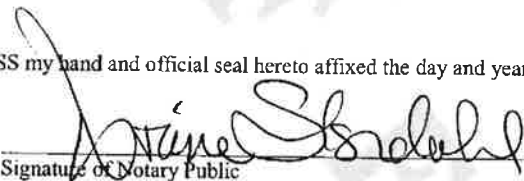
STATE OF WASHINGTON

ss.

COUNTY OF CLARK

On this day 19th of November, 2010, before me, the undersigned, A Notary Public in and for the State of Washington, duly commissioned and sworn, personally appeared Jeanne D. Wright, to me known to be the Trustee of Agnes M. Nuttman Living Trust dated December 29, 1997, the entity that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of the said entity, for the uses and purposes therein mentioned, and on oath stated that she is authorized to execute the said instrument on behalf of the said entity.

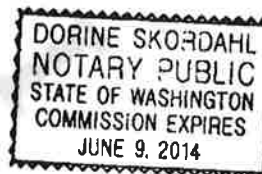
WITNESS my hand and official seal hereto affixed the day and year in the certificate above written.


Signature of Notary Public

Notary Public in and for the State of Washington

Residing at Vancouver

My Commission Expires: 6-9-2014



Acknowledgment - Corporation - Trust or - Partnership



Legal Description
Right-of-way Acquisition, Slope Easement, & Temporary Construction Permit
Parcel 83 – Nuttman Property

PARCEL I (a)

Right-of-way Acquisition

Being a parcel of land located in the Northwest One-Quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, Clark County Washington and being a portion of that property conveyed to Agnes M. Family Limited Partnership, by deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records, said parcel being more particularly described as follows:

Commencing from the northwest corner of said Section 27; thence S00°25'54"W, along the West line of said Section 27, 415.38 feet to the Westerly extension of the North line of that parcel described in deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records; thence along said Westerly extension S88°48'47"E 45.00 feet to the East right-of-way line of NE 112th Avenue and the True Point of Beginning of the herein described parcel of land; thence along said North line S88°48'47"E 10.85 feet to the beginning of a 199.01 foot radius non-tangent curve to the left; thence along said non-tangent curve to the left through a central angle of 03°45'18" (chord bears S12°52'55"W 13.04 feet) 13.04 feet to the beginning of a 970.00 foot radius compound curve to the left; thence along said compound curve to the left through a central angle of 00°43'57" (chord bears S10°38'17"W 12.40 feet) 12.40 feet to a point of non-tangency; thence N88°48'47"W 5.84 feet to said East right-of-way line; thence along said East right-of-way line N00°25'54"E 25.00 feet to the True Point of Beginning. Containing 204 square feet more or less.

Slope Easement

Being a slope easement located in the Northwest One-Quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, Clark County Washington and being a portion of that property conveyed to Agnes M. Family Limited Partnership, by deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records, said easement being more particularly described as follows:

Commencing from the northwest corner of said Section 27; thence S00°25'54"W, along the West line of said Section 27, 415.38 feet to the Westerly extension of the North line of that parcel described in deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records; thence along said Westerly extension and said North line S88°48'47"E 55.85 feet to the beginning of a 199.01 foot radius non-tangent curve to the left, and the True Point of Beginning of the herein described parcel of land; thence along said non-tangent curve to the left through a central angle of 03°45'18" (chord bears S12°52'55"W 13.04 feet) 13.04 feet to the beginning of a 970.00 foot radius compound curve to the left; thence along said compound

300 W 15th Street • Vancouver, WA 98660 • 360/695-3488 tel • 360/695-8767 fax

curve to the left through a central angle of $00^{\circ}43'57''$ (chord bears $S10^{\circ}38'17''W$ 12.40 feet) 12.40 feet to a point of non-tangency; thence $N88^{\circ}48'47''W$ 5.84 feet to the East right-of-way line of NE 112th Avenue; thence along said East right-of-way line, $S00^{\circ}25'54''W$ 3.42 feet to an angle point, thence continuing along said East right-of-way line, $S04^{\circ}43'15''W$ 113.10 feet to an angle point; thence leaving said East right-of-way line, $S88^{\circ}48'47''E$ 12.00 feet to an angle point; thence $N14^{\circ}51'37''E$ 145.82 feet to said North line of that parcel described in deed recorded under Auditor's File No. 980630056; thence along said North line $N88^{\circ}48'47''W$ 29.00 feet to the True point of Beginning.

Temporary Construction Permit

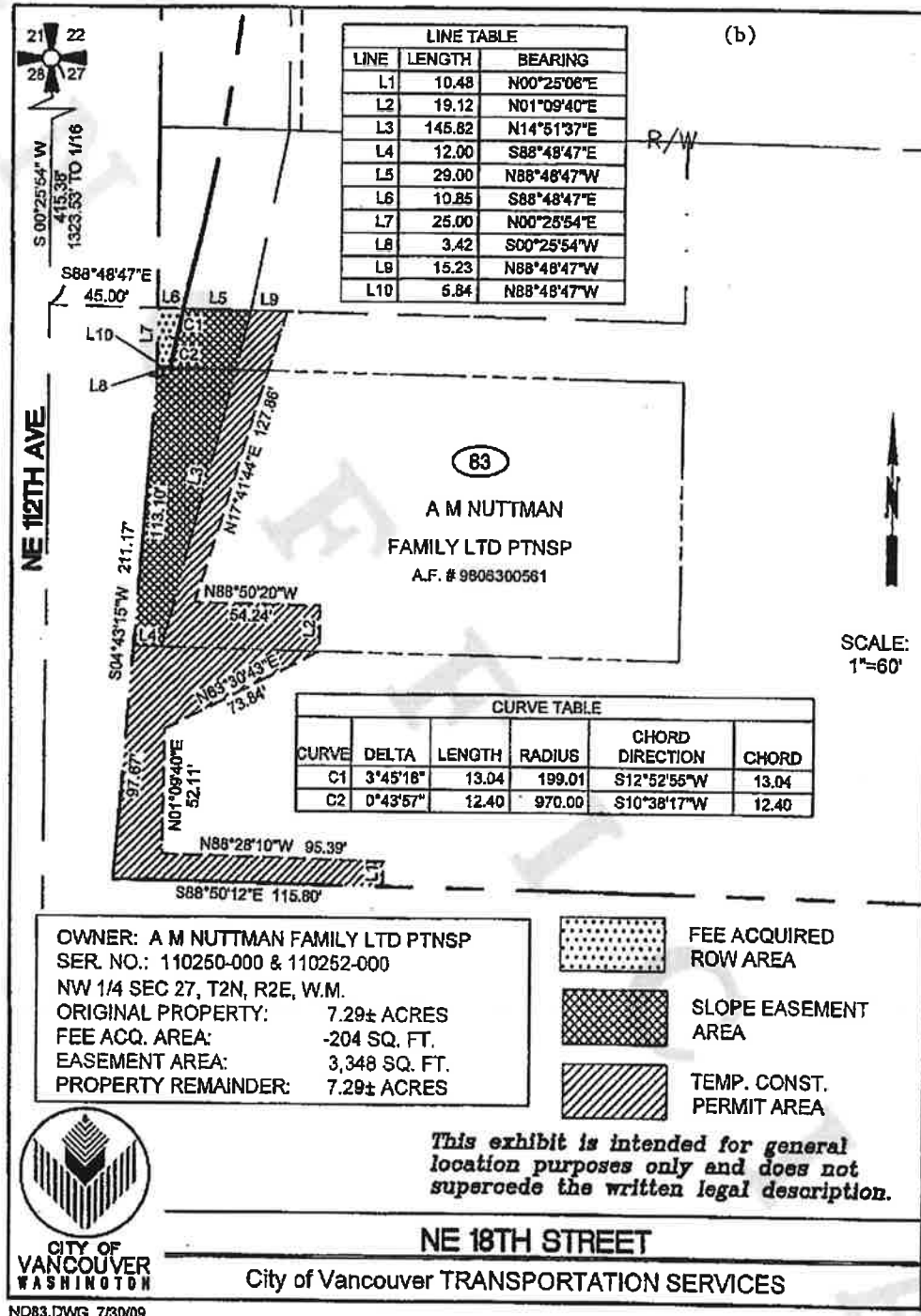
Being a temporary construction permit located in the Northwest One-Quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, Clark County Washington and being a portion of that property conveyed to Agnes M. Family Limited Partnership, by deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records, said temporary construction permit being more particularly described as follows:

Commencing from the northwest corner of said Section 27; thence $S00^{\circ}25'54''W$, along the West line of said Section 27, 415.38 feet to the Westerly extension of the North line of that parcel described in deed recorded under Auditor's File No. 9806300561 in the Clark County Deed Records; thence along said Westerly extension and said North line $S88^{\circ}48'47''E$ 84.85 feet to the True Point of Beginning of the herein described parcel of land; thence leaving said North line $S14^{\circ}51'37''W$ 145.82 feet to an angle point; thence $N88^{\circ}48'47''W$ 12.00 feet to the East right-of-way line of NE 112th Avenue; thence along said East right-of-way line, $S04^{\circ}43'15''W$ 97.67 feet to the South line of said parcel; thence along said South line $S88^{\circ}50'12''E$ 115.80 feet to an angle point; thence leaving said South line $N00^{\circ}25'06''E$ 10.48 feet to an angle point; thence $N88^{\circ}28'10''W$ 95.39 feet to an angle point; thence $N01^{\circ}09'40''E$ 52.11 feet to an angle point; thence $N63^{\circ}30'43''E$ 73.84 feet to an angle point; thence $N01^{\circ}09'40''E$ 19.12 feet to an angle point; thence $N88^{\circ}50'20''W$ 54.24 feet to an angle point; thence $N17^{\circ}41'44''E$ 127.86 feet to the North line of said parcel described in deed recorded under Auditor's File No. 9806300561; thence along said North line $N88^{\circ}48'47''W$ 15.23 feet to the True Point of Beginning.



7-30-09

300 W 15th Street • Vancouver, WA 98660 • 360/695-3488 tel • 360/695-8767 fax





Legal Description
Right-of-way Acquisition & Slope Easement
Parcel 82 – Nuttman Property
PARCEL II (c)

Right-of-way Acquisition

Being a parcel of land located in the Northwest One-Quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, Clark County Washington and being a portion of that property conveyed to Agnes M. Nuttman Living Trust, by deed recorded under Deed Document No. 3096273 in the Clark County Deed Records, said parcel being more particularly described as follows:

Commencing from the northwest corner of said Section 27; thence S00°25'54"W, along the West line of said Section 27, 415.38 feet to the Westerly extension of the South line of that parcel described in deed recorded under Deed Document No. 3096273 in the Clark County Deed Records; thence along said Westerly extension S88°48'47"E 45.00 feet to the East right-of-way line of NE 112th Avenue and the True Point of Beginning of the herein described parcel of land; thence along said South line S88°48'47"E 10.85 feet to the beginning of a 1063.00 foot radius non-tangent curve to the left; thence along said non-tangent curve to the left through a central angle of 04°07'32" (chord bears N12°40'30"E 76.53 feet) 76.54 feet to the South line of the Bonneville Power Administration right-of-way; thence along said South right-of-way line N88°48'47"W 27.08 feet to said East right-of-way line; thence along said East right-of-way line S00°25'54"W 75.00 feet to the True Point of Beginning. Containing 1,457 square feet more or less.

Slope Easement

Being a slope easement located in the Northwest One-Quarter of Section 27, Township 2 North, Range 2 East, Willamette Meridian, Clark County Washington and being a portion of that property conveyed to Agnes M. Nuttman Living Trust, by deed recorded under Deed Document No. 3096273 in the Clark County Deed Records, said easement being more particularly described as follows:

Commencing from the northwest corner of said Section 27; thence S00°25'54"W, along the West line of said Section 27, 415.38 feet to the Westerly extension of the South line of that parcel described in deed recorded under Deed Document No. 3096273 in the Clark County Deed Records; thence along said Westerly extension and South line S88°48'47"E 55.85 feet to the beginning of a 1063.00 foot radius non-tangent curve to the left, and the True Point of Beginning of the herein described parcel of land; thence along said non-tangent curve to the left through a central angle of 04°07'32" (chord bears N12°40'30"E 76.53 feet) 76.54 feet to the South line of the Bonneville Power Administration right-of-way; thence along said South right-of-

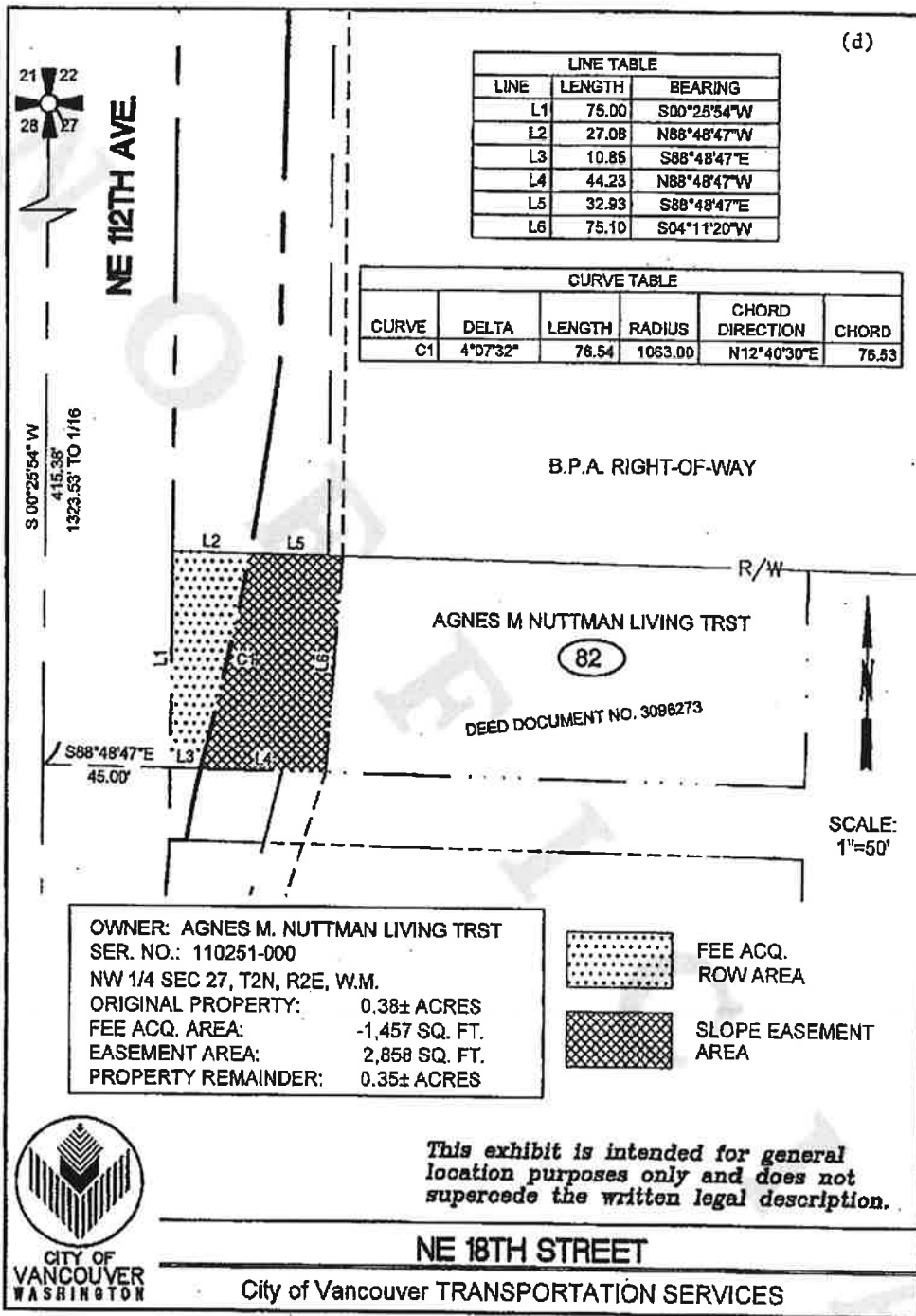
300 W 15th Street · Vancouver, WA 98660 · 360/695-3488 tel · 360/695-8767 fax

way line S88°48'47"E 32.93 feet to an angle point; thence leaving said South line, S04°11'20"W 75.10 feet to the South line of said deed recorded under Deed Document No. 3098273; thence along said South line N88°48'47"W 44.23 feet to the True Point of Beginning.



300 W 15th Street • Vancouver, WA 98660 • 360/695-3488 tel • 360/695-8767 fax

Clark Auditor Mon Aug 08 11:27:06 PDT 2011 4783753 Page 11



Corbin, Kristian

EXHIBIT

144

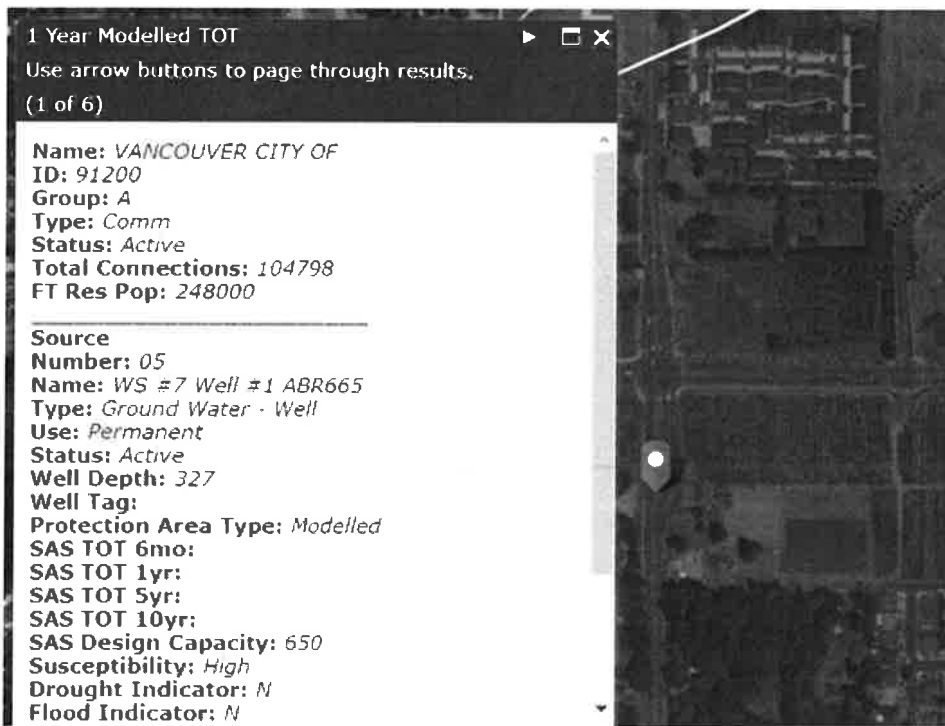
From: Johnson, Deborah L (DOH) <deborah.johnson@doh.wa.gov>
Sent: Tuesday, January 8, 2019 5:20 PM
To: Corbin, Kristian
Cc: Wilson, Brian E; Pollock, R. Scott (DOH); Schultz, Fern M (DOH)
Subject: Comments- File #PRJ-156552 & LUP-70974, Four Seasons South Subdivision PUD (SEPA #201900020)

Follow Up Flag: Follow up
Flag Status: Flagged

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

We noticed that an ODNS has been issued for this project. This site is located just slightly south of the Four Seasons Apartments project we commented on earlier today (appended below), & the site is within the same wellhead protection area so, irrespective of the SEPA process, should likewise be evaluated under Ch. 14.26 VMC, including those terms specifically applicable to special protection areas.



###

Thank you for your consideration. Please let me know if you have any questions or need additional information.

Deborah Johnson

Wellhead Protection Specialist
Office of Drinking Water
Environmental Public Health Division
Washington State Department of Health
deborah.johnson@doh.wa.gov



From: Johnson, Deborah L (DOH)

Sent: Tuesday, January 8, 2019 2:46 PM

To: 'mark.person@cityofvancouver.us' <mark.person@cityofvancouver.us>

Cc: 'brian.e.wilson@cityofvancouver.us' <brian.e.wilson@cityofvancouver.us>

Subject: Comments- File #PRJ-160848 & LUP-71764, Four Seasons Apartments Ph. II (SEPA #201900063)

Hello,

Thank you for the opportunity to review and comment upon the [NOA/ODNS](#) for the proposed PLS project. We have the following comments on the project:

Critical Areas. The SEPA checklist (Q. #B.8.h) indicates that there are no designated critical areas on site. While critical aquifer recharge areas (CARAs) are a form of critical area under [RCW 36.70A.030\(5\)](#), Vancouver's critical areas provisions (Ch. 20.740 VMC) do not encompass CARAs, instead referring to Ch. 14.26 VMC (VMC 20.740.010.B). VMC 14.26.115.B.1 identifies the entirety of Vancouver as being a CARA.

Ss. B.2 of this code identifies special protection areas inside the CARA, including property within 1,900 feet of "any municipal water supply well." Municipal wells are defined in VMC 14.26.110 to include City-owned Group A community water systems. There is a significant disparity between the Vancouver code definition & that in state regulations, under which wellhead protection areas (WHPAs), which are set by the purveyor in keeping with [WAC 246-290-135](#) as approved by DOH, are not limited to 1,900 feet from a well & may vary considerably in size depending on the approach taken in identifying them.

The proposed project site lies within the WHPA associated with two City of Vancouver wells (see details below) & appears to be within 1,900 feet of each source. It appears the project should be evaluated under Ch. 14.26 VMC, including those terms specifically applicable to special protection areas.

City of Vancouver, 1-year modeled time of travel, Sources #5 & #10, Wells #1 ABR665 & #2 AFP658

1 Year Modelled TOT
Use arrow buttons to page through results.
(1 of 6)

Name: VANCOUVER CITY OF
ID: 91200
Group: A
Type: Comm
Status: Active
Total Connections: 104798
FT Res Pop: 248000

Source
Number: 05
Name: WS #7 Well #1 ABR665
Type: Ground Water - Well
Use: Permanent
Status: Active
Well Depth: 327
Well Tag:
Protection Area Type: Modelled
SAS TOT 6mo:
SAS TOT 1yr:
SAS TOT 5yr:
SAS TOT 10yr:
SAS Design Capacity: 650
Susceptibility: High
Drought Indicator: N
Flood Indicator: N

Map source: <https://fortress.wa.gov/doh/eh/maps/SWAP/index.html>
 ###

This concludes our comments. Please let me know if you have any questions or need additional information.

For distribution of future SEPA notices, please note that our new email is SEPA.reviewteam@doh.wa.gov.

Deborah Johnson

Wellhead Protection Specialist
 Office of Drinking Water
 Environmental Public Health Division
 Washington State Department of Health
deborah.johnson@doh.wa.gov
 360-236-3133 | www.doh.wa.gov





P.O. Box 1995 • Vancouver, WA 98668-1995
www.cityofvancouver.us

EXHIBIT

15

January 3, 2019

**Notice of Final Determination of Nonsignificance (DNS)
Four Seasons South PUD
PRJ-156552/LUP-70974**

The city issued a DNS for this project Nov. 30, 2018; this determination is retained. The city received two comments from Department of Ecology. It has been determined the following described project will not have a probable significant adverse impact on the environment. Under the authority of WAC 197-11-330(1) and 197-11-350, a determination of nonsignificance has been issued.

Proponent: Patrick Ginn, Four Seasons Subdivision LLC. 800 Tenney Road #110-348 Vancouver, Washington 98671

Description: A planned unit development to create a senior-oriented 70-lot single-family subdivision and a boundary line adjustment.

Location: Tax Lots 110251000, 110252000, 110250000, and 110235000 located in the NW Quarter of Section 27, Township 2N, Range 2E of the Willamette Meridian.

Requests to appeal this decision must be made in writing within 14 calendar days after the date the decision is mailed. The letter of appeal shall state the case number designated by the city, the name of the applicant, name and signature of each petitioner, a statement showing that each petitioner is entitled to file the appeal under VMC Chapter 20.210, the specific aspect(s) of the SEPA issue being appealed, the reasons each aspect is in error as a matter of fact or law, and the evidence relied on to prove the error. A substantive appeal of the SEPA determination must be filed in conjunction with and within the limitation period applicable to an available administrative appeal of the applicable permit or approval (VMC 20.790.640.D).

All appeals, along with the required fee, must be received by 4 p.m., January 17, 2019.

Submit the appeal request and fee to Community & Economic Development Department, Permit Center, 415 W. 6th Street, or mail to PO Box 1995, Vancouver, WA 98668-1995.

Permit center hours are 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.

Responsible Official: Kristian Corbin, Assistant Planner, PO Box 1995, Vancouver, WA 98668
Telephone: 360-487-7818
Email: kristian.corbin@cityofvancouver.us


Kristian Corbin

1-3-19
Date

EXHIBIT 16

112th Avenue Subarea Guidelines

Because of the size of the exhibit, it is not included with this report. The document is available for review at Community & Economic Development Department, 415 W 6th Street, on the first floor. If you would like to review the document, check in at the reception area of the Permit Center between the hours of 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.

EXHIBIT 17
Traffic Study
Prepared By
Kittelsohn & Associates
Dated
Oct. 23, 2018

Because of the size of the exhibit, it is not included with this report. The document is available for review at Community & Economic Development Department, 415 W 6th Street, on the first floor. If you would like to review the document, check in at the reception area of the Permit Center between the hours of 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.

Geotechnical Site Investigation

Four Seasons South

Vancouver, Washington

December 4, 2017

Geotechnical ■ Environmental ■ Special Inspections

Columbia West
Engineering, Inc



11917 NE 95th Street
Vancouver, Washington
98682

Phone: 360-823-2900

Fax: 360-823-2901



**GEOTECHNICAL SITE INVESTIGATION
FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON**

Prepared For:

**Mr. Patrick Ginn
Four Seasons Subdivision, LLC
800 NE Tenney Road, Suite 110-348
Vancouver, Washington 98685**

Site Location:

**1611 & 1619 NE 112th Avenue and
11610 NE 16th Street
Parcel Nos. 110251-000, 110252-000, 110250-000,
and 110235-000
Vancouver, Washington 98684**

Prepared By:

**Columbia West Engineering, Inc.
11917 NE 95th Street
Vancouver, Washington 98682
Phone: 360-823-2900
Fax: 360-823-2901**

Date Prepared:

December 4, 2017

TABLE OF CONTENTS

LIST OF FIGURES	ii
LIST OF APPENDICES	iii
1.0 INTRODUCTION	1
1.1 General Site Information	1
1.2 Proposed Development	1
2.0 REGIONAL GEOLOGY AND SOIL CONDITIONS	1
3.0 REGIONAL SEISMOLOGY	2
4.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION	4
4.1 Surface Investigation and Site Description	4
4.2 Subsurface Exploration and Investigation	5
4.2.1 Soil Type Description	5
4.2.2 Groundwater	6
5.0 DESIGN RECOMMENDATIONS	6
5.1 Site Preparation and Grading	6
5.1.1 Existing Fill	7
5.2 Engineered Structural Fill	8
5.3 Cut and Fill Slopes	8
5.4 Foundations	9
5.5 Settlement	10
5.6 Excavation	10
5.7 Lateral Earth Pressure	10
5.8 Seismic Design Considerations	11
5.9 Drainage	12
5.10 Infiltration Testing Results	13
5.11 Bituminous Asphalt and Portland Cement Concrete	14
5.12 Wet Weather Construction Methods and Techniques	15
5.13 Erosion Control Measures	16
5.14 Soil Shrink/Swell Potential	17
5.15 Utility Installation	17
6.0 CONCLUSION AND LIMITATIONS	17
REFERENCES	
FIGURES	
APPENDICES	

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
1	Site Location Map
2	Exploration Location Map
3	Typical Cut and Fill Slope Cross-Section
4	Minimum Foundation Slope Setback Detail
5	Typical Foundation Drain Detail
6	Typical Perforated Drain Pipe Trench Detail

LIST OF APPENDICES

<u>Number</u>	<u>Title</u>
A	Analytical Laboratory Test Reports
B	Exploration Logs
C	Soil Classification Information
D	Photo Log
E	Report Limitations and Important Information

GEOTECHNICAL SITE INVESTIGATION

FOUR SEASONS SOUTH

VANCOUVER, WASHINGTON

1.0 INTRODUCTION

Columbia West Engineering, Inc. (Columbia West) was retained by Four Seasons Subdivision, LLC, to conduct a geotechnical site investigation for the proposed Four Seasons South residential development project located in Vancouver, Washington. The purpose of the investigation was to observe and assess subsurface soil conditions at specific locations and provide geotechnical engineering analyses, planning, and design recommendations for the proposed development. The specific scope of services was outlined in Columbia West's proposal dated October 18, 2017. This report summarizes the investigation and provides field assessment documentation and laboratory analytical test reports. This report is subject to the limitations expressed in Section 6.0, *Conclusion and Limitations*, and Appendix E.

1.1 General Site Information

As indicated on Figures 1 and 2, the subject site is located at 1619 and 1611 NE 112th Avenue; and 11610 NE 16th Street in Vancouver, Washington. The site is comprised of tax parcels 110251000, 110250000, 110252000, and 110235000, totaling approximately 9.47 acres. The regulatory jurisdictional agency is the City of Vancouver, Washington. The approximate latitude and longitude are N 45° 38' 03" and W 122° 33' 19", and the legal description is a portion of the NW ¼ of Section 27, T2N, R2E, Willamette Meridian. Parcel 110235000 (eastern 4.79 acres of the site) was inaccessible at the time of this investigation. Therefore, additional field exploration will be required to confirm whether the recommendations contained in this report are applicable parcel 110235000.

1.2 Proposed Development

Review of preliminary plans provided by SGA Engineering, Inc. indicates that proposed development will consist of a 90-lot single-family residential subdivision. Improvements will also include asphalt concrete roadways and parking areas, underground utilities, and stormwater management facilities. Columbia West has not reviewed preliminary grading plans but understands that minor cut and fill will likely be proposed at the property. This report is based upon the proposed development as described above and may not be applicable if modified.

2.0 REGIONAL GEOLOGY AND SOIL CONDITIONS

The subject site lies within the Willamette Valley/Puget Sound Lowland, a wide physiographic depression flanked by the mountainous Coast Range on the west and the Cascade Range on the east. Inclined or uplifted structural zones within the Willamette Valley/Puget Sound Lowland constitute highland areas and depressed structural zones form sediment-filled basins. The site is located in the central portion of the

Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

According to the *Geologic Map of the Vancouver and Orchards Quadrangles and Parts of the Portland and Mount Tabor Quadrangles, Clark County, Washington, and Multnomah County, Oregon* (U.S. Geological Survey Scientific Investigations Map 3357), near-surface soils are expected to consist of upper-Pleistocene, rhythmically bedded, coarse-grained periglacial deposits derived from catastrophic outburst floods of Glacial Lake Missoula (Qfg).

The *Web Soil Survey* (United States Department of Agriculture, Natural Resource Conservation Service [USDA NRCS], 2017 Website) identifies surface soils as Wind River gravelly loam. Although soil conditions may vary from the broad USDA descriptions, Wind River soils are generally medium- to coarse-textured sands and gravels and somewhat excessively drained. Wind River soils typically exhibit rapid permeability, low shear strength, and slight to very severe erosion hazard based primarily on slope grade.

3.0 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.

There are at least four major known fault zones in the vicinity of the site that may be capable of generating potentially destructive horizontal accelerations. These fault zones are described briefly in the following text.

Portland Hills Fault Zone

The Portland Hills Fault Zone consists of several northwest-trending faults located along the northeastern margin of the Tualatin Mountains, also known as the Portland Hills, and the southwest margin of the Portland Basin. The fault zone is approximately 25 to 30 miles in length and is located approximately 10 miles southwest of the site. According to *Seismic Design Mapping, State of Oregon* (Geomatrix Consultants, 1995), there is no definitive consensus among geologists as to the zone fault type. Several alternate interpretations have been suggested.

According to the *USGS Earthquake Hazards Program*, the fault was originally mapped as a down-to-the-northeast normal fault, but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a south-west dipping, blind thrust fault. The Portland Hills fault offsets Miocene Columbia River Basalts, and Miocene to Pliocene sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been

described along the fault trace, and the fault is mapped as buried by the Pleistocene-aged Missoula flood deposits.

However, evidence suggests that fault movement has impacted shallow Holocene deposits and deeper Pleistocene sediments. Seismologists recorded a M3.2 earthquake thought to be associated with the fault zone near Kelly Point Park in November 2012, a M3.9 earthquake thought to be associated with the fault zone near Kelly Point Park in April 2003, and a M3.5 earthquake possibly associated with the fault zone occurred approximately 1.3 miles east of the fault in 1991. Therefore, the Portland Hills Fault Zone is generally thought to be potentially active and capable of producing possible damaging earthquakes.

Gales Creek-Newberg-Mt. Angel Fault Zone

Located approximately 30 miles southwest of the site, the northwest-striking, approximately 50-mile long Gales Creek-Newberg-Mt. Angel Structural Zone forms the northwestern boundary between the Oregon Coast Range and the Willamette Valley, and consists of a series of discontinuous northwest-trending faults. The southern end of the fault zone forms the southwest margin of the Tualatin basin. Possible late-Quaternary geomorphic surface deformation may exist along the structural zone (Geomatrix Consultants, 1995).

According to the *USGS Earthquake Hazards Program*, the Mount Angel fault is mapped as a high-angle, reverse-oblique fault, which offsets Miocene rocks of the Columbia River Basalts, and Miocene and Pliocene sedimentary rocks. The fault appears to have controlled emplacement of the Frenchman Spring Member of the Wanapum Basalts, and thus must have a history that predates the Miocene age of these rocks. No unequivocal evidence of deformation of Quaternary deposits has been described, but a thick sequence of sediments deposited by the Missoula floods covers much of the southern part of the fault trace.

Although no definitive evidence of impacts to Holocene sediments have clearly been identified, the Mount Angel fault appears to have been the location of minor earthquake swarms in 1990 near Woodburn, Oregon, and a M5.6 earthquake in March 1993 near Scotts Mills, approximately four miles south of the mapped extent of the Mt. Angel fault. It is unclear if the earthquake occurred along the fault zone or a parallel structure. Therefore, the Gales Creek-Newberg-Mt. Angel Structural Zone is considered potentially active.

Lacamas Lake-Sandy River Fault Zone

The northwest-trending Lacamas Lake Fault and northeast-trending Sandy River Fault intersect north of Camas, Washington approximately 7 ½ miles southeast of the site, and form part of the northeastern margin of the Portland basin. According to *Geology and Groundwater Conditions of Clark County Washington* (USGS Water Supply Paper 1600, Mundorff, 1964) and the *Geologic Map of the Lake Oswego Quadrangle* (Oregon DOGAMI Series GMS-59, 1989), the Lacamas Lake fault zone consists of shear contact between

the Troutdale Formation and underlying Oligocene andesite-basalt bedrock. Secondary shear contact associated with the fault zone may have produced a series of prominent northwest-southeast geomorphic lineaments in proximity to the site.

According to the *USGS Earthquake Hazards Program* the fault has been mapped as a normal fault with down-to-the-southwest displacement, and has also been described as a steeply northeast or southwest-dipping, oblique, right-lateral, slip-fault. The trace of the Lacamas Lake fault is marked by the very linear lower reach of Lacamas Creek. No fault scarps on Quaternary surficial deposits have been described. The Lacamas Lake fault offsets Pliocene-aged sedimentary conglomerates generally identified as the Troutdale formation, and Pliocene- to Pleistocene-aged basalts generally identified as the Boring Lava formation.

Recent seismic reflection data across the probable trace of the fault under the Columbia River yielded no unequivocal evidence of displacement underlying the Missoula flood deposits, however, recorded mild seismic activity during the recent past indicates this area may be potentially seismogenic.

Cascadia Subduction Zone

The Cascadia Subduction Zone has recently been recognized as 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).

4.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION

A geotechnical field investigation consisting of visual reconnaissance, six test pits (TP-1 through TP-6), and three infiltration tests was conducted at the site on November 3, 2017. Test pits were explored with a track-mounted excavator. Subsurface soil profiles were logged in accordance with Unified Soil Classification System (USCS) specifications. Disturbed soil samples were collected from relevant soil horizons and submitted for laboratory analysis. Analytical laboratory test results are presented in Appendix A. Exploration locations are indicated on Figure 2. Subsurface exploration logs are presented in Appendix B. Soil descriptions and classification information are provided in Appendix C. A photo log is presented in Appendix D.

4.1 Surface Investigation and Site Description

The approximate 9.47-acre subject site consists of four parcels located east of NE 112th Avenue and north of NE 16th Street in Vancouver, Washington. Field reconnaissance and review of site topographic mapping indicates relatively flat to gently sloping terrain with grades generally ranging from 0 to 15 percent. Site elevations range from approximately 296 feet above mean sea level (amsl) in the northern central portion of the site to 312 feet

amsl in the southern portion of parcel 110252000. Currently, the site appears minimally developed with three outbuildings on the western portion of the site, three outbuildings on the northeastern portion of the site, and several gravel roadways bordering the agricultural plots characterizing much of the site. Vegetation within the western portion of the site primarily consist of grass in open areas with sparse tree coverage. The eastern half of parcel 110252000 and western half of parcel 110235000 are currently being used for agricultural purposes. The eastern half of parcel 110235000 appears to be covered with grassy areas in the northern portion, more densely populated trees in the central portion, and small stockpiles of mulch and tree logs in the southern portion.

4.2 Subsurface Exploration and Investigation

Test pit explorations TP-1 through TP-6 were advanced at the site to a maximum depth of 14.0 feet below ground surface (bgs). Exploration locations were selected to observe subsurface soil characteristics in proximity to proposed development areas and are indicated on Figure 2.

4.2.1 Soil Type Description

The field investigation indicated the site is generally covered with approximately 4 to 18 inches of sod and topsoil in the observed locations. Underlying the topsoil layer, subsurface soils resembling native USDA Wind River soil series descriptions were generally encountered. Subsurface lithology was reasonably consistent at all explored locations and may generally be described by soil types identified in the following text.

Soil Type 1 – Undocumented FILL

Soil Type 1 was observed to primarily consist of native materials previously excavated and repurposed on the site as FILL. Beneath the topsoil layer in test pit TP-6 and in the northern portion of test pit TP-1, Soil Type 1A was observed to consist of dark brown, moist, medium dense clayey SAND with gravel. These materials extended to approximately 8.5 feet bgs in the northern portion of test pit TP-1 where they were underlain by Soil Type 3. In test pit TP-6, these clayey sand materials extended to approximately 5 feet bgs where they were underlain by additional repurposed native FILL, designated as Soil Type 1B. Soil Type 1B was observed to consist of dark gray, damp, poorly-graded SAND with gravel and clayey sand lenses and layers. Soil Type 1B was observed below Soil Type 1A in test pit TP-6 and extended to approximately 9 feet bgs where it was underlain by Soil Type 3.

Soil Type 2 – Clayey SAND

Soil Type 2 was observed to primarily consist of brown, moist, medium dense, clayey SAND. Soil Type 2 was observed below the topsoil layer in the southern portion of test pit TP-1 and in test pits TP-3 through TP-5. Soil Type 2 extended approximately four feet bgs where it was underlain by Soil Type 3.

Analytical laboratory testing conducted upon a representative soil sample obtained from test pit TP-2 indicated approximately 28 percent by weight passing the No. 200 sieve and an in situ moisture content of approximately 19 percent. Atterberg Limits analysis

indicated the tested sample of Soil Type 2 had a liquid limit of 34 and a plasticity index of 14. The laboratory tested sample of Soil Type 2 is classified SC according to USCS specifications and A-2-6(1) according to AASHTO specifications.

Soil Type 3 – Poorly-graded SAND

Soil Type 3 was observed to consist of dark gray, damp to moist, medium dense poorly-graded SAND with silt and dark gray, damp, poorly-graded SAND. Soil Type 3 was observed below Soil Types 1A and 2 in the northern and southern portions of test pit TP-1, respectively; below Soil Type 1B in test pit TP-6; and below Soil Type 2 in test pits TP-2, through TP-5. Soil Type 3 extended to the maximum depth of exploration in all test pits.

Analytical laboratory testing conducted upon a representative soil sample obtained from test pit TP-4 indicated approximately 1 percent by weight passing the No. 200 sieve and an in situ moisture content of approximately 10 percent. Atterberg Limits analysis indicated the tested sample of Soil Type 3 is nonplastic. The laboratory tested sample of Soil Type 3 is classified SP according to USCS specifications and A-1-b(0) according to AASHTO specifications.

4.2.2 Groundwater

Groundwater was not encountered in the test pit excavations to the maximum explored depth of 14.0 feet bgs. According to *Clark County Maps Online*, groundwater within the vicinity is approximately 100 feet bgs. Groundwater levels are often subject to seasonal variance and may rise during extended periods of increased precipitation. 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, roads, and drainage design should be planned accordingly.

5.0 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 utilized and incorporated into the design and construction processes. Design recommendations are presented in the following text sections. As previously mentioned, parcel 110235000 was inaccessible at the time of this investigation. Therefore, additional field exploration will be required to confirm that the below recommendations are applicable to that portion of the site.

5.1 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, other 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 anticipated stripping depth for sod and highly organic topsoil is anticipated to vary between 4 and 18 inches. The required stripping depth may increase in areas of existing fill, heavy organics, agricultural plots, or previously existing structures. Actual stripping depths 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 unconsolidated fill encountered during grading or construction activities should be removed completely and thoroughly from structural areas. Based on observations made during the field investigation, undocumented fill materials are present in certain locations throughout the site. Approximate areas observed to contain undocumented fill material are indicated on Figure 2. Additional filled areas may be uncovered during construction operations. Further evaluation by Columbia West will be required to determine whether these materials are suitable for reuse as structural fill on the site.

Demolition work prior to site improvements construction may generate unsuitable fill and disturbed soils in areas of old foundations, basement walls, utilities, and debris. These materials should also be thoroughly removed from structural areas and backfilled with engineered structural fill.

Test pits excavated during site exploration were backfilled loosely with onsite soils. These test pits should be located and properly backfilled with structural fill during site improvements construction. 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 2015 *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.

5.1.1 Existing Fill

As previously discussed and indicated in Figure 2, existing fill was observed at the subject site in test pits TP-1 and TP-6. Subsurface exploration and field reconnaissance indicate that existing fill, in the areas observed, primarily consists of dark brown clayey sand with gravel and dark gray poorly-graded sand with gravel and clayey sand lenses and layers. Site observations and subsurface exploration indicated that existing fill extended up to 9 feet below ground surface in the areas explored.

Existing fill (Soil Type 1) and other previously disturbed soils or debris should be removed completely and thoroughly from proposed building footprints. In some areas, existing fill may directly overlie vegetation and the original topsoil layer. This material should also be removed completely from proposed building locations. Upon removal of existing fill, Columbia West should observe the exposed subgrade.

Based upon Columbia West's investigation, most existing fill soils (Soil Type 1) appear to be acceptable for reuse as structural fill, provided materials are observed to exhibit index properties similar to those observed during this investigation and that construction adheres to the specifications presented in this report. Portions of existing fill found to contain highly

organic or clayey soils, debris, or other deleterious material should be removed. Recommendations regarding the suitability of reusing existing fill soils as structural fill material should be provided in the field by Columbia West during construction. It should be noted that the limited scope of exploration conducted for this investigation cannot wholly eliminate uncertainty regarding the presence of unsuitable soils in areas not explored.

5.2 Engineered Structural Fill

Areas proposed for fill placement should be appropriately prepared as described in the preceding text. Surface soils should then be scarified and compacted prior to additional fill placement. Engineered structural fill should be placed in loose lifts not exceeding 12 inches in depth and compacted using standard conventional compaction equipment. The soil moisture content should be within two percentage points of optimum conditions. A field density at least equal to 95 percent of the maximum dry density, obtained from the standard Proctor moisture-density relationship test (ASTM D698), is recommended for structural fill placement. For engineered structural fill placed on sloped grades, the area should be benched to provide a horizontal surface for compaction.

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. Engineered fill placement should be observed by Columbia West.

Engineered structural fill placement activities should be performed during dry summer months if possible. Clean native soils may be suitable for use as structural fill if adequately dried or moisture-conditioned to achieve recommended compaction specifications. Native soils may require addition of moisture during late summer months or after extended periods of warm dry weather. Compacted fine-textured fill soils should be covered shortly after placement to maintain moisture conditions and minimize shrink swell potential.

If adequate compaction is not achievable with clean native soils, import structural fill consisting of granular fill meeting WSDOT specifications for *Gravel Borrow 9-03.14(1)* is recommended.

Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by Columbia West prior to placement. Laboratory analyses should include particle-size gradation and standard Proctor moisture-density analysis.

5.3 Cut and Fill Slopes

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 3. Drainage implementations, including subdrains or perforated drain pipe 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 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 4.

Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required. Fill slopes should be constructed by placing fill material in maximum 12-inch level lifts, compacting as described in Section 5.2, *Engineered Structural Fill* and horizontally benching where appropriate. 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.

5.4 Foundations

Residential foundations are anticipated to consist of shallow continuous perimeter or column spread footings. Footings should be designed by a licensed structural engineer and conform to the recommendations below. Typical residential building loads are not expected to exceed approximately 2 to 3 kips per foot for perimeter footings or 10 kips per column. If actual loading exceeds anticipated loading, additional analysis should be conducted for the specific load conditions and proposed footing dimensions.

The existing ground surface should be prepared as described in Section 5.1, *Site Preparation and Grading*, and Section 5.2, *Engineered Structural Fill*. Foundations should bear upon firm native soil or engineered structural fill.

To evaluate bearing capacity for proposed structures, serviceability and reliability of shear resistance for subsurface soils was considered. Allowable bearing capacity is typically a function of footing dimension and subsurface soil properties, including settlement and shear resistance. Based upon in situ field testing and laboratory analysis, the estimated allowable bearing capacity for well-drained foundations prepared as described above is 1,500 psf. Bearing capacity may be increased by one-third for transient lateral forces such as seismic or wind. The estimated coefficient of friction between in situ compacted native soil or engineered structural fill and in-place poured concrete is 0.45. Lateral forces may also be resisted by an assumed passive soil equivalent fluid pressure of 250 psf/f against embedded footings. The upper six inches of soil should be neglected in passive pressure calculations.

As previously mentioned, parcel 110235000 was inaccessible at the time of this investigation. Therefore, additional field exploration will be required to confirm that the above allowable bearing capacity value and the below corresponding settlement estimates are applicable to that portion of the site.

Footings should extend to a depth at least 18 inches below lowest adjacent grade to provide adequate bearing capacity and protection against frost heave. Foundations constructed during wet weather conditions will require over-excavation of saturated subgrade soils and granular structural backfill prior to concrete placement. Over-excavation recommendations should be provided by Columbia West during foundation excavation and construction. Excavations adjacent to foundations should not extend within a 1.5H:1V angle projected down from the outside bottom footing edge without additional geotechnical analysis.

Foundations should not be permitted to bear upon existing fill or disturbed soil. Because soil is often heterogeneous and anisotropic, Columbia West should observe foundation excavations prior to placing forms or reinforcing bar to verify subgrade support conditions are as anticipated in this report.

5.5 Settlement

Total long-term static footing displacement for shallow foundations constructed as described in this report is not anticipated to exceed approximately 1 inch. Differential settlement between comparably loaded footing elements is not expected to exceed approximately ½ inch over a span of 50 feet. The resulting vertical displacement after loading may be due to elastic distortion, dissipation of excess pore pressure, or soil creep.

5.6 Excavation

Soils at the site were explored to a maximum depth of 14.0 feet using a track-mounted excavator. Bedrock was not observed within test pit explorations and blasting or specialized rock-excavation techniques are not anticipated.

Groundwater was not encountered within the test pit excavations, however, perched groundwater layers may exist in other areas of the site depending on seasonal fluctuations of the water table.

Based upon laboratory analysis and field testing, near-surface soils may be Washington State Industrial Safety and Health Administration (WISHA) Type C. For temporary open-cut excavations deeper than four feet, but less than 20 feet in soils of these types, the maximum allowable slope is 1.5H:1V. WISHA soil type should be confirmed during field construction activities by the contractor. Soil is often anisotropic and heterogeneous, and it is possible that WISHA soil types determined in the field may differ from those described above.

The contractor should be held responsible for site safety, sloping, and shoring. Columbia West is not responsible for contractor activities and in no case should excavation be conducted in excess of all applicable local, state, and federal laws.

5.7 Lateral Earth Pressure

If retaining walls are proposed, lateral earth pressures should be carefully considered in the design process. Hydrostatic pressure and additional surcharge loading should also be considered. Retained material may include engineered structural backfill or undisturbed native soil. Structural wall backfill should consist of imported granular material meeting

Section 9-03.12(2) of WSDOT Standard Specifications. Backfill should be prepared and compacted to at least 95 percent of maximum dry density as determined by the modified Proctor test (ASTM D1557). Recommended parameters for lateral earth pressures for retained soils and engineered structural backfill consisting of imported granular fill meeting WSDOT specifications for *Gravel Backfill for Walls 9-03.12(2)* are presented in Table 1.

The design parameters presented in Table 1 are valid for static loading cases only and are based upon in situ existing soils or compacted granular fill. The recommended earth pressures do not include surcharge loads, dynamic loading, hydrostatic pressure, or seismic design.

Table 1. Lateral Earth Pressure Parameters for Level Backfill

Retained Soil	Equivalent Fluid Pressure for Level Backfill			Wet Density	Drained Internal Angle of Friction
	At-rest	Active	Passive		
Undisturbed native Clayey SAND (Soil Type 2)	58 pcf	38 pcf	345 pcf	115 pcf	30°
Undisturbed native Poorly-graded SAND (Soil Type 3)	56 pcf	37 pcf	391 pcf	120 pcf	32°
Approved Structural Backfill Material	52 pcf	32 pcf	568 pcf	135 pcf	38°
WSDOT 9-03.12(2) compacted aggregate backfill					

* The upper 6 inches of soil should be neglected in passive pressure calculations. If exterior grade from top or toe of retaining wall is sloped, Columbia West should be contacted to provide location-specific lateral earth pressures.

If seismic design is required for unrestrained walls, seismic forces may be calculated by superimposing a uniform lateral force of $10H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The resultant force should be applied at 0.6H from the base of the wall.

A continuous one-foot-thick zone of free-draining, washed, open-graded 1-inch by 2-inch drain rock and a 4-inch perforated gravity drain pipe is assumed behind retaining walls. Geotextile filter fabric should be placed between the drain rock and backfill soil. Specifications for drainpipe design are presented in Section 5.9, *Drainage*. If walls cannot be gravity drained, saturated base conditions and/or applicable hydrostatic pressures should be assumed.

Final retaining wall design should be reviewed and approved by Columbia West. Retaining wall subgrade and backfill activities should also be observed and tested for compliance with recommended specifications by Columbia West during construction.

5.8 Seismic Design Considerations

According to the *United States Geologic Survey (USGS) 2012 Seismic Design Maps Summary Report*, the anticipated peak ground and maximum considered earthquake spectral response accelerations resulting from seismic activity for the subject site are summarized in Table 2.

Table 2. Approximate Probabilistic Ground Motion Values for ‘firm rock’ sites based on subject property longitude and latitude

	2% Probability of Exceedance in 50 yrs
Peak Ground Acceleration	0.39 g
0.2 sec Spectral Acceleration	0.90 g
1.0 sec Spectral Acceleration	0.39 g

The listed probabilistic ground motion values are based upon “firm rock” sites with an assumed shear wave velocity of 2,500 ft/s in the upper 100 feet of soil profile. These values should be adjusted for site class effects by applying site coefficients F_a and F_v as defined in 2015 IBC Tables 1613.3.3(1) and (2); the PGA should be adjusted by applying the site coefficient F_{PGA} as defined by *ASCE 7, Chapter 11, Table 11.8-1*. The site coefficients are intended to more accurately characterize estimated peak ground and respective earthquake spectral response accelerations by considering site-specific soil characteristics and index properties.

The *Site Class Map of Clark County, Washington* (Washington State Department of Natural Resources, 2004), indicates site soils may be represented by Site Class C. Based upon observed subsurface soil conditions at the site and review of well logs and local geologic maps, site soils may be considered to be Site Class C as defined in 2015 IBC Section 1613.3.5. This site class designation indicates that some amplification of seismic energy may occur during a seismic event because of subsurface conditions.

Localized peak ground accelerations exceeding the adjusted values may occur in some areas in direct proximity to an earthquake’s origin. This may be a result of amplification of seismic energy due to depth to competent bedrock, compression and shear wave velocity of bedrock, presence and thickness of loose, unconsolidated alluvial deposits, soil plasticity, grain size, and other factors.

Identification of specific seismic response spectra is beyond the scope of this investigation. If site structures are designed in accordance with recommendations specified in the *2015 IBC*, the potential for peak ground accelerations in excess of the adjusted and amplified values should be understood.

5.9 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 Vancouver regulations. Finished site grading should be conducted with positive drainage away from structures. Depressions or shallow areas that may retain ponding water should be avoided. Roof drains, low-point drains, and perimeter foundation drains are recommended for structures. Drains should consist of separate

systems and gravity flow with a minimum two-percent slope away from foundations into the stormwater system or approved discharge location.

Perimeter foundation drains should consist of 3-inch perforated PVC pipe surrounded by a minimum of 1 ft³ of clean, washed drain rock per linear foot of pipe and wrapped with geotextile filter fabric. Open-graded drain rock with a maximum particle size of 3 inches and less than 2 percent passing the No. 200 sieve is recommended. Geotextile filter fabric should consist of Mirafi 140N or approved equivalent, with AOS between No. 70 and No. 100 sieve. The water permittivity should be greater than 1.5/sec. Figure 5 presents a typical foundation drain. Perimeter drains may limit increased hydrostatic pressure beneath footings and assist in reducing potential perched moisture areas.

Subdrains should also 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 the stormwater management system or an approved discharge. Recommendations for design and installation of perforated drainage pipe may be performed on a case-by-case basis by the geotechnical engineer 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 drain pipe trench detail is presented in Figure 6.

Foundation drains and subdrains 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. Columbia West should be consulted to provide appropriate recommendations.

5.10 Infiltration Testing Results

To investigate the feasibility of subsurface disposal of stormwater, Columbia West conducted in situ infiltration testing at two locations within the project area on November 3, 2017. Results of in situ infiltration testing are presented in Table 3. The soil classifications presented in Table 3 are based upon laboratory analysis when available. The measured infiltration rates are presented as a coefficient of permeability (k) and have been reported without application of a factor of safety. As previously mentioned, parcel 110235000 was inaccessible at the time of this investigation. Therefore, additional infiltration testing should be performed on that portion of the site before the design of infiltration facilities is finalized.

As indicated in Table 3, tests were conducted in test pits TP-2 and TP-4 at the indicated depths. Soils in the tested locations were observed and sampled where appropriate to adequately characterize the subsurface profile. Tested native soils are classified as clayey SAND (SC); and poorly-graded SAND (SP). Soil laboratory analytical test reports are provided in Appendix A.

Single-ring, falling head infiltration testing was performed by inserting three-inch diameter pipes into the soil at the noted depths. The tests were conducted by filling the pipes with water and measuring time relative to changes in hydraulic head at regular intervals. Using

Darcy's Law for saturated flow in homogeneous media, the coefficient of permeability (k) was then calculated.

Table 3. Infiltration Test Data

Infiltration Test No.	Location (See Figure 2)	Approximate Test Depth (feet bgs)	Groundwater Depth (feet bgs)	Soil Type*	Passing No. 200 Sieve (%)	Measured Infiltration Rate (Coefficient of Permeability, k) (inches/hour)**
IT-2.1	TP-2 (See Figure 2)	2.0	Not Encountered	SC, Clayey SAND	28.0	8.8
IT-2.2	TP-2 (See Figure 2)	6.0	Not Encountered	SP, Poorly-graded SAND*	-	> 250
IT-4.1	TP-4 (See Figure 2)	6.5	Not Encountered	SP, Poorly-graded SAND	1.0	232

* Indicates visual soil classification.

** Infiltration rate as defined by soil's approximate vertical coefficient of permeability [k].

The reported infiltration rates, as defined by the soil's vertical coefficient of permeability, reflect approximate raw observed data, without application of a factor of safety. An appropriate correction factor should be developed for proposed stormwater facilities and applied to the observed infiltration rates prior to use in design calculations.

Infiltration facilities should be protected from erosion, especially during construction. Improperly designed or constructed systems may become fouled or plugged with mud or micaceous sediment. Excavation and preparation of stormwater disposal facilities should be closely monitored by Columbia West. An emergency overflow discharge point should be provided.

It is important to note that site soil conditions and localized infiltration capability may be variable. Therefore, infiltration rates should be verified by additional testing during construction when subgrade soils are exposed. Subgrade soils should be observed by Columbia West to verify soil index properties pertaining to infiltration are similar to those at the tested locations.

The observed infiltration rates provided in Table 3 are based upon an assumed adequate separation distance between the infiltrating surface and the ground water table and Columbia West's observations during limited subsurface exploration. Therefore, they may not be an accurate indicator of post-developed long-term system performance. It should be understood that systems may require additional infiltration capacity if submerged or mounded conditions are present, or construction verification testing or future performance indicate the system is not functioning according to original tested and designed parameters.

5.11 Bituminous Asphalt and Portland Cement Concrete

Based upon review of preliminary site plans, proposed development will include new private asphalt concrete parking areas and drive aisles. Columbia West recommends

adherence to City of Vancouver standards for street improvements in the public right-of-way.

For dry weather construction, pavement surface sections should bear upon competent subgrade consisting of scarified and compacted native soil or engineered structural fill. Wet weather pavement construction is discussed in Section 5.14, *Wet Weather Construction Methods and Techniques*. Subgrade conditions should be evaluated and tested by Columbia West prior to placement of crushed aggregate base. Subgrade evaluation should include nuclear gauge density testing and wheel proof-roll observations conducted with a 12-cubic yard, double-axle dump truck or equivalent. Nuclear gauge density testing should be conducted at 150-foot intervals or as determined by the onsite geotechnical engineer. Subgrade soil should be compacted to at least 95 percent of the modified Proctor dry density, as determined by ASTM D1557. Areas of observed deflection or rutting during proof-roll evaluation should be excavated to a firm surface and replaced with compacted crushed aggregate.

Crushed aggregate base should be compacted and tested in accordance with the specifications outlined above. Asphalt concrete pavement should be compacted to at least 91 percent of maximum Rice density. Nuclear gauge density testing should be conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with Washington Department of Transportation and City of Vancouver specifications.

Portland cement concrete curbs and sidewalks should be installed in accordance with City of Vancouver specifications. Curb and sidewalk aggregate base should be observed and proof-rolled by Columbia West. Soft areas that deflect or rut should be stabilized prior to pouring concrete. Field sampling and testing of concrete during installation should be performed in accordance with ASTM C172. This includes casting a set of at least four cylindrical concrete specimens at a minimum frequency of one set per 100 cubic yards of poured concrete. The concrete test cylinders should be molded and cured in accordance with ASTM C31 and tested for compressive strength in accordance with ASTM C39. Concrete sampling and testing should also adhere to Washington Department of Transportation and City of Vancouver specifications, where applicable, in addition to the above mentioned ASTM standards and specifications.

5.12 Wet Weather Construction Methods and Techniques

Wet weather construction often results in significant shear strength reduction and soft areas that may rut or deflect. Installation of granular working layers may be necessary to provide a firm support base and sustain construction equipment. Granular layers should consist of all-weather gravel, 2x4-inch gabion, or other similar material (six-inch maximum size with less than five percent passing the No. 200 sieve).

Construction equipment traffic across exposed soil should be minimized. Equipment traffic induces dynamic loading, which may result in weak areas and significant reduction in shear strength for wet soils. Wet weather construction may also result in generation of

significant excess quantities of soft wet soil. This material should be removed from the site or stockpiled in a designated area.

Construction during wet weather conditions may require increased base thickness. Over-excavation of subgrade soils or subgrade amendment with lime and/or cement may be necessary to provide a firm base upon which to place crushed aggregate. Geotextile filter fabric is also recommended. If soil amendment with lime or cement is considered, Columbia West should be contacted to provide appropriate recommendations based upon observed field conditions and desired performance criteria.

Crushed aggregate base should be installed in a single lift with trucks end-dumping from an advancing pad of granular fill. During extended wet periods, stripping activities may also need to be conducted from an advancing pad of granular fill. Once installed, the crushed aggregate base should be compacted with several passes from a static drum roller. A vibratory compactor is not recommended because it may further disturb the subgrade. Subdrains may also be necessary to provide subgrade drainage and maintain structural integrity.

Crushed aggregate base should be compacted to at least 95 percent of maximum dry density according to the modified Proctor density test (ASTM D1557). Compaction should be verified by nuclear gauge density testing. Observation of a proof-roll with a loaded dump truck is also recommended as an indication of the compacted aggregate's performance.

It should be understood that wet weather construction is risky and costly. Columbia West should observe and document wet weather construction activities. Proper construction methods and techniques are critical to overall project integrity.

5.13 Erosion Control Measures

Based upon field observations and laboratory testing, the erosion hazard for site soils in flat to shallow-gradient portions of the property is likely to be low. The potential for erosion generally increases in sloped areas. Therefore, disturbance to vegetation in sloped areas should be minimized during construction activities. Soil is also prone to erosion if unprotected and unvegetated during periods of increased precipitation. Erosion can be minimized by performing construction activities during dry summer months.

Site-specific erosion control measures should be implemented to address the maintenance of exposed areas. This may include silt fence, biofilter bags, straw wattles, or other suitable methods. During construction activities, exposed areas should be well-compacted and protected from erosion with visqueen, surface tactifier, or other means, as appropriate. Temporary slopes or exposed areas may be covered with straw, crushed aggregate, or riprap in localized areas to minimize erosion. Erosion and water runoff during wet weather conditions may be controlled by application of strategically placed channels and small detention depressions with overflow pipes.

After grading, exposed surfaces should be vegetated as soon as possible with erosion-resistant native vegetation. Jute mesh or straw may be applied to enhance

vegetation. Once established, vegetation should be properly maintained. Disturbance to existing native vegetation and surrounding organic soil should also be minimized during construction activities.

5.14 Soil Shrink/Swell Potential

Based upon laboratory analysis, near-surface soils contain as much as 28 percent by weight passing the No. 200 sieve and have low to moderate plasticity. This indicates low potential for soil shrinking or swelling.

5.15 Utility Installation

Utility installation may require subsurface excavation and trenching. Excavation, trenching and shoring should conform to federal (Occupational Safety and Health Administration) (OSHA) (29 CFR, Part 1926) and *WISHA* (WAC, Chapter 296-155) regulations. Site soils may slough when cut vertically and sudden precipitation events or perched groundwater may result in accumulation of water within excavation zones and trenches.

Utilities should be installed in general accordance with manufacturer's recommendations. Utility trench backfill should consist of crushed aggregate or other coarse-textured, free-draining material acceptable to the client, the City of Vancouver, and Columbia West. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). The remaining backfill should be compacted to at least 95 percent of maximum dry density as determined by the standard Proctor moisture-density test (ASTM D698). Clean, free-draining, fine bedding sand is recommended for use in the pipe zone. With exception of the pipe zone, backfill should be placed in loose lifts not exceeding 12 inches in thickness.

Compaction of utility trench backfill material should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938. It is recommended that field compaction testing be performed at 200-foot intervals along the utility trench centerline at the surface and midpoint depth of the trench. Compaction frequency and specifications may be modified for non-structural areas in accordance with recommendations of the site geotechnical engineer.

6.0 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 significantly 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 E. 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

Annual Book of ASTM Standards, Soil and Rock (I), v04.08, American Society for Testing and Materials, 1999.

Beeson, M.H., Tolan, T.L., Madin, I.P., *Geologic Map of the Lake Oswego Quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon*; Oregon Department of Geology and Mineral Industries; Geological Map Series GMS-59, 1989.

Clark County Maps Online (<http://gis.clark.wa.gov/ccgis/mol/property.htm>)

Geomatrix Consultants, *Seismic Design Mapping, State of Oregon*, January 1995.

International Building Code: *2015 International Building Code, 2015 edition*, International Code Council, 2015.

O'Conner, J.E., Cannon, C.M., Mangano, J.F., and Evarts, R.C., 2016, *Geologic Map of the Vancouver and Orchards Quadrangles and Parts of the Portland and Mount Tabor Quadrangles, Clark County, Washington, and Multnomah County, Oregon*, U.S. Geological Survey Scientific Investigations Map 3357

Safety and Health Regulations for Construction, 29 CFR Part 1926, Occupational Safety and Health Administration (OSHA), revised July 1, 2001.

Safety Standards for Construction Work, Part N, Excavation, Trenching and Shoring, Washington Administrative Code, Chapter 296-155, Division of Industrial Safety and Health, Washington Department of Labor and Industries, February, 1993.

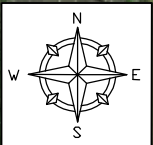
United States Geologic Survey (USGS), *2012 Seismic Design Maps, Web Application*, Accessed October 2016

Wong, Ivan, et al, *Earthquake Scenario and Probabilistic Earthquake Ground Shaking Maps for the Portland, Oregon, Metropolitan Area*, IMS-16, Oregon Department of Geology and Mineral Industries, 2000.

Palmer, Stephen P., Magsino, Sammantha L., Poelstra, James L., and Niggemann, Rebecca A., *Site Class Map of Clark County, Washington*; Washington State Department of Natural Resources, September 2004.

Web Soil Survey, Natural Resources Conservation Service, United States Department of Agriculture 2017 website (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>).

FIGURES



UNDOCUMENTED FILL OBSERVED (ACTUAL EXTENT UNKNOWN)

TP-6

TP-1

TP-5

TP-4

TP-2

TP-3

UNEXPLORED PARCEL NO. 110235000

APPROXIMATE SUBJECT SITE BOUNDARY

Infiltration Test Results

Test Number	Location	Approximate Test Depth (feet bgs)	Groundwater Depth (feet bgs)	Soil Type (Visual Classification)	Passing No. 200 Sieve (%)	Infiltration Rate (Coefficient of Permeability, k) (inches/hour)
IT-2.1	TP-2	2.0	Not Encountered	SC, Clayey SAND	28.0	8.8
IT-2.2	TP-2	6.0	Not Encountered	SP, Poorlygraded SAND	-	> 250
IT-4.1	TP-4	6.5	Not Encountered	SP, Poorlygraded SAND	1.0	232



APPROXIMATE LOCATION OF TEST PIT EXPLORATION



APPROXIMATE LOCATION OF INFILTRATION TEST

NOTES:

1. SITE LOCATION: 1619 NE 112TH AVE, VANCOUVER, WASHINGTON.
2. SITE CONSISTS OF PARCELS 110252000, 110251000, 110250000, AND 110235000 TOTALING APPROXIMATELY 9.47 ACRES.
3. DRAWING IS NOT TO SCALE.
4. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
5. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
6. TEST PITS BACKFILLED LOOSELY WITH ONSITE SOIL ON NOVEMBER 3, 2017.

Geotechnical • Environmental • Special Inspections
Columbia West
Engineering, Inc.
11917 NE 95th STREET
VANCOUVER, WASHINGTON 98682
PHONE: 360-823-2900 FAX: 360-823-2901
www.columbiawestengineering.com

Design:

Checked: ASR

Client: FSS, LLC

Job No: 17306

CAD File: FIGURE 2

Scale: NONE

Drawn: JFM

Date: 11/14/17

Rev By Date

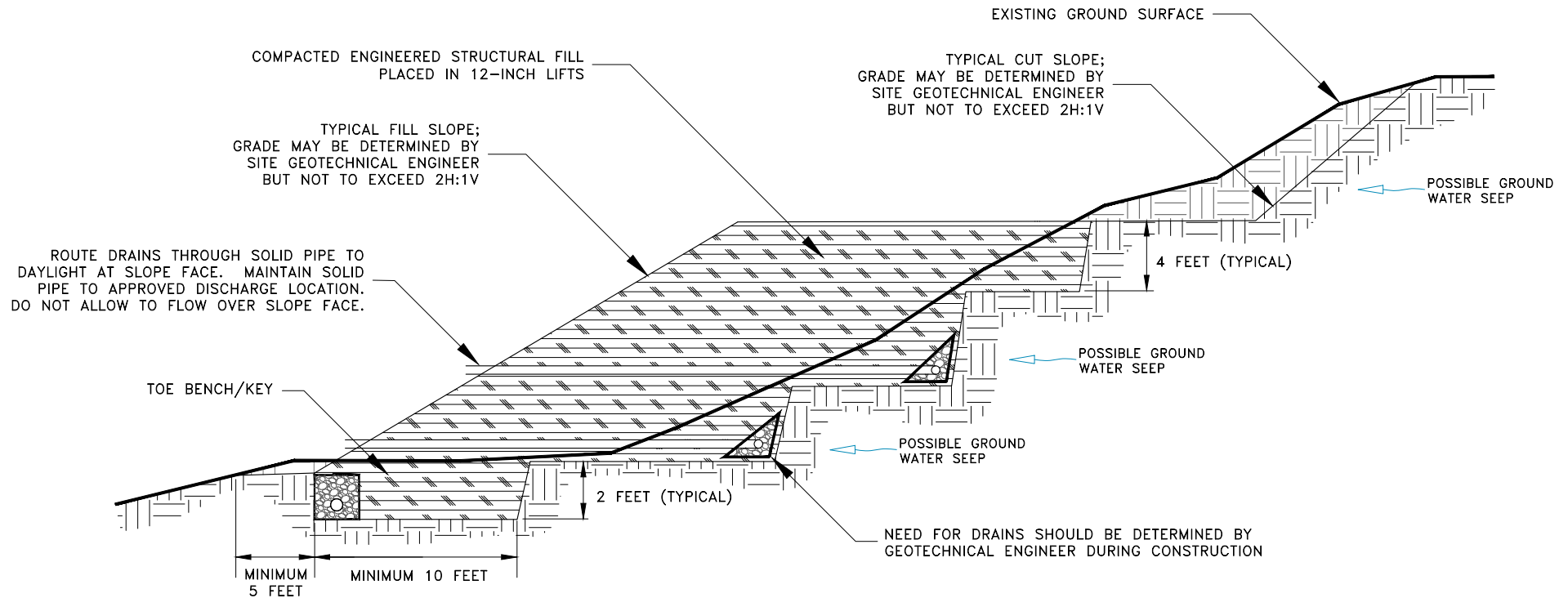
01 JFM 12/1/17

EXPLORATION LOCATION MAP

FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON

FIGURE
2

TYPICAL CUT AND FILL SLOPE CROSS-SECTION

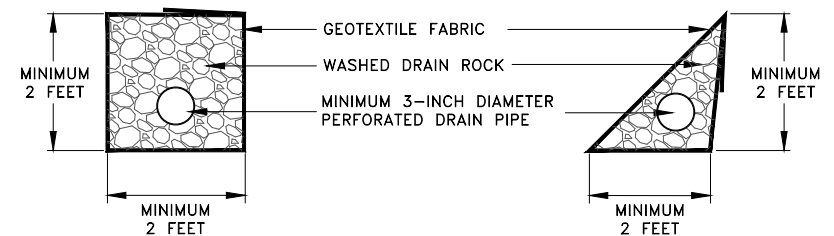


DRAIN SPECIFICATIONS

GEOTEXTILE FABRIC SHALL CONSIST OF MIRAFI 140N OR APPROVED EQUIVALENT WITH AOS BETWEEN No. 70 AND No. 100 SIEVE.

WASHED DRAIN ROCK SHALL BE OPEN-GRADED ANGULAR DRAIN ROCK WITH LESS THAN 2 PERCENT PASSING THE No. 200 SIEVE AND A MAXIMUM PARTICLE SIZE OF 3 INCHES.

TYPICAL DRAIN SECTION DETAIL



TYPICAL CUT AND FILL
SLOPE CROSS-SECTION

FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON

FIGURE
3

Geotechnical • Environmental • Special Inspections
Columbia West
Engineering, Inc.

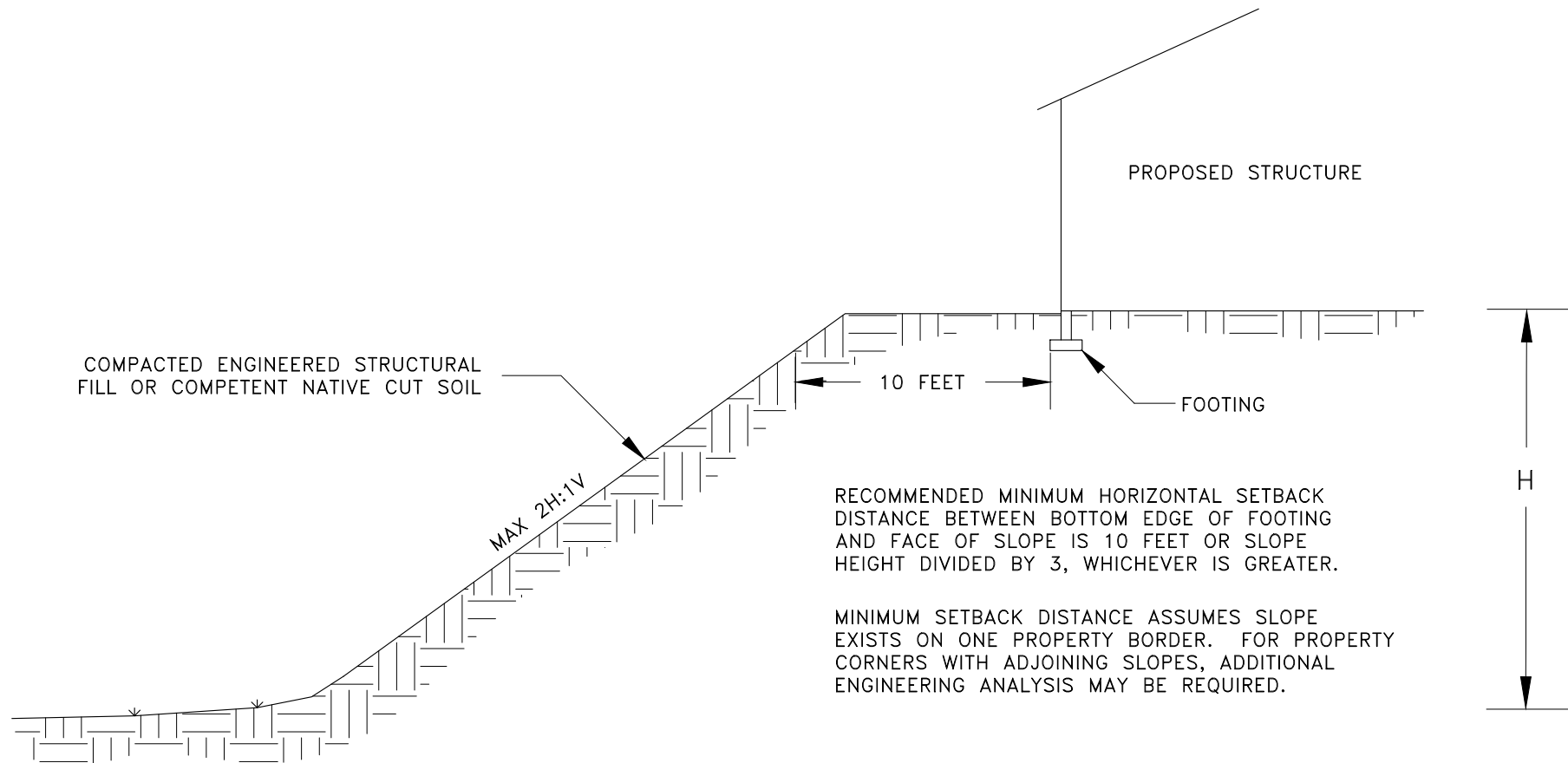
11917 NE 95th STREET
VANCOUVER, WASHINGTON 98682
PHONE: 360-823-2900 FAX: 360-823-2901
www.columbiawestengineering.com

Design:	Drawn: JFM
Checked: ASR	Date: 11/21/17
Client: FSS, LLC	Rev By Date
Job No: 17306	
CAD File: FIGURE 3	
Scale: NONE	

NOTES:

1. DRAWING IS NOT TO SCALE.
2. SLOPES AND PROFILES SHOWN ARE APPROXIMATE.
3. DRAWING REPRESENTS TYPICAL FILL AND CUT SLOPE SECTION, AND MAY NOT BE SITE-SPECIFIC.

MINIMUM FOUNDATION SLOPE SETBACK DETAIL



- NOTES:
1. DRAWING IS NOT TO SCALE.
 2. SLOPES AND PROFILES SHOWN ARE APPROXIMATE.
 3. DRAWING REPRESENTS TYPICAL FOUNDATION SETBACK DETAIL, AND MAY NOT BE SITE-SPECIFIC.

Geotechnical ■ Environmental ■ Special Inspections

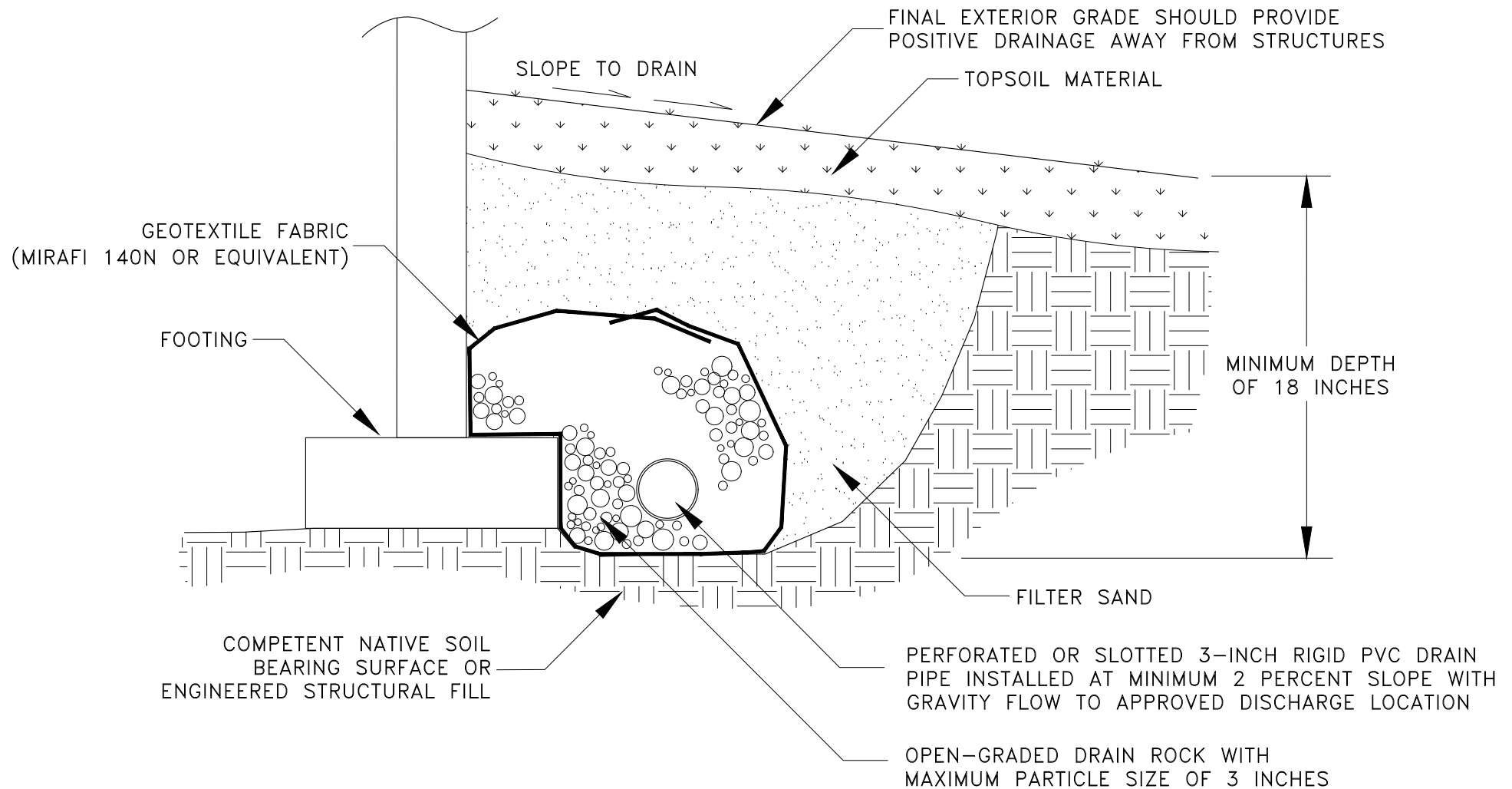
Columbia West
Engineering, Inc.

11917 NE 95th STREET
VANCOUVER, WASHINGTON 98682
PHONE: 360-823-2900 FAX: 360-823-2901
www.columbiawestengineering.com

Design:	Drawn: JFM
Checked: ASR	Date: 11/21/17
Client: FSS, LLC	Rev By Date
Job No: 17306	
CAD File: FIGURE 4	
Scale: NONE	

TYPICAL MINIMUM SLOPE SETBACK DETAIL
FOUR SEASONS SOUTH VANCOUVER, WASHINGTON

TYPICAL PERIMETER FOOTING DRAIN DETAIL



- NOTES:
1. DRAWING IS NOT TO SCALE.
 2. SLOPES AND PROFILES SHOWN ARE APPROXIMATE.
 3. DRAWING REPRESENTS TYPICAL FOUNDATION SETBACK DETAIL, AND MAY NOT BE SITE-SPECIFIC.

Geotechnical ■ Environmental ■ Special Inspections

Columbia West
Engineering, Inc.

11917 NE 95th STREET
VANCOUVER, WASHINGTON 98682
PHONE: 360-823-2900 FAX: 360-823-2901
www.columbiawestengineering.com

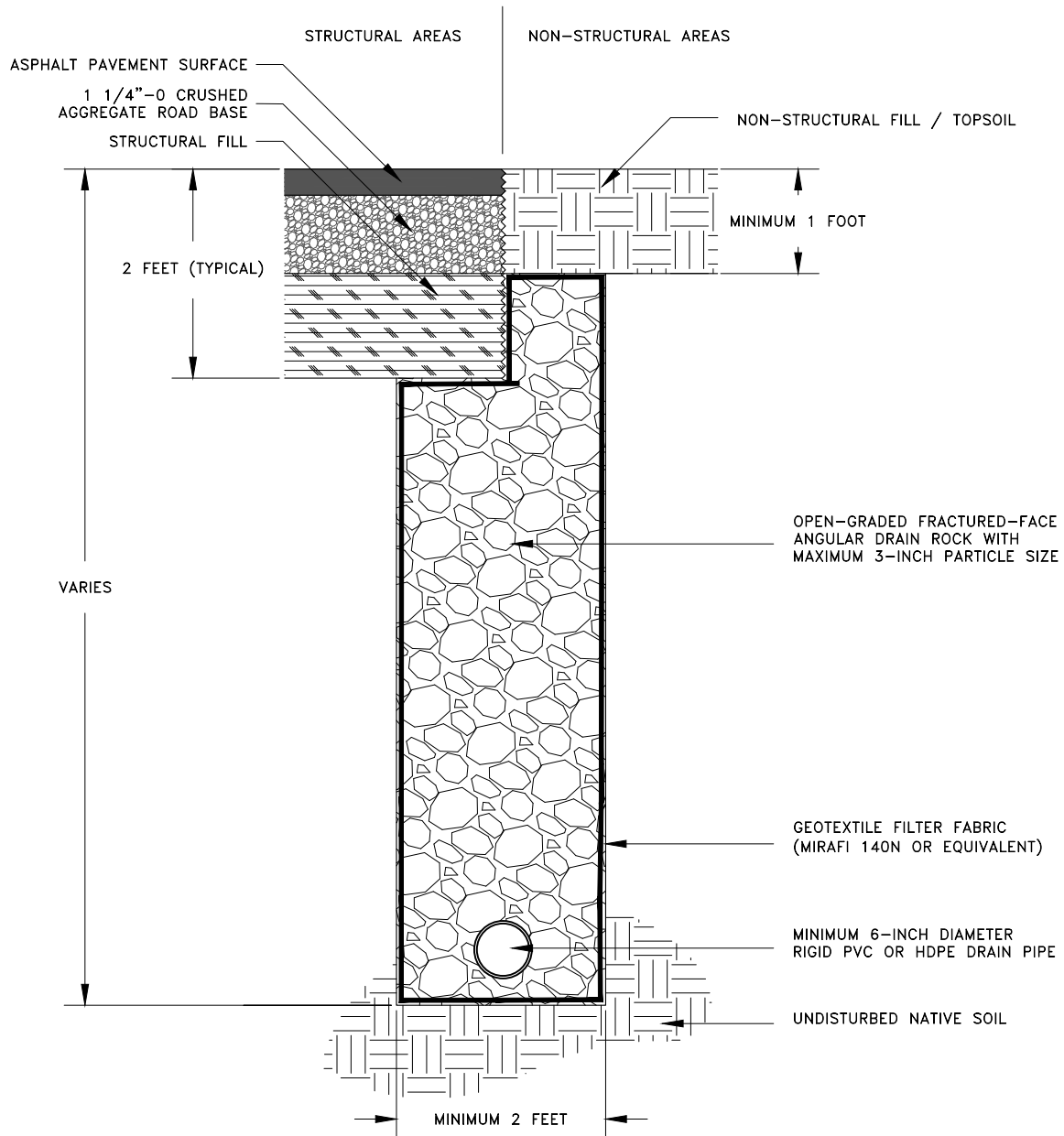
Design:	Drawn: JFM
Checked: ASR	Date: 11/21/17
Client: FSS, LLC	Rev By Date
Job No: 17306	
CAD File: FIGURE 5	
Scale: NONE	

TYPICAL PERIMETER
FOOTING DRAIN DETAIL

FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON

FIGURE
5

TYPICAL PERFORATED DRAIN PIPE TRENCH DETAIL



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.

APPENDIX A

LABORATORY TEST RESULTS

PARTICLE-SIZE ANALYSIS REPORT

PROJECT Four Seasons South Vancouver, Washington		CLIENT Mr. Patrick Ginn Four Seasons Subdivision, LLC 800 NE Tenney Road, Suite 110-348 Vancouver, Washington 98685		PROJECT NO. 17306		LAB ID S17-908																																																																																																																																																																																											
				REPORT DATE 11/21/17		FIELD ID TP2.1																																																																																																																																																																																											
				DATE SAMPLED 11/03/17		SAMPLED BY JFM																																																																																																																																																																																											
MATERIAL DATA																																																																																																																																																																																																	
MATERIAL SAMPLED Clayey SAND		MATERIAL SOURCE Test Pit TP-02 depth = 2 feet		USCS SOIL TYPE SC, Clayey Sand																																																																																																																																																																																													
SPECIFICATIONS none		AASHTO SOIL TYPE A-2-6(1)																																																																																																																																																																																															
LABORATORY TEST DATA																																																																																																																																																																																																	
LABORATORY EQUIPMENT Rainhart "Mary Ann" Sifter 637				TEST PROCEDURE ASTM D6913, D422																																																																																																																																																																																													
ADDITIONAL DATA				SIEVE DATA																																																																																																																																																																																													
initial dry mass (g) = 1744.3 as-received moisture content = 18.7% liquid limit = 34 plastic limit = 20 plasticity index = 14 fineness modulus = n/a				% sieve loss = 0.05% coefficient of curvature, C_c = n/a coefficient of uniformity, C_u = n/a effective size, $D_{(10)}$ = n/a $D_{(30)}$ = 0.100 mm $D_{(60)}$ = 0.918 mm																																																																																																																																																																																													
				% gravel = 8.2% % sand = 63.8% % silt and clay = 28.0%																																																																																																																																																																																													
				<table border="1"> <thead> <tr> <th colspan="2">SIEVE SIZE</th> <th colspan="4">PERCENT PASSING</th> </tr> <tr> <th>US</th> <th>mm</th> <th>act.</th> <th>interp.</th> <th>max</th> <th>min</th> </tr> </thead> <tbody> <tr><td>6.00"</td><td>150.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>4.00"</td><td>100.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>3.00"</td><td>75.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>2.50"</td><td>63.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>2.00"</td><td>50.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.75"</td><td>45.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.50"</td><td>37.5</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.25"</td><td>31.5</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.00"</td><td>25.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>7/8"</td><td>22.4</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>3/4"</td><td>19.0</td><td>100.0%</td><td></td><td></td><td></td></tr> <tr><td>5/8"</td><td>16.0</td><td>98.8%</td><td></td><td></td><td></td></tr> <tr><td>1/2"</td><td>12.5</td><td>98.2%</td><td></td><td></td><td></td></tr> <tr><td>3/8"</td><td>9.50</td><td>97.1%</td><td></td><td></td><td></td></tr> <tr><td>1/4"</td><td>6.30</td><td>94.3%</td><td></td><td></td><td></td></tr> <tr><td>#4</td><td>4.75</td><td>91.8%</td><td></td><td></td><td></td></tr> <tr><td>#8</td><td>2.36</td><td></td><td>78.5%</td><td></td><td></td></tr> <tr><td>#10</td><td>2.00</td><td>75.4%</td><td></td><td></td><td></td></tr> <tr><td>#16</td><td>1.18</td><td></td><td>65.0%</td><td></td><td></td></tr> <tr><td>#20</td><td>0.850</td><td>58.5%</td><td></td><td></td><td></td></tr> <tr><td>#30</td><td>0.600</td><td></td><td>53.0%</td><td></td><td></td></tr> <tr><td>#40</td><td>0.425</td><td>47.6%</td><td></td><td></td><td></td></tr> <tr><td>#50</td><td>0.300</td><td></td><td>41.5%</td><td></td><td></td></tr> <tr><td>#60</td><td>0.250</td><td>38.4%</td><td></td><td></td><td></td></tr> <tr><td>#80</td><td>0.180</td><td></td><td>34.8%</td><td></td><td></td></tr> <tr><td>#100</td><td>0.150</td><td>32.8%</td><td></td><td></td><td></td></tr> <tr><td>#140</td><td>0.106</td><td></td><td>30.4%</td><td></td><td></td></tr> <tr><td>#170</td><td>0.090</td><td></td><td>29.2%</td><td></td><td></td></tr> <tr><td>#200</td><td>0.075</td><td>28.0%</td><td></td><td></td><td></td></tr> </tbody> </table>				SIEVE SIZE		PERCENT PASSING				US	mm	act.	interp.	max	min	6.00"	150.0		100.0%			4.00"	100.0		100.0%			3.00"	75.0		100.0%			2.50"	63.0		100.0%			2.00"	50.0		100.0%			1.75"	45.0		100.0%			1.50"	37.5		100.0%			1.25"	31.5		100.0%			1.00"	25.0		100.0%			7/8"	22.4		100.0%			3/4"	19.0	100.0%				5/8"	16.0	98.8%				1/2"	12.5	98.2%				3/8"	9.50	97.1%				1/4"	6.30	94.3%				#4	4.75	91.8%				#8	2.36		78.5%			#10	2.00	75.4%				#16	1.18		65.0%			#20	0.850	58.5%				#30	0.600		53.0%			#40	0.425	47.6%				#50	0.300		41.5%			#60	0.250	38.4%				#80	0.180		34.8%			#100	0.150	32.8%				#140	0.106		30.4%			#170	0.090		29.2%			#200	0.075	28.0%			
SIEVE SIZE		PERCENT PASSING																																																																																																																																																																																															
US	mm	act.	interp.	max	min																																																																																																																																																																																												
6.00"	150.0		100.0%																																																																																																																																																																																														
4.00"	100.0		100.0%																																																																																																																																																																																														
3.00"	75.0		100.0%																																																																																																																																																																																														
2.50"	63.0		100.0%																																																																																																																																																																																														
2.00"	50.0		100.0%																																																																																																																																																																																														
1.75"	45.0		100.0%																																																																																																																																																																																														
1.50"	37.5		100.0%																																																																																																																																																																																														
1.25"	31.5		100.0%																																																																																																																																																																																														
1.00"	25.0		100.0%																																																																																																																																																																																														
7/8"	22.4		100.0%																																																																																																																																																																																														
3/4"	19.0	100.0%																																																																																																																																																																																															
5/8"	16.0	98.8%																																																																																																																																																																																															
1/2"	12.5	98.2%																																																																																																																																																																																															
3/8"	9.50	97.1%																																																																																																																																																																																															
1/4"	6.30	94.3%																																																																																																																																																																																															
#4	4.75	91.8%																																																																																																																																																																																															
#8	2.36		78.5%																																																																																																																																																																																														
#10	2.00	75.4%																																																																																																																																																																																															
#16	1.18		65.0%																																																																																																																																																																																														
#20	0.850	58.5%																																																																																																																																																																																															
#30	0.600		53.0%																																																																																																																																																																																														
#40	0.425	47.6%																																																																																																																																																																																															
#50	0.300		41.5%																																																																																																																																																																																														
#60	0.250	38.4%																																																																																																																																																																																															
#80	0.180		34.8%																																																																																																																																																																																														
#100	0.150	32.8%																																																																																																																																																																																															
#140	0.106		30.4%																																																																																																																																																																																														
#170	0.090		29.2%																																																																																																																																																																																														
#200	0.075	28.0%																																																																																																																																																																																															
GRAIN SIZE DISTRIBUTION 				DATE TESTED 11/14/17																																																																																																																																																																																													
				TESTED BY RTT																																																																																																																																																																																													

ATTERBERG LIMITS REPORT

PROJECT Four Seasons South Vancouver, Washington	CLIENT Mr. Patrick Ginn Four Seasons Subdivision, LLC 800 NE Tenney Road, Suite 110-348 Vancouver, Washington 98685	PROJECT NO. 17306	LAB ID S17-908
		REPORT DATE 11/21/17	FIELD ID TP2.1
		DATE SAMPLED 11/03/17	SAMPLED BY JFM

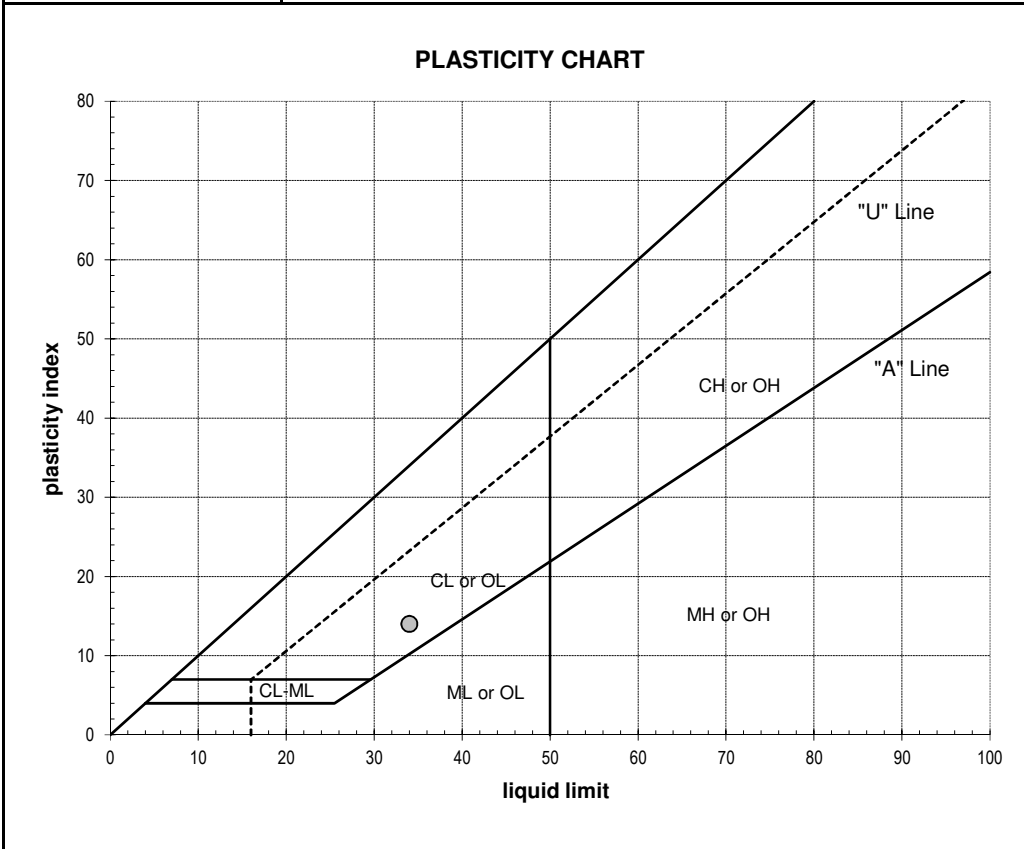
MATERIAL DATA

MATERIAL SAMPLED Clayey SAND	MATERIAL SOURCE Test Pit TP-02 depth = 2 feet	USCS SOIL TYPE SC, Clayey Sand
---------------------------------	---	-----------------------------------

LABORATORY TEST DATA

LABORATORY EQUIPMENT Liquid Limit Machine, Hand Rolled	TEST PROCEDURE ASTM D4318
---	------------------------------

ATTERBERG LIMITS liquid limit = 34 plastic limit = 20 plasticity index = 14	LIQUID LIMIT DETERMINATION <table><thead><tr><th></th><th>①</th><th>②</th><th>③</th><th>④</th></tr></thead><tbody><tr><td>wet soil + pan weight, g =</td><td>33.54</td><td>32.97</td><td>33.41</td><td></td></tr><tr><td>dry soil + pan weight, g =</td><td>30.43</td><td>29.99</td><td>30.17</td><td></td></tr><tr><td>pan weight, g =</td><td>20.83</td><td>20.87</td><td>20.85</td><td></td></tr><tr><td>N (blows) =</td><td>35</td><td>27</td><td>19</td><td></td></tr><tr><td>moisture, % =</td><td>32.4 %</td><td>32.7 %</td><td>34.8 %</td><td></td></tr></tbody></table>		①	②	③	④	wet soil + pan weight, g =	33.54	32.97	33.41		dry soil + pan weight, g =	30.43	29.99	30.17		pan weight, g =	20.83	20.87	20.85		N (blows) =	35	27	19		moisture, % =	32.4 %	32.7 %	34.8 %		LIQUID LIMIT <table><caption>Liquid Limit Data</caption><thead><tr><th>Number of blows, "N"</th><th>moisture, %</th></tr></thead><tbody><tr><td>35</td><td>32.4</td></tr><tr><td>27</td><td>32.7</td></tr><tr><td>19</td><td>34.8</td></tr></tbody></table>	Number of blows, "N"	moisture, %	35	32.4	27	32.7	19	34.8
	①	②	③	④																																				
wet soil + pan weight, g =	33.54	32.97	33.41																																					
dry soil + pan weight, g =	30.43	29.99	30.17																																					
pan weight, g =	20.83	20.87	20.85																																					
N (blows) =	35	27	19																																					
moisture, % =	32.4 %	32.7 %	34.8 %																																					
Number of blows, "N"	moisture, %																																							
35	32.4																																							
27	32.7																																							
19	34.8																																							
SHRINKAGE shrinkage limit = n/a shrinkage ratio = n/a	PLASTIC LIMIT DETERMINATION <table><thead><tr><th></th><th>①</th><th>②</th><th>③</th><th>④</th></tr></thead><tbody><tr><td>wet soil + pan weight, g =</td><td>28.18</td><td>28.07</td><td></td><td></td></tr><tr><td>dry soil + pan weight, g =</td><td>26.97</td><td>26.89</td><td></td><td></td></tr><tr><td>pan weight, g =</td><td>20.79</td><td>20.85</td><td></td><td></td></tr><tr><td>moisture, % =</td><td>19.6 %</td><td>19.5 %</td><td></td><td></td></tr></tbody></table>		①	②	③	④	wet soil + pan weight, g =	28.18	28.07			dry soil + pan weight, g =	26.97	26.89			pan weight, g =	20.79	20.85			moisture, % =	19.6 %	19.5 %																
	①	②	③	④																																				
wet soil + pan weight, g =	28.18	28.07																																						
dry soil + pan weight, g =	26.97	26.89																																						
pan weight, g =	20.79	20.85																																						
moisture, % =	19.6 %	19.5 %																																						



ADDITIONAL DATA

% gravel = 8.2%
 % sand = 63.8%
 % silt and clay = 28.0%
 % silt = n/a
 % clay = n/a
 moisture content = 18.7%

DATE TESTED 11/16/17	TESTED BY MJR
-------------------------	------------------

[Signature]

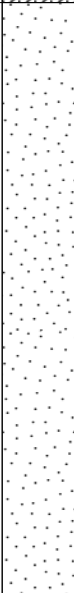
PARTICLE-SIZE ANALYSIS REPORT

PROJECT Four Seasons South Vancouver, Washington		CLIENT Mr. Patrick Ginn Four Seasons Subdivision, LLC 800 NE Tenney Road, Suite 110-348 Vancouver, Washington 98685		PROJECT NO. 17306		LAB ID S17-909																																																																																																																																																																																											
				REPORT DATE 11/21/17		FIELD ID TP4.1																																																																																																																																																																																											
				DATE SAMPLED 11/03/17		SAMPLED BY JFM																																																																																																																																																																																											
MATERIAL DATA																																																																																																																																																																																																	
MATERIAL SAMPLED Poorly graded SAND		MATERIAL SOURCE Test Pit TP-04 depth = 6 feet		USCS SOIL TYPE SP, Poorly graded Sand																																																																																																																																																																																													
SPECIFICATIONS none				AASHTO SOIL TYPE A-1-b(0)																																																																																																																																																																																													
LABORATORY TEST DATA																																																																																																																																																																																																	
LABORATORY EQUIPMENT Rainhart "Mary Ann" Sifter 637				TEST PROCEDURE ASTM D6913, D422																																																																																																																																																																																													
ADDITIONAL DATA				SIEVE DATA																																																																																																																																																																																													
initial dry mass (g) = 1744.3 as-received moisture content = 9.8% liquid limit = - plastic limit = - plasticity index = NP fineness modulus = n/a				% sieve loss = 0.03% coefficient of curvature, C_c = 0.98 coefficient of uniformity, C_u = 3.29 effective size, $D_{(10)}$ = 0.405 mm $D_{(30)}$ = 0.727 mm $D_{(60)}$ = 1.331 mm																																																																																																																																																																																													
				% gravel = 1.1% % sand = 97.9% % silt and clay = 1.0%																																																																																																																																																																																													
				<table border="1"> <thead> <tr> <th colspan="2">SIEVE SIZE</th> <th colspan="2">PERCENT PASSING</th> <th colspan="2">SPECS</th> </tr> <tr> <th>US</th> <th>mm</th> <th>act.</th> <th>interp.</th> <th>max</th> <th>min</th> </tr> </thead> <tbody> <tr><td>6.00"</td><td>150.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>4.00"</td><td>100.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>3.00"</td><td>75.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>2.50"</td><td>63.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>2.00"</td><td>50.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.75"</td><td>45.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.50"</td><td>37.5</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.25"</td><td>31.5</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>1.00"</td><td>25.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>7/8"</td><td>22.4</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>3/4"</td><td>19.0</td><td></td><td>100.0%</td><td></td><td></td></tr> <tr><td>5/8"</td><td>16.0</td><td>100.0%</td><td></td><td></td><td></td></tr> <tr><td>1/2"</td><td>12.5</td><td>99.6%</td><td></td><td></td><td></td></tr> <tr><td>3/8"</td><td>9.50</td><td>99.5%</td><td></td><td></td><td></td></tr> <tr><td>1/4"</td><td>6.30</td><td>99.3%</td><td></td><td></td><td></td></tr> <tr><td>#4</td><td>4.75</td><td>98.9%</td><td></td><td></td><td></td></tr> <tr><td>#8</td><td>2.36</td><td></td><td>85.3%</td><td></td><td></td></tr> <tr><td>#10</td><td>2.00</td><td>82.1%</td><td></td><td></td><td></td></tr> <tr><td>#16</td><td>1.18</td><td></td><td>53.5%</td><td></td><td></td></tr> <tr><td>#20</td><td>0.850</td><td>35.6%</td><td></td><td></td><td></td></tr> <tr><td>#30</td><td>0.600</td><td></td><td>23.1%</td><td></td><td></td></tr> <tr><td>#40</td><td>0.425</td><td>10.6%</td><td></td><td></td><td></td></tr> <tr><td>#50</td><td>0.300</td><td></td><td>6.1%</td><td></td><td></td></tr> <tr><td>#60</td><td>0.250</td><td>3.8%</td><td></td><td></td><td></td></tr> <tr><td>#80</td><td>0.180</td><td></td><td>2.5%</td><td></td><td></td></tr> <tr><td>#100</td><td>0.150</td><td>1.8%</td><td></td><td></td><td></td></tr> <tr><td>#140</td><td>0.106</td><td></td><td>1.4%</td><td></td><td></td></tr> <tr><td>#170</td><td>0.090</td><td></td><td>1.2%</td><td></td><td></td></tr> <tr><td>#200</td><td>0.075</td><td>1.0%</td><td></td><td></td><td></td></tr> </tbody> </table>				SIEVE SIZE		PERCENT PASSING		SPECS		US	mm	act.	interp.	max	min	6.00"	150.0		100.0%			4.00"	100.0		100.0%			3.00"	75.0		100.0%			2.50"	63.0		100.0%			2.00"	50.0		100.0%			1.75"	45.0		100.0%			1.50"	37.5		100.0%			1.25"	31.5		100.0%			1.00"	25.0		100.0%			7/8"	22.4		100.0%			3/4"	19.0		100.0%			5/8"	16.0	100.0%				1/2"	12.5	99.6%				3/8"	9.50	99.5%				1/4"	6.30	99.3%				#4	4.75	98.9%				#8	2.36		85.3%			#10	2.00	82.1%				#16	1.18		53.5%			#20	0.850	35.6%				#30	0.600		23.1%			#40	0.425	10.6%				#50	0.300		6.1%			#60	0.250	3.8%				#80	0.180		2.5%			#100	0.150	1.8%				#140	0.106		1.4%			#170	0.090		1.2%			#200	0.075	1.0%			
SIEVE SIZE		PERCENT PASSING		SPECS																																																																																																																																																																																													
US	mm	act.	interp.	max	min																																																																																																																																																																																												
6.00"	150.0		100.0%																																																																																																																																																																																														
4.00"	100.0		100.0%																																																																																																																																																																																														
3.00"	75.0		100.0%																																																																																																																																																																																														
2.50"	63.0		100.0%																																																																																																																																																																																														
2.00"	50.0		100.0%																																																																																																																																																																																														
1.75"	45.0		100.0%																																																																																																																																																																																														
1.50"	37.5		100.0%																																																																																																																																																																																														
1.25"	31.5		100.0%																																																																																																																																																																																														
1.00"	25.0		100.0%																																																																																																																																																																																														
7/8"	22.4		100.0%																																																																																																																																																																																														
3/4"	19.0		100.0%																																																																																																																																																																																														
5/8"	16.0	100.0%																																																																																																																																																																																															
1/2"	12.5	99.6%																																																																																																																																																																																															
3/8"	9.50	99.5%																																																																																																																																																																																															
1/4"	6.30	99.3%																																																																																																																																																																																															
#4	4.75	98.9%																																																																																																																																																																																															
#8	2.36		85.3%																																																																																																																																																																																														
#10	2.00	82.1%																																																																																																																																																																																															
#16	1.18		53.5%																																																																																																																																																																																														
#20	0.850	35.6%																																																																																																																																																																																															
#30	0.600		23.1%																																																																																																																																																																																														
#40	0.425	10.6%																																																																																																																																																																																															
#50	0.300		6.1%																																																																																																																																																																																														
#60	0.250	3.8%																																																																																																																																																																																															
#80	0.180		2.5%																																																																																																																																																																																														
#100	0.150	1.8%																																																																																																																																																																																															
#140	0.106		1.4%																																																																																																																																																																																														
#170	0.090		1.2%																																																																																																																																																																																														
#200	0.075	1.0%																																																																																																																																																																																															
GRAIN SIZE DISTRIBUTION 				DATE TESTED 11/14/17																																																																																																																																																																																													
				TESTED BY RTT																																																																																																																																																																																													

APPENDIX B

SUBSURFACE EXPLORATION LOGS

TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-1	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 312 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 0920	
FINISH TIME 0940											
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	Infiltration Testing
0						Approximately 6 to 8 inches of grass and topsoil.					
		Wind River gravelly loam	A-2	SC		Dark brown clayey SAND with some gravel, moist, medium dense [Soil Type 2].					
5			A-1	SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3]. Fines content decreasing with depth.					
10						North and south portions of test pit consistent at 8.5 feet bgs (*see note below).					
15						Bottom of test pit at 12.0 feet. Groundwater not encountered.					
20						*The above profile is representative of the south portion of test pit TP-1. The north portion of TP-1 consisted of fill materials, similar to those encountered at TP-6, extending to 8.5 feet bgs at which point the northern portion of TP-1 was consistent with the native soils encountered in the southern portion.					

TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-2	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 314 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 0812	
FINISH TIME 0915											

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	Infiltration Testing
0	TP2.1	Wind River gravelly loam	A-2-6(1)	SC		Approximately 4 to 6 inches of grass and topsoil.	18.7	28.0	34	14	IT-2.1 Depth = 2.0 ft k = 8.8 in/hr
		Dark brown clayey SAND with some gravel, moist, medium dense [Soil Type 2].									
5			A-1	SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3].					
				Fines content decreasing with depth.							
10											
15						Bottom of test pit at 14.0 feet. Groundwater not encountered.					
20											

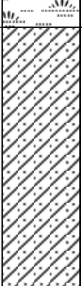
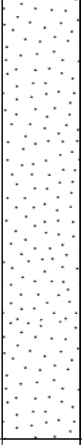
TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-3	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 314 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 1111	
FINISH TIME 1135											
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	Infiltration Testing
0						Approximately 18 inches of grass and topsoil.					
		Wind River gravelly loam	A-2	SC		Dark brown clayey SAND with some gravel, moist, medium dense [Soil Type 2].					
5			A-1	SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3]. Fines content decreasing with depth.					
10						Bottom of test pit at 10.0 feet. Groundwater not encountered.					
15											
20											

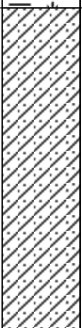
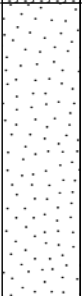
TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-4	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 305 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 1030	
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	Infiltration Testing
0	TP4.1					Approximately 6 to 12 inches of grass and topsoil.	9.8	1.0	NP	NP	IT-4.1 Depth = 6.5 ft k = 232 in/hr
		Wind River gravelly loam	A-2	SC		Dark brown clayey SAND with some gravel, moist, medium dense [Soil Type 2].					
5				SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3].					
			A-1-b(0)			Fines content decreasing with depth.					
10						Bottom of test pit at 10.0 feet. Groundwater not encountered.					
15											
20											

TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-5	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 311 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 1010	
FINISH TIME 1025											
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	Infiltration Testing
0		Wind River gravelly loam	A-2	SC		Approximately 4 to 6 inches of grass and topsoil. Dark brown clayey SAND with some gravel, moist, medium dense [Soil Type 2].					
5			A-1	SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3]. Fines content decreasing with depth.					
10						Bottom of test pit at 10.0 feet. Groundwater not encountered.					
15											
20											

TEST PIT LOG

PROJECT NAME Four Seasons South						CLIENT Four Seasons Subdivision, LLC		PROJECT NO. 17306		TEST PIT NO. TP-6	
PROJECT LOCATION Vancouver, Washington						CONTRACTOR L&S Contractors		EQUIPMENT Excavator		ENGINEER JFM	
TEST PIT LOCATION See Figure 2						APPROX. SURFACE ELEVATION 311 ft amsl		GROUNDWATER DEPTH Not encountered		START TIME 0945	
FINISH TIME 1000											
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	Infiltration Testing
0						Approximately 6 to 8 inches of grass and topsoil.					
		Wind River gravelly loam	A-2	SC		Dark brown clayey sand FILL with some gravel, moist, medium dense [Soil Type 1A].					
5			A-1	SP		Dark gray poorly-graded sand FILL with traces of gravel and sandy silt lenses and layers, damp, medium dense [Soil Type 1B]. Fines content decreasing with depth.					
10			A-1	SP		Dark gray poorly-graded SAND with trace of gravel, damp, medium dense [Soil Type 3].					
20						Bottom of test pit at 10.0 feet. Groundwater not encountered.					

APPENDIX C

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)	POCKET PENETROMETER (UNCONFINED COMPRESSIVE STRENGTH, tsf)
Very Soft	2	less than 0.25
Soft	2 to 4	0.25 to 0.50
Medium Stiff	4 to 8	0.50 to 1.0
Stiff	8 to 15	1.0 to 2.0
Very Stiff	15 to 30	2.0 to 4.0
Hard	30 to 60	greater than 4.0
Very Hard	greater than 60	-

Relative Density for Granular Soil

RELATIVE DENSITY	SPT N-VALUE (BLOWS PER FOOT)
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	more than 50

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.

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
<u>Characteristics of fraction passing 0.425 mm (No. 40)</u>							
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.

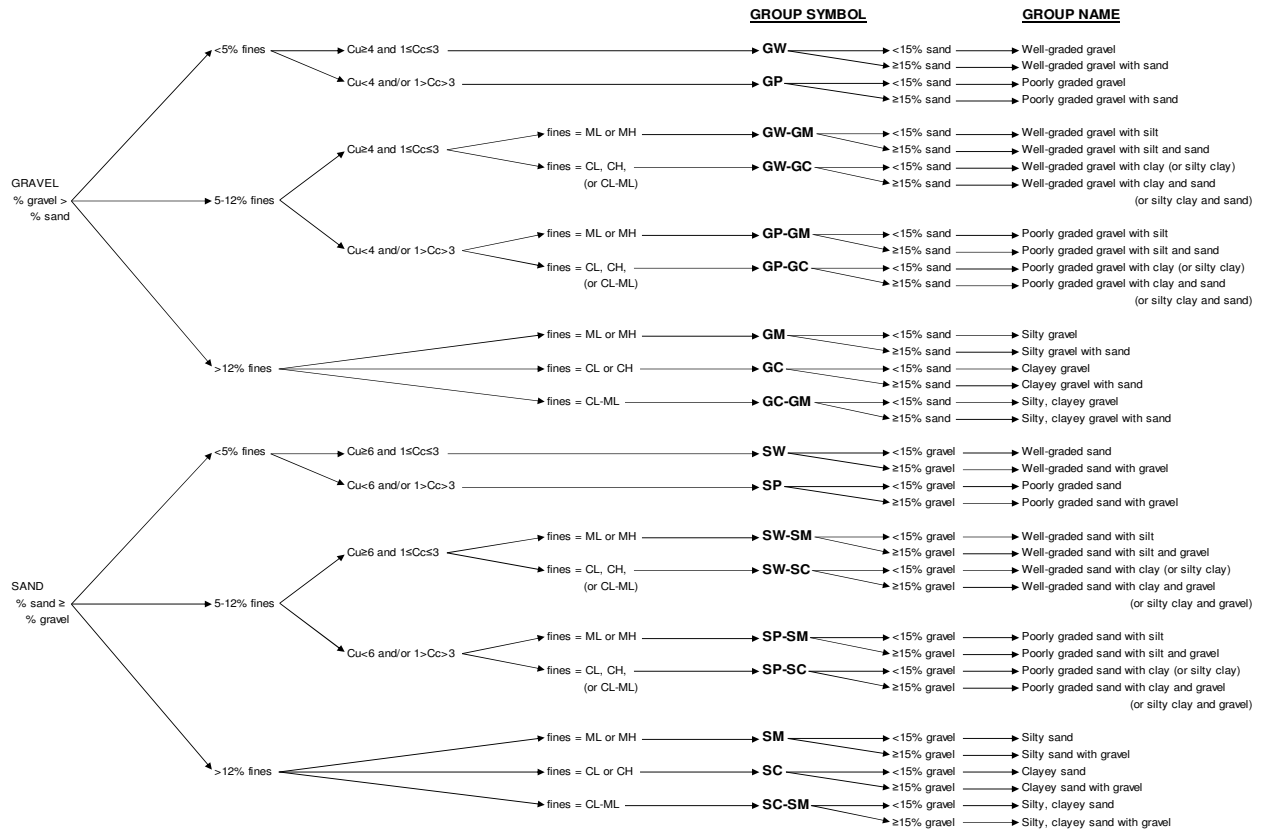
TABLE 2. Classification of Soils and Soil-Aggregate Mixtures

	Granular Materials							Silt-Clay Materials			
General Classification	(35 Percent or Less Passing 0.075 mm)							(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			

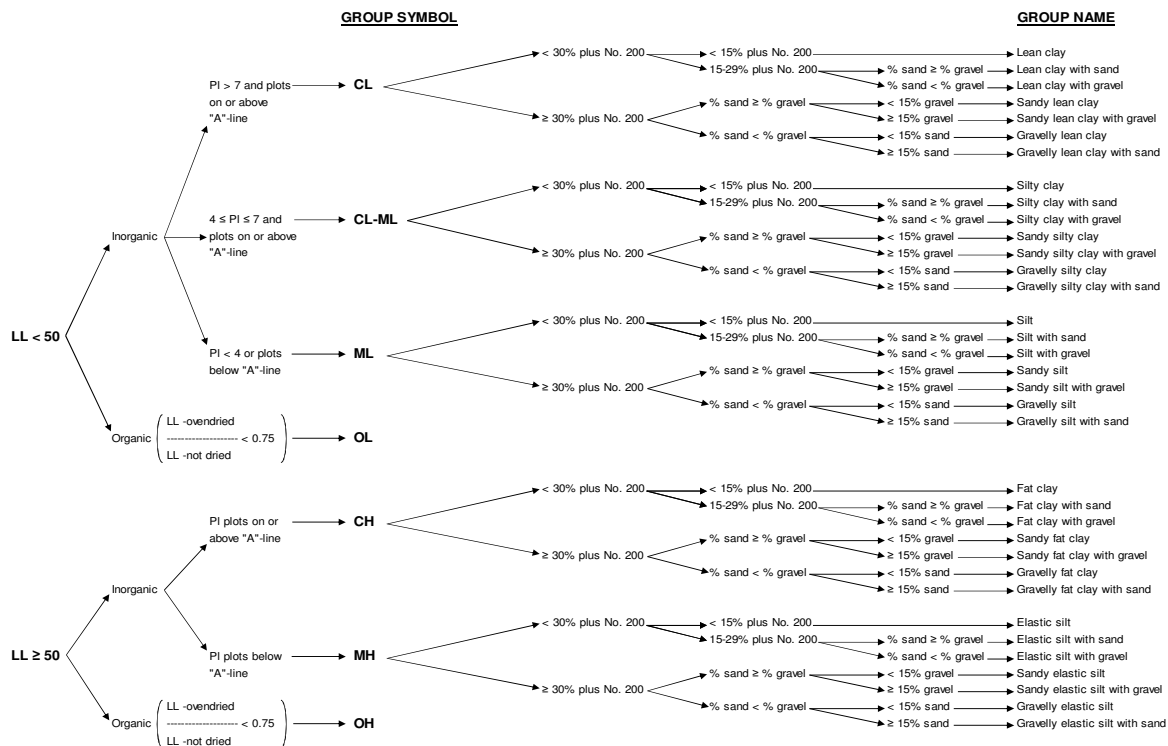
Note: Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30 (see Figure 2).

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 D

PHOTO LOG

**FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON
PHOTO LOG**



Site Exploration Activity, TP-5



Typical Test Pit Profile, Test Pit TP-1



**FOUR SEASONS SOUTH
VANCOUVER, WASHINGTON
PHOTO LOG**



Typical Test Pit Profile, Test Pit TP-4



APPENDIX E

REPORT LIMITATIONS AND IMPORTANT INFORMATION

Date: December 4, 2017
Project: Four Seasons South
Vancouver, 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

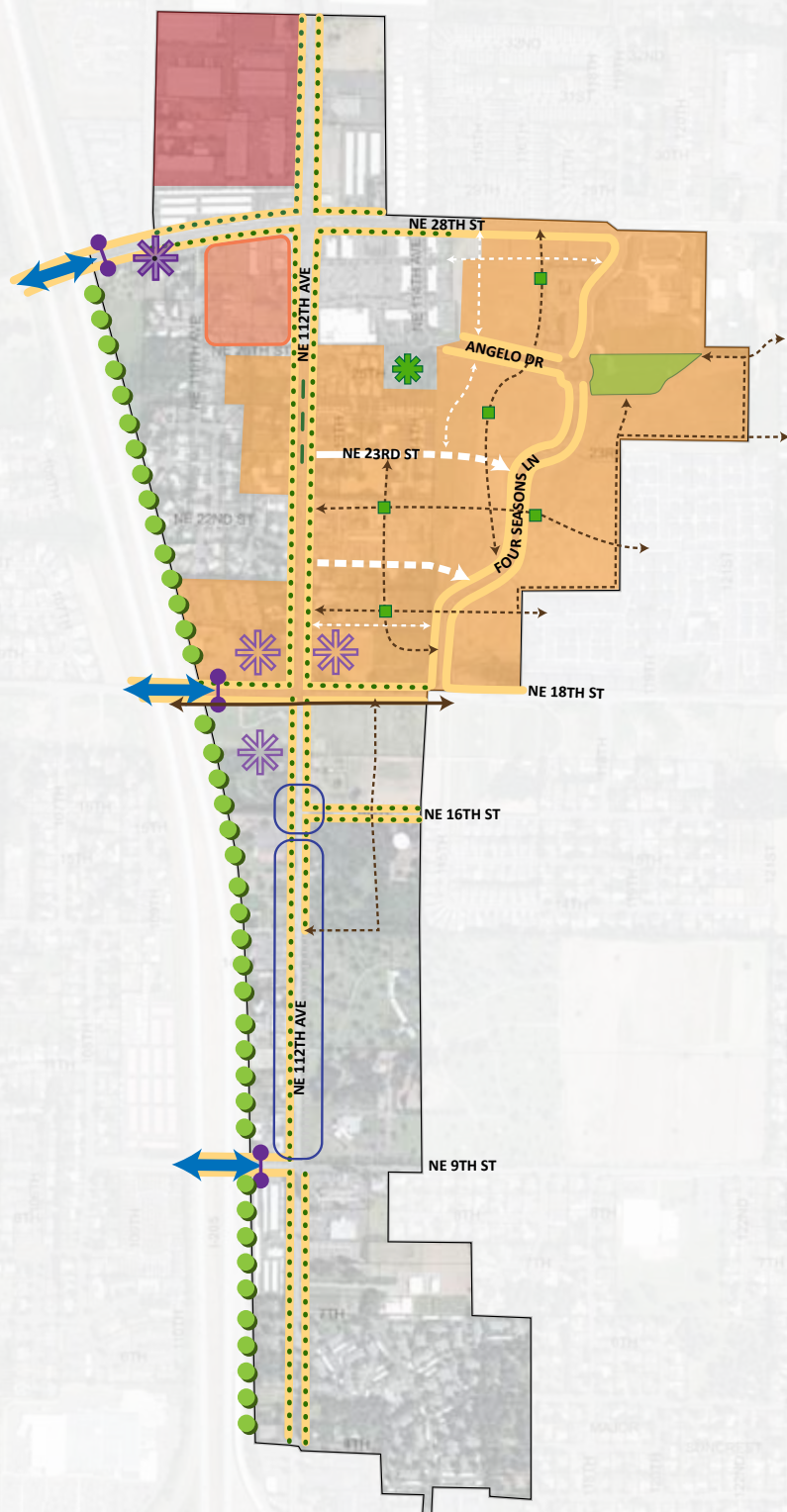
Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors 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.



112th Avenue Corridor Plan

Adopted December 19, 2011



ACKNOWLEDGEMENTS

Vancouver City Council

Tim Leavitt, Mayor
 Larry Smith
 Jeanne Harris
 Jeanne E. Stewart
 Pat Campbell
 Jack Burkman
 Bart Hansen
 Eric Holmes, City Manager

Vancouver Planning Commission

Esther B. Schrader, Chair
 Robert Haverkate, Vice Chair
 John S. Lee
 Mario Raia
 Dave Moriuchi
 Lisa F. Willis
 Erik Paulsen

Vancouver Neighborhood Associations

Fircrest
 Image
 Landover-Sharmel

Project Team

MAKERS Architecture and Urban Design

John Owen
 Bob Bengford
 Sean McCormick

Leland Consulting Group

Chris Zahas

Transpo Group

Mike Swenson

City of Vancouver

Matt Ransom
 Sandra Towne
 Phil Wuest
 Greg Turner
 Alisa Pyszka
 Jean Akers
 Charles Ray
 Tyler Clary

ADDITIONAL THANKS

Fircrest Neighborhood Association
 Image Neighborhood Association
 Landover-Scharmell Neighborhood Association
 Local residents, businesses, and stakeholders

This page intentionally left blank

TABLE OF CONTENTS

INTRODUCTION	5
Plan Area	5
Purpose	5
Planning Process	6
PLAN CONTEXT	7
Surrounding Area Characteristics	7
Plan Area Characteristics	7
MARKET STRATEGY	13
Study Influence Area	13
Market Trends	13
Opportunities	14
SUBAREA CONCEPT	15
Plan Goals	15
Concept Overview	15
Key Features	17
PLAN STRATEGIES	19
Land Use & Zoning	19
Access and Circulation	22
Future Development Conceptual Site Plan	26
Design Guidelines	34
Plan District Approach	34
Land Use Policies	34
Access and Circulation Policies	37
APPENDICES	A-1
Appendix A: Market Strategy	A-1
Appendix B: Traffic Analysis Summary	A-18
Appendix C: Illustrated Site Plan Example & Assumptions	A-24

This page intentionally left blank

INTRODUCTION

PLAN AREA

The 112th Avenue Corridor is a north-south principal arterial just east of Interstate 205 (I-205) in the City of Vancouver. The portion of the corridor that is the subject of this planning effort follows 112th Avenue from NE 4th Street on the south to NE 33rd Street on the north and from I-205 on the west to a varied one to five blocks from 112th Avenue to the east (see Figure 1 below). The planning area encompasses portions of three active neighborhood associations – Fircrest, Image, and Landover-Sharmel and one inactive neighborhood association, Kevanna Park. There is a small residential area west of 112th that is not part of a neighborhood association, but is included in the plan area.

NOTE: Although the names of 112th Avenue and 18th and 28th Streets each begin with northeast (NE), this plan for brevity and ease of reading purposefully leaves off the NE from each street name.

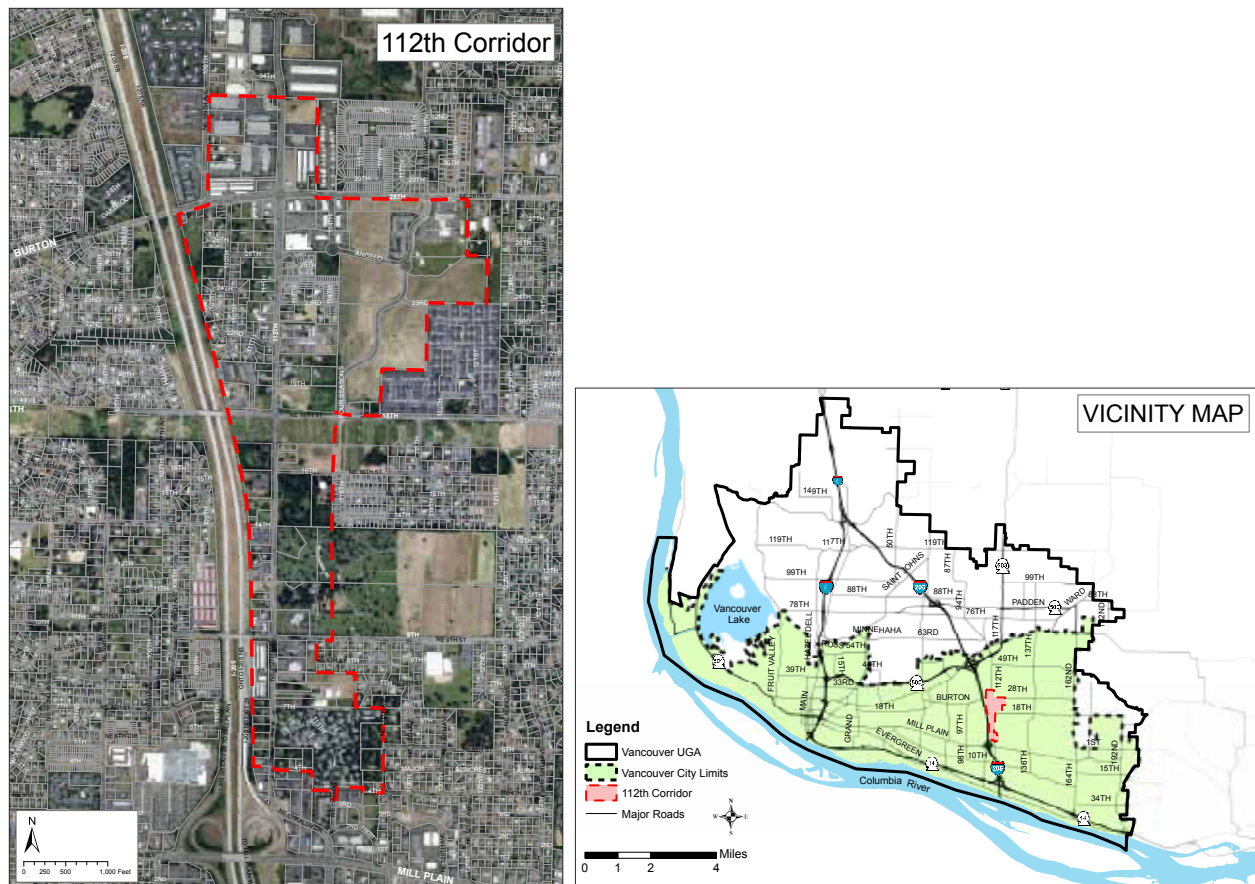


Figure 1. Vicinity Map and Plan Boundary Map

PURPOSE

The City of Vancouver's Comprehensive Plan calls for subarea planning and identifies 112th Avenue Corridor as an area where focused planning for urban growth and services should occur. By initiating the 112th Avenue Corridor Plan the city with input from community residents, businesses and agencies will address the growth and change the area will soon face.

INTRODUCTION

In the near future, the Washington State Department of Transportation's (WSDOT) 18th Street second phase of the split-diamond I-205 interchange project will be constructed. Numerous private development proposals that are on hold with the market slow down will reappear as the market picks up. In the more distant future, proposed projects include 1) WSDOT's Phase III of the I-205 Interchange at 28th Street completing the split-diamond I-205 project and 2) a potential transit station to be located near I-205 in the vicinity of 18th and 28th Streets serving local and bi-state commuters.

This Plan's challenge is to incorporate these major transportation facilities and private developments in a way that supports transit service and enhances the distinctive characteristics and livability of the plan area. It is not too soon to meet this challenge. The WSDOT 18th Street interchange and connector project is slated to begin construction in 2015. The proposed private development on hold because of the national recession and market slow down is expected to revive, possibly modified, as the economy improves. Economists predict that there will be a high demand in the immediate future and over the long term for attached housing such as apartments and town homes.

PLANNING PROCESS

The 112th Avenue Corridor Plan was developed following an extensive planning process. The process included compiling information on existing conditions in the study area to create a "baseline" for future planning, actively engaging property owners, agencies, businesses, and interested citizens, and soliciting advice from urban design professionals.

City staff and consultants held three public workshops to seek input from the 112th Avenue community to identify planning goals, challenges and opportunities, determine a preliminary plan concept, and review and comment on the preferred concept. At the workshops, participants evaluated existing conditions, answered questions, participated in a brainstorming session, identified challenges and opportunities, and took part in a mapping exercise to explore what features and activities would they like to see in the 112th Subarea within the next 10 to 20 years. Later in the summer four additional public open houses were held to review and comment on a draft conceptual site plan, design guidelines, and draft plan text and policy.

Throughout the planning period, information was made available and public comment opportunities were provided through emails, newsletters, and postings to the project website. Neighborhood meeting presentations were made before the Image, Landover-Sharmel, Fircrest Neighborhood Associations and the Vancouver Neighborhood Alliance. City staff attended and displayed planning maps and concepts at the Landover-Sharmel July 16th picnic.

All written comments received regarding the draft Subarea Plan and implementation strategies were provided to the Planning Commission.



112th Avenue Corridor Plan workshops

PLAN CONTEXT

SURROUNDING AREA CHARACTERISTICS

By far the most dominant land use surrounding the plan area is single family residential. These suburban single family neighborhoods located east and west of the plan area were built between 1970 and 1990.

To the north of 28th street is one of the City's more significant industrial employment corridors that includes a wide range of light industrial users from smaller businesses housed within "tech/flex" buildings to the large silicon wafer manufacturer SEH America, Inc. This employment corridor influences the future growth and character of the plan area providing nearby jobs to an urban center population. Additional significant employment can be found to the east of the plan area, Evergreen School District offices and schools, Micropump, US Digital, and public services to name only a few.

To the south of the plan area is the Mill Plain Blvd/Chaklov commercial destination with a diversity of businesses and services provided, and to the north is the Orchards commercial area and Westfield Mall. The plan area incorporates three important east-west connections that pass over or under I-205 – 9th Street, 18th Street, and 28th Street.

PLAN AREA CHARACTERISTICS

Land Use

In the past, 112th Avenue was named N.E. Ellsworth and surrounding it were single family houses on acreage or large lots, small farms, agricultural fields, and open space with large stands of trees. As commonly occurs through the years, urban growth replaced some large residential lots, farms, fields, and stands of trees with subdivisions, businesses, schools and industry. Yet uniquely, this plan area continues to noticeably retain some of these historic characteristics – mature trees, open space at the Evergreen Memorial Gardens, and a successful urban farm, Joe's Place farm.

Although housing remains the dominant land use today, a transition from older single family homes on large lots to newer developments of single-family attached and multifamily housing or office/commercial began several years ago. Specific areas markedly display this transition – South of 18th Street on both the west and east sides of 112th Avenue are several new commercial developments: the Four Seasons mixed-use site includes newly completed commercial and senior housing projects with proposals of future office and multifamily housing projects; and just south of 28th Street adjacent to 112th Avenue is the new 49 home Maxwell Manor townhouse neighborhood.

Nearly all of the property within the plan area is privately owned; the few exceptions include a City of Vancouver water tower, a Clark Public Utility substation and the Bonneville Power Administration's high-voltage transmission line corridor.



Examples of new housing in plan area

There are a couple of land uses along the corridor that give the plan area a special identity – the Evergreen Memorial Gardens and Joe’s Place Farm.

Evergreen Memorial Gardens: In the early 1950s, a Texan named Anderson, began establishing a network of cemeteries in smaller cities of the West. He acquired 40 acres in Clark County and created the Evergreen Memorial Gardens Cemetery. Within a few years the Waterhouse family purchased the cemetery. In 1968, Willard J. Carlson, of Spokane Washington, was hired to promote and further develop the cemetery. Within a few years Mr. Carlson purchased the cemetery from the Waterhouse family. Over the years the Carlson family expanded the cemetery to include a full service funeral chapel and crematory; the only one to this day in Clark County with the combination of cemetery, funeral chapel and crematory. (Source: Evergreen Memorial Gardens Web Page, www.evergreenmemorialgardens.com)



Evergreen Cemetery

Joe’s Place Farm: Joe Beaudoin began planting his first orchard when he was 14 years old. With no equipment he borrowed the neighbor’s horse to cultivate the fields. As a junior in high school, he grew strawberries and sold them to 2 local stores, 2 drive-in restaurants, and at his own roadside stand on NE Ellsworth (now named NE 112th Avenue). In 1957 Joe earned his State Farmers Degree from Washington State University, but didn’t fully apply his farming degree for several years, instead managing a local furniture store.

Returning to farming in 1974, he and his family built their house on 5 acres, and grew corn and tomatoes that they sold by the boxes from their garage. Unable to keep up with the demand, they began to expand by purchasing additional acreage and leasing larger nearby properties. Today, Joe’s farm has expanded to cover nearly 80 acres and Joe and his family continue to sell their locally grown fruits and vegetables from the farm store located just behind their 1974 home. (Source: Interview April 27, 2011 with Joe and Gayle Beaudoin)



Joe's Place Farm

Access and Circulation

Future Significant Transportation Projects

The Washington State Department of Transportation's (WSDOT) I-205 access project was planned many years ago. The first phase (the 112th Avenue connector from I-5 Northbound south of Mill Plain) of this interchange project was completed in 2010. Future phases will add a split diamond interchange at 18th and 28th Streets. The south half of the future split diamond interchange is funded and scheduled for design and construction, but the northern half that includes the collector-distributor roads between 18th and 28th Streets and the I-205 northbound-on and southbound-off ramps are not funded at this time.

In preparation for the future 18th Street interchange, the City of Vancouver is currently upgrading 18th St. at the 112th Avenue intersection with additional vehicle capacity and pedestrian and bicycle facilities. Future phases of the 18th Street corridor improvement will include extension of the corridor to 87th Avenue on the west side of I-205 to provide access to nearby neighborhoods and the Southwest Washington Medical Center/Peacehealth Hospital, and reconstruction and urban upgrade to the 18th Street corridor all the way east to 192nd Avenue. Those future project phases are unfunded at this time.

In the recently completed Regional High Capacity Transit Plan for Clark County, the Southwest Washington Regional Transportation Council (RTC) included a recommendation for a future transit station in the vicinity of 112th Avenue and the planned new split-diamond interchange at 18th and 28th Streets. This facility would likely be designed to serve both nearby residents as well as park and ride traffic. While no detailed planning has been completed, the location of a park and ride is an important consideration for local land use and transportation planning in the 112th Avenue Corridor.

112th Avenue

112th Avenue is partially improved to urban arterial standard. Recent major improvement projects include: the 28th Street and 18th Street intersections completed with frontage improvements (curb, gutter, sidewalks, bike lanes) and the southernmost end of the corridor was upgraded with completion of the I-205 northbound 112th Avenue off-ramp, the first phase of the WSDOT I-205 access improvements described above.



Improved 28th/112th intersection

PLAN CONTEXT

Additionally, development along sections of the corridor, for example the office buildings on the west side of 112th Avenue just north of 9th Street or the commercial development on the southeast corner of 28th Street and 112th Avenue have included frontage improvements along the parcels being developed.



Examples of newer commercial development street frontages

Although portions of 112th Avenue have recently been improved with public projects and private development, much of 112th is built to less than full urban standard. Frontage improvements are spotty or substandard in places and corridor right-of-way width is inconsistent and lacking in several locations. For example, sections of 112th south of 18th Street lack adequate lane width, sidewalks, and bike lanes. The Evergreen Memorial Garden's 112th Avenue frontage does not have any sidewalk and existing right-of-way is between 50 and 60 feet wide.

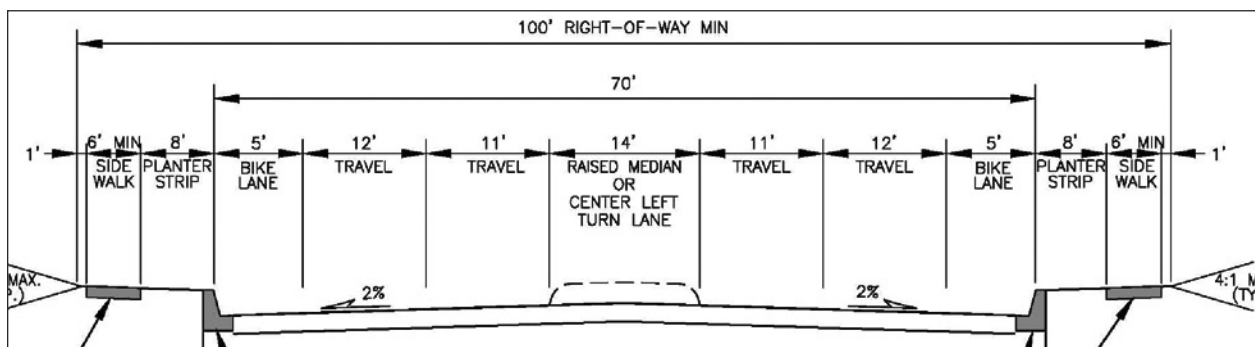


Figure 2. Vancouver's principal arterial standard includes 100 feet of right-of-way, 11 and 12 foot travel lanes, a 14 center turn lane, bike lanes and detached sidewalks.



Areas of 112th Avenue with narrow sidewalk or no sidewalk

112th Avenue Corridor Traffic Safety Project

The Washington State Corridor Safety Program identified 112th Avenue as a corridor safety project in 2009. The Corridor Safety Program works to reduce collisions on roadways using low-cost, near-term solutions through the use of partnerships with engineering, enforcement, education, and emergency services. The program is locally coordinated, which includes invitation to local leadership to chair steering committee meetings, requires local government, interested citizens, businesses, schools and any other agencies that have a vested interest in the safety of their roadways. The Project will come to an end September 2011 and will deliver a summary report that includes:

- Short median installation and I-205 ramp signal installation at Chkalov Drive mid block between NE 2nd Street and I-205 off-ramp;
- Striping of north bound to westbound left-turn striping modified to reduce queue length at Mill Plain Boulevard/Chkalov Drive;
- Left-turn signal upgraded to protected (green arrow) phasing at Chkalov Drive/Fred Meyer traffic signal;
- Radar sign installed between Chkalov Drive and NE 7th Street; and 18th Street intersection widened and upgraded.

Bus Service

Today there is little direct public transit service for the 112th Avenue corridor and plan area. Two local-service routes pass through the plan area on NE 28th Street on one-half hour headways between 6:30 AM and about 9:00 PM.

This page intentionally left blank

MARKET STRATEGY

(Source: The Leland Consulting Group Market Strategy Report Appendix A)

STUDY INFLUENCE AREA

Leland Consulting Group, completed a market strategy report for the 112th Avenue Corridor highlighting several key opportunities and challenges that will shape what is possible in the corridor over the next 10 to 20 years. The report uses a larger study area than the subarea plan boundary in order to provide a broader picture of the influence area. This larger market area encompasses the entirety of 4 neighborhood association boundaries – Kevanna Park, Image, Landover-Sharmel, and Fircrest. (Refer to Appendix A)

MARKET TRENDS

Demographic Shifts

Nationwide, the baby boomer generation is now beginning to enter their retirement years. At the same time, younger generations (namely “Generation Y”) are entering the housing market. Both are expected to drive significant demand for multifamily housing. Further, while growth in the region has slowed due to the economy, growth will return, driven by natural growth as well as renewed in-migration.

New Households

The vast majority of new households being formed during the next decade and beyond will be singles, couples, and seniors according to Harvard University’s Joint Center for Housing Studies. These are the types of households most likely to locate in urban, transit-oriented development, and infill locations - and thus to purchase goods and services, and support retailers in these neighborhoods.

Mixed-use Centers are the Wave of the Future

Demographic and market trends indicate that mixed-use urban centers with good pedestrian and transit access will be the most desirable places for development in the future. Both the baby boomers and Generation Y share a desire for quality over quantity, a sense of community and place, and a desire to live in more urban environments.

“A whopping 88 percent of generation Y wants to live in an urban setting, according to a survey by Robert Charles Lesser & Company. Factor in rising gas prices - which make drivable suburbs more expensive - rising suburban poverty and the difficulty of selling houses on once-exclusive cul-de-sacs, and suburban appeal erodes further.” (Source: New Urban Network)

Combined, these two generations will greatly impact how cities evolve over the next 20 years, driving more demand for infill in urbanized areas and significantly increasing the demand for multifamily housing. Deliberate planning and urban design to make quality places with a sense of community and place will increase the attractiveness and livability of future urban development.

Livability is an Economic Development Draw

The quality of life of a community is a major factor in business location. Whereas, in previous years employees moved to be close to their jobs, a new paradigm is emerging where it is the employers who move in order to be close to the talented workers they need to be successful. More and more, those workers are mobile and choose to live in communities with quality physical environments, outdoor recreation opportunities, cultural amenities, accessible transportation options, good schools, and mixed-use urban centers. Deliberate planning and urban design will help create successful quality urban communities that both employees and employers desire.

OPPORTUNITIES

Future Transit Station

The Southwest Washington Regional Transportation Council (RTC) completed a Clark County High Capacity Transit (HCT) System Study in December 2008. The Study builds from the proposed bi-state Columbia River Crossing Project connecting downtown Vancouver to the Portland MAX system. Four Corridors were evaluated - I-5/Highway 99, Fourth Plain, I-205, and Mill Plain Blvd. The RTC Steering Committee approved the 4 corridor system plan strategy, policies and recommended corridor elements. The study states that HCT in the I-205 corridor will serve both internal Clark County trips and bi-state trips. The study also identifies a future transit station in the plan area along I-205.

Significant nearby Employment

The market area has a significant amount of employment. Based on 2008 numbers, approximately 7,800 people work in the study area. Manufacturing is the strongest employment base with other significant employment in wholesale and retail trade, accommodation and food services, administration and support, waste management and remediation, and health care and social assistance. Several major high-tech manufacturing facilities are located in the market area, including facilities operated by US Digital, Micropump, and SEH America. It is widely known that silicon wafer manufacturer SEH America, Inc. is considering a major expansion of its facility.

Good Access

Well located within the region the planning area has generally good access that will be improved with a new I-205 interchange, is adjacent to a significant employment corridor, and is near many major destinations. With two new planned I-205 interchanges, the plan area's accessibility will make it an increasingly desirable place to be, particularly for housing.

Housing

While national and local economic conditions have largely halted residential development plans over the past couple years, Leland Consulting Group's market analysis indicates strong demand for housing, particularly attached housing such as apartments and townhomes. Housing demand is anticipated to be particularly strong over the long term due to a combination of the area's employment, accessibility, and demographics. Development opportunity sites, especially those along 112th are most likely to redevelop as housing due to these market pressures.

Walkable Mixed-use Urban Center and Corridor

To the extent that the subarea plan accommodates and encourages a transit-oriented walkable mixed-use urban center and corridor, it will be better positioned to thrive and attract investment in the future. In the context of a suburban location such as the 112th Corridor, mixed-use development does not necessarily need to imply vertically mixed uses (multiple uses in a single structure), but could include multiple uses on the same site or on adjacent sites.

New Commercial

Given the strong retail presence along Mill Plain and Fourth Plain Boulevards and at the Four Seasons shopping center, opportunities for new retail are likely to be limited. Some additional retail and services will be needed within the study area to support the anticipated new housing development. Smaller-scale and neighborhood-serving uses could include restaurants, personal services, coffee shops, child care, medical offices, financial services, and general office spaces.

SUBAREA CONCEPT

PLAN GOALS

- Unique neighborhood characteristics and assets such as Evergreen Memorial Gardens, Joe's Place farm, and large canopy trees continue to identify the community.
- Single-family neighborhoods are preserved and enhanced.
- The future I-205 interchange and transit station are carefully integrated into the urban center.
- New developments are coordinated and integrated into a cohesive well-designed walkable urban center.
- Transit-supportive developments are designed to promote a sense of place with a diversity of housing types, a mix of uses, welcoming gathering places, and enhanced pedestrian amenities.
- East-west roadway and trail connections, common open spaces, and coordinated development between 18th and 28th Streets create a pedestrian-friendly neighborhood setting.
- 112th Avenue is enhanced as a safe, pedestrian friendly, multimodal corridor.

CONCEPT OVERVIEW

The concept focuses on design options for the improvement of 112th Avenue corridor and areas that are anticipated for new development, particularly sites between NE 18th and 28th Streets. The concept diagram shown in Figure 3 on page 16 is intended as a design framework that visually depicts the key features for an integrated land use and transportation plan meeting the community's expressed goals listed above.

The 112th Avenue Corridor Subarea is envisioned as a walkable (connected, safe, and comfortable) community. The primary street, 112th Avenue, as well as its adjacent developments will provide for safe pedestrian, bicycle and vehicle travel, allowing connectivity to services, jobs, housing, and amenities along the corridor. To achieve walkability future development will incorporate interconnected streets and trails, diverse housing choices, mix of uses, gathering places, and enhanced pedestrian amenities. The future I-205 interchanges and the potential transit station will also be integrated into the fabric of the area and support walkability.

Walkable neighborhoods provide connectivity, safety, and comfort. Connectivity is how easily residents of all ages and abilities can walk within their neighborhood to community assets. Safety is the provision of a route between walking points that avoids the risk of physical harm. Separation between the pedestrian and or bike and vehicular traffic is an important factor in safety. Comfort is both the physical and aesthetic accommodations that make walking an enjoyable experience. The amount of trees and landscaping, architectural design, public art or other interests are key components in comfortable walkways. Private development frontages along streets also play a key role in comfort and safety by maintaining good visibility between uses and the street and providing visible building entries.

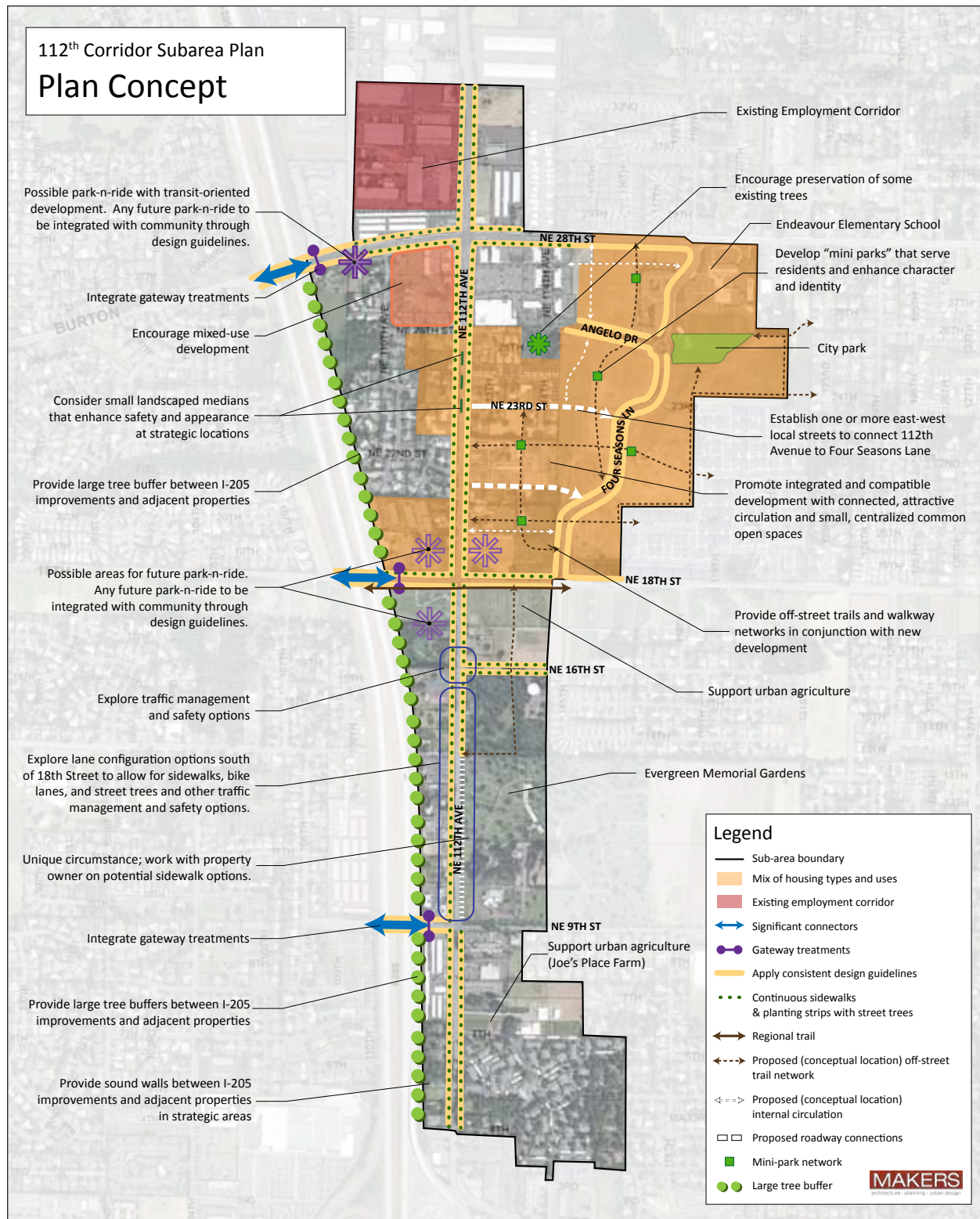


Figure 3. 112th Corridor Subarea Plan Concept

KEY FEATURES

Key Features of the Concept include:

- A network of streets, sidewalks, and off-street trails that connect to current and future developments on adjacent properties to improve both pedestrian and vehicular circulation.
- Small gathering spaces (mini-parks, plazas) incorporated into new development serving as a visual and functional amenity to the immediate surrounding area. The gathering spaces may vary from open lawn, community gardens, natural areas, and hard surface plazas.
- Integrated and compatible development edges. While fenced edges might be appropriate along some property lines, consider more integrated approaches such as a shared pathway or common drive along an internal property line.
- Large tree buffer between I-205 improvements and adjacent properties.
- Any future transit station to be integrated with the community through design guidelines.
- Lane configuration options south of 18th Street on 112th Avenue to allow for bike lanes, sidewalks, street trees, and other traffic management and safety options.
- Consistent design guidelines that provide for pedestrian-friendly façades - both for residential and non-residential uses.
- Gateway features that can be integrated to the streetscape and/or private development at highly visible locations.
- Small landscaped medians along 112th Avenue that enhance safety and appearance at strategic locations.
- A core network of urban arterials for auto and freight access and circulation.

This page intentionally left blank

PLAN STRATEGIES

LAND USE & ZONING

Development of a High Capacity Transit system on I-205 is still easily 10 or more years away, with a number of feasibility and environmental planning studies that would have to be completed before any project moves forward. However, with a strong local employment base and a substantial amount of developable land, the potential for a transit station, brings an opportunity for new, transit-oriented land uses to this area. Success stories from other transit-oriented developments around other cities in the U.S. show that they tend to attract mixed-use development that consists of a mix of retail, office and residential development that takes advantage of convenient transit as well as the large number of people that pass through the area to take the transit.

Transit-oriented development opportunities are most pronounced in areas within 1/4 mile from a transit station. However, for high-capacity transit stations, transit-oriented developments can extend to as much as 1/2 mile from the station, since stations provide high speed and high frequency service. Transit stops also become a “gateway” for the City, since they convey to transit riders an impression about the City. Thus, a future transit station is an opportunity for land owners to take advantage of higher-intensity uses, and an opportunity for the City to create a quality development image.

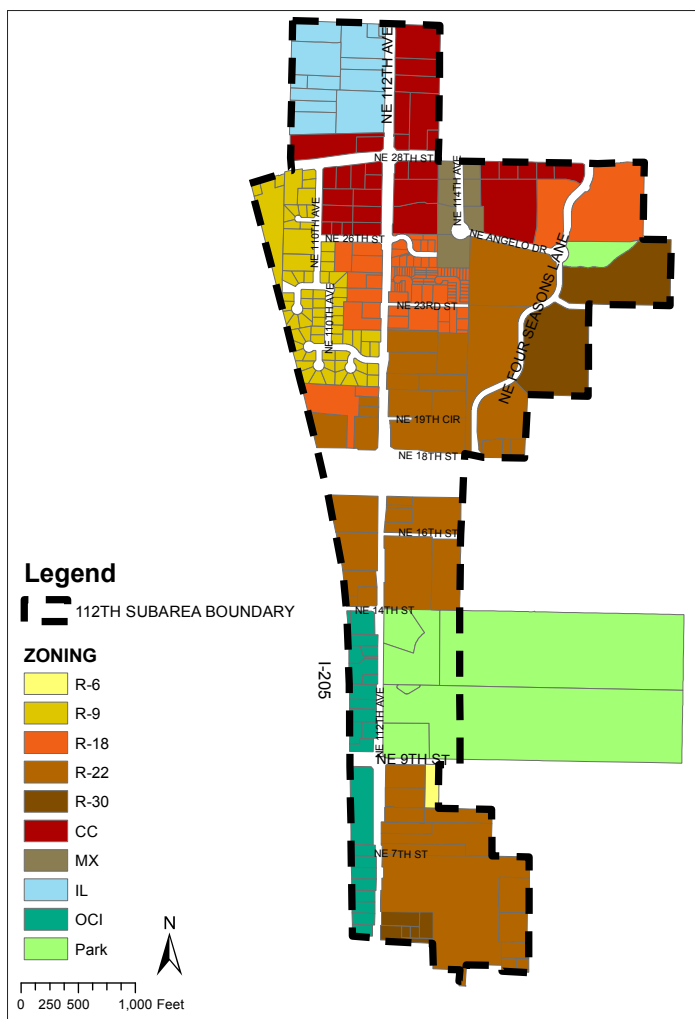


Figure 4. Zoning Map

Single Family Residential

While single family uses and zoning predominate areas surrounding the subarea, there is only one single family zoned area within the subarea. Located between I-205, 112th Avenue, and 18th and 28th Streets (see Figure 4, Zoning Map), the homes within this well established neighborhood were nearly all built in the 1970s and early 80s.

This plan proposes to maintain the existing single family residential zone located in its boundaries, except that the single family R-9 zoning located along 28th Street and east of 112th Avenue may be reconsidered to accommodate a transit station with transit oriented development. Additionally, the plan proposes urban design strategies to help improve the transition between more intense compact development and the single family neighborhoods.

Multi-family Residential

Shifting demographics and market changes favor more housing choices and quality compact development. Economic trends and existing opportunities point to the continuation of primarily residential development with limited retail and office uses. (See Market Study, Appendix A) Currently, multi-family housing is the dominant land use zone in the plan area. However, the current R-18 zone, the most prominent designation in the sub-area, has proven to offer limited mix of housing choices.

To better ensure availability of a mix of housing types to meet expected demand, compact walkable development that supports a transit-oriented urban center and flexibility for those properties with challenging sites to develop, this plan proposes a diverse mixture of R-18, R-22, and R-30 zoning designations.

Additionally, the City of Vancouver Code allows for limited mixed use development pursuant to the design requirements of the Mixed Use code within all of the multifamily zones. This flexibility is beneficial to both property owners wishing to develop and to the community in reaching the plan's goals for an integrated well connected walkable community.

Commercial

A neighborhood retail node named Four Seasons is located at 28th Street and 112th Avenue. Future growth at this intersection is challenged by competition along the Mill and Fourth Plain corridors and the presence of two corner gas stations, an electrical substation and mini-storage warehouses on the north side of 28th Street. These uses limit the ability of the area to achieve a critical mass of commercial development without significant changes of use and/or relocation. Therefore, the type of retail and commercial uses that are likely in this area will continue to be smaller-scale and neighborhood serving.

In either case, the vacant land due east of the Four Seasons shopping center is the most likely to develop as commercial before any redevelopment occurs elsewhere in the vicinity.

Based on the physical constrictions of the commercial properties north of 28th Street, this plan recommends rezoning several parcels zoned Mixed Use within the Four Seasons master plan to the Community Commercial designation. This rezone would extend the existing commercial a bit further east and benefit from the 28th Street access and visibility. It would provide for a few more small scale neighborhood commercial services located within walking distance of the future higher density housing projects and existing single family neighborhoods surrounding the plan area.

Industrial

This plan values the opportunity to enhance the existing employment lands and to provide a choice of housing to be located near the 112th Avenue employment corridor. The plan retains the industrial zoned properties within its boundaries.

Future Transit Station

As discussed under the Market Strategy opportunities, the Southwest Washington Regional Transportation Council's Clark County High Capacity Transit (HCT) System Study identifies a future park and ride facility to be located somewhere in the vicinity of 18th Street and 28th Street and I-205.

The study found that while the design of a good HCT system is critical, it is not enough to ensure successful HCT project implementation. A well designed set of HCT facilities needs to be complimented by transit-supportive densities, a mix of land use, transit-oriented pedestrian environment, parking management strategies, and transit-oriented urban design.

This plan sets the stage for compact transit-oriented development through a proposed mix of land use, housing density, pedestrian amenities and urban design within the larger context of the plan area. However, it will be necessary in the future as C-Tran determines the specific location for the proposed transit station that the criteria to maximize the opportunity to develop as a mixed-use node on adjacent and/or nearby land be employed. Additionally, the zoning of selected property will need to be reconsidered to accommodate a future transit center.

Transit park and ride stations are currently only allowed in commercial and industrial zones. Once a final location is identified, C-TRAN should initiate a zone change request with the City. At that time, the City will have the opportunity to evaluate how a park and ride could best be integrated into the subarea.

Special Uses and Features

Uniquely, this plan area continues to retain some of its historic characteristics – mature trees particularly in the Fircrest neighborhood, open space at the Evergreen Memorial Gardens, and a successful urban farm, Joe's Place farm. These amenities are valued by the community and as the plan area continues to transition to more intense compact development it will be important to protect these amenities.

Evergreen Memorial Gardens, Inc.: The Evergreen Memorial Gardens is a locally owned and independently operated business by both second and third generations of the Willard Carlson family. While the cemetery's historic interest, aesthetic open space and large tree canopy adds significantly to the character of the community, its unique local business plan that provides a cemetery with full service funeral chapel and crematory and employs 27 full-time and 5 part-time employees is a significant amenity to the City of Vancouver.

Joe's Place Farms: Today, Joe's farm has expanded to cover nearly 80 acres, employs 5 full-time, 10 full-time/seasonal, and approximately 30 temporary employees annually. As an urban agriculture business that grows and sells local fruits and vegetables, retention of Joe's Place farm is important to the character of the neighborhood and as an amenity to the City of Vancouver.



(left) Joe's Place Farms, (right) Evergreen Memorial Gardens

Large Canopy Trees: The plan area south of 18th Street is within the boundary of the Fircrest Neighborhood Association. As the Fircrest name proclaims, trees are one of the more important physical characteristics of the neighborhood. The City of Vancouver recognizes the benefits of mature trees. Such benefits include increased property values, improved air quality, and control of rainfall runoff to name only a few. While some trees unfortunately need to be removed because of new urban projects or ill health, the city's goal is to limit removal because of the impacts on the neighborhoods, quality of life, and environment. To help achieve this goal, the City has a Tree Conservation Ordinance that pertains to all land use zones except for single family that meet the exemption requirements. The ordinance protects trees from unnecessary removals and requires replacement.



Preservation of large canopy trees is desired

This plan encourages the preservation of existing trees where appropriate and seeks opportunities for planting new trees. One such opportunity is along the east side of the future I-205 Interchange project. This plan recognizes that properly designed and maintained roadsides complement the functions of the roadway, integrate the roadway facility into the surrounding landscape, and provide social and environmental benefits to vehicle occupants and communities adjacent to roadsides.

Another opportunity is the existing stand of large evergreens located on a property just south of the Four Seasons shopping center (identified on the Concept Plan, Figure 3). Upon future development proposals, the City's Community Development Department and Forester should work collaboratively with the property owners of parcel #162742012 to preserve this stand of trees. The conceptual site plan (see Figure 7 on page 27) shows an example of how a portion of this wooded area could be developed, while setting aside a healthy stand of the trees as permanent open space. The site plan also shows how some of the larger rows of evergreen trees along the perimeter of several properties could be maintained and integrated as an amenity to the development and the larger neighborhood. Such mature trees provide character and identity to the development and provide obvious environmental benefits.

ACCESS AND CIRCULATION

I-205 Split Diamond Interchange

Construction of the 18th/28th Street split diamond interchange will affect the plan area on several levels. It will increase accessibility to residences, retail opportunities, and the 112th Avenue employment corridor north of the plan area. Completion of the interchange will also change traffic patterns in and around the neighborhood. Today, access from the south is provided primarily by 112th Avenue from Mill Plain. In the future that access will be provided at 18th Street and 28th Street. This change in traffic patterns will likely lighten the traffic load on 112th Avenue south of 18th Street.

Future Transit Station

Although this plan does not identify the best location for a potential future transit station, it does identify important considerations for locating one, and provides policies on how it could best be integrated into the neighborhood. Locations around the 18th and 28th Street intersections were evaluated for operational efficiency and as a potential transit-oriented development site. Refer to Figure 3, Concept Plan, for potential transit center locations.

18th Street Locations: The identified locations near the 18th Street Intersection may work with detailed planning, however access and operations would be challenging. And, these locations may be difficult to integrate with the neighborhood and provide little opportunity for a mixed-use transit oriented development. Potentially, a park and ride facility may be a good near-term option in the vicinity of the 18th Street Interchange, provided access challenges can adequately be addressed.

28th Street Location: This location was evaluated as a likely location to integrate a transit center with surrounding land uses. With completion of the north half of the split diamond interchange, a 28th Street transit station would provide easy freeway access to Portland-bound commuters traveling from the north. Looking at the subarea as a whole, the 28th Street area is probably a better location for a transit station with transit oriented development. But the uncertainty of future funding to finish the north half of the split diamond interchange renders investment in a transit station in that area imprudent at this time. However, the long term opportunity for a transit center in the 28th Street vicinity should be considered. As it is likely to be more than a decade before the 28th Street Interchange is completed, the long term market conditions may provide greater opportunity to integrate transit oriented development with structured parking as land values increase over time.

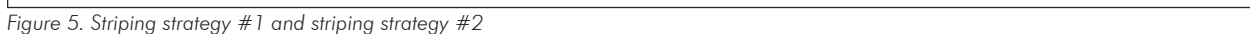
112th Avenue South of 18th Street

The portion of 112th Avenue south of 18th Street presents a significant future transportation challenge for the plan area, because it does not have adequate public right-of-way to accommodate a full urban principal arterial standard roadway. Moreover, frontage improvements such as sidewalks are spotty and pedestrian roadway crossings are few and far between. The plan presents two alternative roadway configurations on the following page that attempt to provide roughly the same functionality as a full-standard principal arterial roadway, but at a slightly lower level of service for each travel mode because of right-of-way constraints.

These configuration concepts on the following page show how a reduced-section roadway could provide mobility and safety within the anticipated available roadway. They are illustrative rather than exclusive and attempt to balance corridor right-of-way constraints with future traffic needs. Strategy 1 widens the roadway to five lanes with reduced lane widths and no planter strip. Strategy 2 includes a reduced roadway to four lanes meeting city arterial lane standards. This includes two northbound lanes, one southbound lane, and one center turn lane. The imbalanced geometry is based on current/future link volumes. Further analysis is needed to confirm operations associated with mid-block connections and merging from the 18th Street improvements.



112th Avenue south of 18th Street presents a significant challenge due to the poor pedestrian facilities and limited right-of-way.



Evergreen Memorial Gardens Frontage

The 112th Avenue frontage at Evergreen Memorial Garden presents a unique challenge. Grave sites begin at approximately 12 feet behind the existing face of curb. Therefore, location of any future sidewalk on that portion of the corridor would be subject to a strict constraint. Any change to the frontage would have to maintain or enhance the existing character of Evergreen Memorial Gardens in order for Evergreen to fulfill its solemn commitment to the deceased and surviving to provide a serene environment. The roadway sections in this plan identify a simple 5 foot attached sidewalk and buffer sufficient to maintain Evergreen Memorial Garden's environment. Specific cross sections provide potential design options to preserve a respectful space between the burials and any future sidewalk.

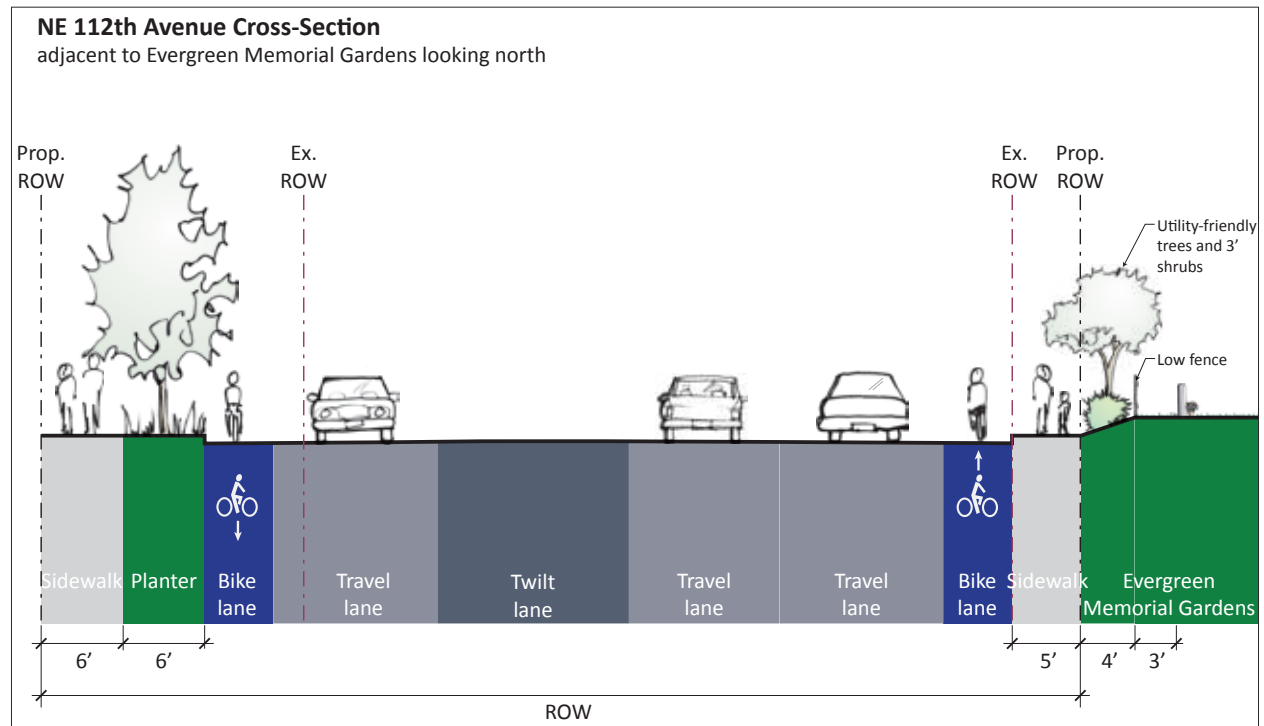


Figure 6. A potential cross-section of future 112th Avenue improvements — measurements to be verified

Needed Improvements

The plan identifies needed street improvements that would provide enhanced safety, connectivity, access and circulation efficiency, and walkability. The following list of improvements if completed would help fulfill the subarea plan's concept, envisioned character, goals and policies.

- Complete 112th Avenue corridor between 18th Street and 28th Street, providing convenient access between the neighborhood on the west to the east side of 112th. This should include pedestrian crossings where appropriate, a continuous sidewalk network, and a continuous bike lane network.
- Construct one signalized intersection on 112th Avenue between 18th and 28th Streets; located to provide access to the areas both east and west of 112th Avenue and to promote efficient traffic operations on 112th.
- Implement context-sensitive design solutions on 112th Avenue south of 18th Street to preserve neighborhood amenities and character while providing principal arterial functionality.
- Create attractive, convenient and safe walkways for pedestrians including roadway crossings, curb ramps, textured crosswalk paving, pedestrian signals and refuges where appropriate, landscaping and intersection median barriers.

- Improve bicycle route safety and connectivity across and along 112th Avenue and through the entire corridor.
- Complete pedestrian and automobile network connections between 112th Avenue and Four Seasons Lane to meet the intent illustrated in the plan concept map.
- Complete planned improvements to the 18th Street corridor east and west of I-205, including the regional trail component on the south side of 18th Street.
- Complete the 28th Street corridor from 142nd to 162nd Avenue.
- Complete the 18th/28th Street split-diamond interchange project, including the collector-distributor roads between 18th and 28th Street and the north ½ of the diamond interchange at 28th Street.
- Explore traffic management options at 16th and 112th.

FUTURE DEVELOPMENT CONCEPTUAL SITE PLAN

With considerable vacant and underutilized land on the east side of 112th Avenue between 18th and 28th Streets, the planning team crafted a site plan and a phasing plan to illustrate how the area could develop over the next twenty years consistent with the goals and policies of this plan.

It is important to note that the site plan and phasing plan illustrations are examples only, and show one of many ways that development could occur consistent with plan policy. Nevertheless, it's critical to communicate how the plan could be carried out over time – particularly showing how the different phases and sites could be integrated with each other, rather than isolated.

While there are vested development applications calling for townhomes and office development on a number of properties, those projects are on hold due to current market conditions. Since there is a very real possibility that owners could submit a revised plan for the sites in the future to accommodate changing market conditions, the site plan illustrates an updated development concept.

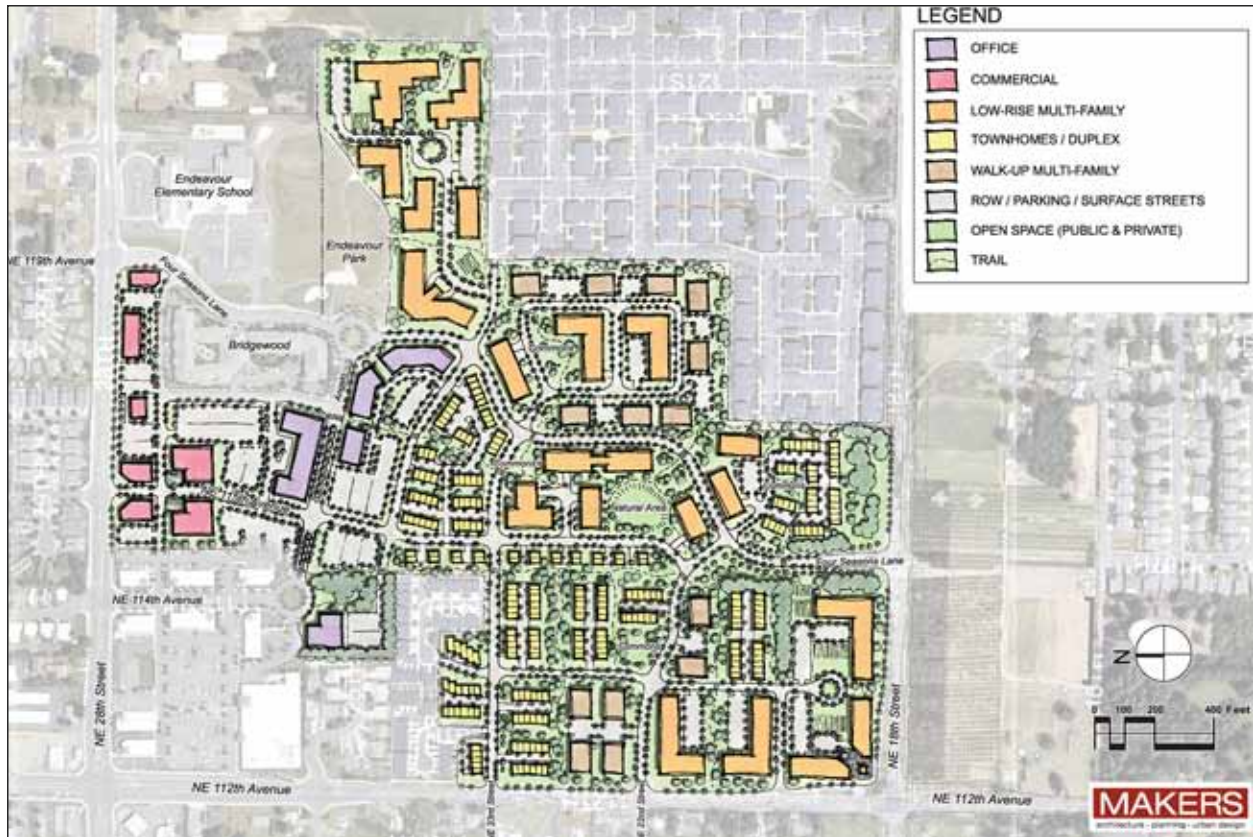


Figure 7. Future development conceptual site plan. This graphic illustrates an example of how the area could be developed over the next twenty years consistent with the community's vision, proposed zoning, and the design guidelines.

Phasing of New Development

Since development is likely to be phased over a period of time, Figure 8 below illustrate examples for first and second phases of development. Depending on market conditions the first phase could be within the next five-ten years, while the second phase could be between five and fifteen years. Figure 7 illustrates full buildout after twenty years.



Figure 8. Example conditions after Phase 1: 0-5 years (left image) and Phase 2: 5-10 years (right image)

Mixture of Housing Types and Uses

The site plan includes a mixture of housing types, office uses, and neighborhood scaled retail developments. Housing types include town homes, walk-up apartments, and senior housing – all of which exist on developed sites within the area now. The proposed mix of housing is expected to accommodate the current and projected market demographics and conditions. With future phased development, the site plan anticipates housing styles that use land efficiently providing a more generous amount of land for open space and trails. One future housing style is low-rise apartments with two or three floors of housing over one floor of parking. Such parking could be built at grade or below grade depending on site conditions and anticipated rents/sales prices. Since most or all of the parking is accommodated within or under the building, more of the site can be used for open space, rather than surface parking.



The site plan assumes a combination of walkup apartments (left), town homes (center), and low-rise apartment buildings.

Commercial uses are integrated in the northern half of the site plan. This includes a continuation of small scale retail, expected to develop in phases along 28th Street and office development centralized along Angelo Drive. In early phases, both uses are expected to be accommodated by surface parking. In later phases, some or most of the parking for office uses might be accommodated within or under buildings. If the market proves weak for office uses, some of these sites may develop as multifamily residential.



Figure 9. Land use and design concept for future development

Connectivity: Street and Internal Drives

Enhancing local connectivity is one of the major objectives of the plan, particularly as this area is developed. The site plan shows a combination of new public streets, private internal drives, and trails that would enhance vehicular, pedestrian, bicycle, and transit access. The site plan shows an extension of 23rd Street eastward to connect with Four Seasons Lane. To the south, 22nd Street also connects 112th Avenue with Four Seasons Lane. Perhaps just as important, private internal streets provide good connectivity, including a north-south roadway east of 112th Avenue and a whole grid of small internal streets on the Four Seasons property. These roadways will reduce vehicular pressure on the arterial streets by providing more options to get around. They will also enhance access to the commercial portion of the Four Seasons site by those future residents north of 18th Street and east of 112th Avenue.



New streets and internal roadways should follow the lead of Four Seasons Drive (left image) and Angelo Lane by providing consistent street trees and planting strips. The image on the right is a good example of an alley providing vehicular access to town homes.

Trails and Open Space

Trails: The vacant and under developed nature of this area provides a tremendous opportunity to create an extensive and connected trail system. While the concept map in Figure 9 on page 29 shows conceptual trail routes, the site plans herein show how a network of trails can actually be integrated with development. Figure 10 highlights a grid of trails that criss-cross the area. Like the uses themselves, these trails would be phased in over time in conjunction with development. Some of the trails are central focal points for developments, while other trails are arranged around the perimeter of developments and expanded over time.

As the photo of Endeavour Park (page 31) shows, a trail separating developments can be a much more attractive option for the neighborhood than simply fencing off each property individually, as has been the pattern in the region over the past few decades. The form and design of these trails could range from 5-foot concrete walkways constructed between buildings, a wider 12-foot asphalt multi-purpose trail (perhaps longer routes connecting park spaces where more bicycle use is anticipated), or gravel/soft-surface where usage is expected to be lighter and/or there is a desire for a nature-type trail.

The context that surrounds these trails are particularly important to their use and safety, thus the site plan aligns these trails in locations that would be visible from nearby residential units or public streets. Over time, such a trail system will be a significant selling point for the area and likely increase demand for housing units and property values.



Figure 10. Illustrating the off-street trail network in the site plan example plus trail design and context examples (right)

Open Space: The site plan shows a variety of ways that open space can be integrated into new development. The existing four acre Endeavour Park provides for large open space recreation, thus newly created open spaces are proposed to be much smaller.



Endeavour Park



These smaller spaces would largely serve the immediate development and could be designed with features and amenities for use by adjacent residents. Some spaces could feature children's play areas, others may include garden plots available to local residents, small sports courts, open lawns for informal recreational activities, or simply enhanced natural areas intended for passive recreation.

The spaces intended for active use are all in central, visible locations – adjacent to streets and/or trails and containing uses that face the space to enhance safety. Some spaces are strategically located to protect existing natural features, such as the heavily wooded area southwest of Angelo Lane, and the hillside area north of 18th Street.



Examples of the types of small open spaces that were envisioned in the site plan example.

Safe and Attractive Streetscapes

The site plan continues the attractive tree-lined streetscape theme from Four Seasons Lane and Angelo Drive to the new street connections and internal roadways and trails throughout the area. The planting strips with trees separate vehicular traffic from pedestrians, provide a consistent visual character, and offer obvious environmental benefits. The site plan extends the street tree concept to internal walkways and drives, as well, which enhances the residential setting.

Public safety was identified as a major concern throughout the process. The design guidelines crafted together with this plan emphasize Crime Prevention through Environmental Design (CPTED) techniques. The CPTED principles emphasize natural surveillance and natural access control, which maximize visibility to public spaces and limits the opportunity for crime by taking steps to clearly differentiate between public space and private space respectively. To enhance natural surveillance, the guidelines promote uses that include entries that are visible from the street, provide a minimum amount of windows on facades, and minimize the extent of blank walls adjacent to streets and trails. For natural access control, the guidelines promote the use of semi-private open space adjacent to ground level units. This is particularly important in buildings where ground level buildings are adjacent to streets and trails.



Illustrating good private development frontage examples. The right image illustrates an example of both natural surveillance and natural access control. The courtyard includes a pathway, but the spaces adjacent to the units are designed as semi-private open space.

Integrated Design

One of the primary goals of the site plan example is to show how individual developments can be integrated with each other, rather than walled-off internalized developments. Road and trail connections discussed above are perhaps the most important features to be integrated. The key to successful integration, particularly where adjacent sites are vacant or under-developed is to plan ahead and assume the adjacent site(s) will be developed at some point. For example, roads and trails would be laid out to allow for their extension in the future. Sometimes, discussions with adjacent property owners can lead to shared facilities for mutual advantages. Examples could include a shared alley along a property line that serves units on both properties. Or it could include a trail along a property line, as mentioned above. Planning these features ahead of time will eventually benefit both developments and the community as a whole.



Figure 11. Illustrating how individual developments could be integrated over time with collaborative site planning. Example phases over twenty years.

DESIGN GUIDELINES

A successful community that incorporates good urban design standards will in turn enhance quality of life for all urban residents and economic benefit to 112th Avenue land owners and businesses.

The most memorable communities that endure as great places to live and centers of commerce have common qualities that can inform new development. These successful communities include:

- A connected network of tree lined streets and internal roadways;
- Welcoming development frontages that add visual interest and safety to streets and sidewalks;
- Buildings of complementary architectural style and scale that lend a sense of cohesiveness;
- Attractive and centralized places for people to meet, congregate, and recreate; and
- The community has a cohesive network of parks, open spaces, and trails.

These qualities and the design goals mentioned herein are incorporated into a set of design standards and guidelines for the 112th Avenue Corridor, which will apply to new commercial, multifamily, and mixed-use development. Design standards and guidelines are perhaps the best tools available to help shape development consistent with the community's vision. They demonstrate a commitment to a design framework that emphasizes walkability; attractive compact development; an integrated open space, trail, street and sidewalk network; health and safety; aesthetics and low impact development techniques. They also provide a higher level of predictability as to what can happen on adjacent properties, which is desirable to potential investors (developers, property owners, and prospective homeowners in new developments).



Attractive density with trail, open space/ low impact development

PLAN DISTRICT APPROACH

The Vancouver Municipal code allows for the creation of a Plan District to meet the unique characteristics and needs of a plan area. The 112th Corridor Plan District will include use and development standard requirements and urban design and interconnectivity design guidelines that implement the goals and policies of the 112th Corridor Plan.

LAND USE POLICIES

General

- LU-1. Provide a unique urban community that offers a diversity of housing choices within a walkable distance of a local commercial center where people can shop, find needed services and entertainment.
- LU-2. Ensure the future success of a transit station by providing shopping opportunities and higher density residential uses within the subarea. Concentrate these uses within walking distance of the transit station.

- LU-3. Provide a variety of housing types within an attractive and integrated compact urban form of development.
- LU-4. Provide opportunities for a limited amount of new commercial development.
- LU-5. Promote pedestrian-oriented retail integrated with office and/or residential.
- LU-6. Recognize existing single family developments and provide for adequate screening from new development where appropriate.
- LU-7. Provide an attractive and integrated open space, sidewalk, and trail network to support health and well being through enhanced recreation, aesthetics and quality pedestrian experiences throughout the 112th Corridor Plan area.
- LU-8. Ensure that all new development provides internal streets, adequate circulation and pedestrian walkways that provide non-motorized connections to adjacent development and that meet the intent of the illustrated street and pedestrian network.
- LU-9. Promote viable transportation alternatives by developing a comprehensive path and trails system to and within the subarea which interconnects neighborhoods with shopping, parks and recreation, work, and schools.
- LU-10. Promote convenient vehicular circulation without negatively impacting the pedestrian environment and visual character of the area.
- LU-11. As development projects are proposed the city shall require coordinated planning to ensure at a minimum adequate access and efficient internal circulation that provides walkable block lengths (eliminates super block development patterns) and is integrated into the city street system, an integrated open space and trail network, and compatible development and appropriate buffers or screening.
- LU-12. Encourage the preservation of mature tree stands located within the plan area and find opportunities to establish new tree plantings.
- LU-13. The City shall partner with WSDOT to provide a consistent, coordinated, proactive approach to the restoration of roadsides along I-205. Coordinate with the WSDOT Regional Landscape Architect and Vancouver's City Forester on the revegetation of buffers using native plants to reflect the regional landscape following the WSDOT Roadside Manual.
- LU-14. The City shall work with WSDOT to ensure provision of sound walls between I-205 improvements and adjacent properties where deemed necessary.
- LU-15. The City shall work with development proposals to secure tree tracts along the east side of I-205 through the means of conservation easements, covenants or otherwise.
- LU-16. When development proposals are submitted for parcel 162742012, the City should work with the applicant to preserve the existing stand of large evergreen trees as noted in the Plan Concept in Figure 3 on page 16.

Future Transit Station

- LU-17. Explore the feasibility of transit-oriented development (TOD) at the transit station. Where it is determined that transit-oriented development is not feasible in the near term, consider designs that might allow for TOD integration in the future within or on adjacent sites.
- LU-18. The City shall work with C-TRAN to ensure that any future transit station site selection criteria include: the ability to maximize the opportunity to develop as an integrated well-connected pedestrian-friendly

mixed-use node (transit center) on adjacent and/or nearby land.

- LU-19. Following a collaborative site selection process with C-TRAN, the City, and public, initiate any necessary zone change request upon the final site selection of the transit park and ride facility.
- LU-20. Ensure any future transit station is integrated into the subarea by developing a comprehensive path and trails system to and within the park and ride which interconnects neighborhoods and shopping and job sites.
- LU-21. Provide landscaping as a key identity element of a future transit station, utilizing large tree canopy and low maintenance plants.
- LU-22. Employ CPTED principles in the design of the transit station.

Urban Design

- LU-23. Design standards and guidelines should be established to direct new development in a way that is consistent with the 112th Corridor Plan Concept.
- LU-24. Provide design guidelines that address façade articulation and architectural scale to reduce the perceived scale of large buildings and add visual interest and promote architectural diversity.
- LU-25. Provide designs that emphasize visible front entries and transparent window areas (to allow for residents to keep an eye on the activity on the street for safety). Avoid layouts where blank fences or walls face the street and layouts where private garages are the dominant visual features along streets.
- LU-26. Locate and design service elements and utility meters to minimize negative aesthetic impacts.
- LU-27. Emphasize human scale, façade articulation, fine detailing, quality building materials, and an inviting appearance in new buildings.
- LU-28. Promote the use of distinctive design treatments at highly visible locations including street corners.
- LU-29. Utilize and maintain landscaping as a key identity element of the development. Also, use landscaping to enhance streetscapes, accommodate natural drainage techniques to the extent possible, soften building edges, and enhance open spaces. Employ a range of plant materials that add multi-season interest, reduce ongoing maintenance costs, and are relatively drought tolerant.
- LU-30. Promote “green” designs and practices that minimize environmental impacts and energy use.
- LU-31. Work cooperatively with WSDOT to include distinctive design treatments for the future pedestrian I-205 over and under passes located at 9th, 18th, and 28th Streets.

Special Features

- LU-32. Encourage the preservation and economic vitality of Joe’s Place Farm.
- LU-33. Encourage the preservation of mature tree stands located within the plan area and find opportunities to establish tree plantings.
- LU-34. Work collaboratively with the owners of the Evergreen Memorial Gardens Cemetery to reach a mutually agreed design solution for a future NE 112th Ave. sidewalk fronting the width of the Cemetery. The sidewalk design shall address at the least the preservation of a private respectful space between the burials and the sidewalk and appropriate tree and shrub plantings.

ACCESS AND CIRCULATION POLICIES

- AC-1. Continue to focus investments on corridor safety enhancements.
- AC-2. Implement context-sensitive design solutions on 112th Avenue to preserve neighborhood amenities and character while providing principal arterial functionality.
- AC-3. Create attractive, convenient and safe walkways for pedestrians including roadway crossings, curb ramps, textured crosswalk paving, pedestrian signals and refuges where appropriate, landscaping and intersection median barriers.
- AC-4. Improve bicycle route safety and connectivity across and along 112th Avenue and through the entire corridor to connect residential, retail, commercial and industrial land uses.
- AC-5. Local and collector streets should be internally connected to allow for off-arterial cross-circulation and to provide multiple local access points to the surrounding arterial roadway network.
- AC-6. Each development proposal should include a local circulation plan demonstrating how the on-site connections and roadways proposed for the underlying development will fit in with the overall network and achieve system connectivity.
- AC-7. Locate off-street parking and auto-oriented land uses behind or on the side of the street face in order to create an interesting urban street front.
- AC-8. Minimize driveway access directly to arterials, encourage shared driveways, and prohibit direct driveway access to arterial roadways where local roadway access is possible.
- AC-9. Minimize industrial truck traffic on residential streets.
- AC-10. Encourage development of compact mixed land uses that can be effectively served by transit and that allow shorter trips by non-auto travel modes to likely urban destinations.
- AC-11. Encourage integration of a future potential park and ride within the neighborhood by providing for multimodal access and with complementary land uses.
- AC-12. C-TRAN should explore direct access to WSDOT's collector-distributor I-205 system for a transit station.
- AC-13. As new development projects are proposed at 16th and 112th, ensure traffic calming design is employed at the western entrance of the existing single family development.
- AC-14. Implement the needed improvements listed under "Needed Improvements" starting on page 25.

This page intentionally left blank



112th Corridor Subarea Plan Project Memorandum

Date 22 March 2011

To Sandra Towne, City of Vancouver

From Chris Zahas, Leland Consulting Group

CC Bob Bengford, Makers

Subject 112th Corridor Subarea Plan Market Strategy

Project No. 5136

Executive Summary

The purpose of this report is to summarize existing market conditions and future opportunities in the 112th Avenue Corridor (the corridor) in order to support the subarea planning process. While a subarea plan is in part an aspirational document, one that articulates how the community would like to grow over time, it must reflect real market conditions and trends if it is to be successfully implemented. The findings discussed in this report will be used to identify what is likely to be achievable from a market perspective and to inform implementation actions that might be needed to shape and achieve the community's desired outcome.

The corridor is a north-south minor arterial in the City of Vancouver, just west of I-205. The portion of the corridor that is the focus of the subarea planning effort roughly follows 112th Avenue from 4th Street to the south and 33rd Street to the north and from I-205 on the west and a varied one to five blocks from 112th to the east (see Figure 1). The planning area encompasses portions of three active neighborhood associations – Fircrest, Image, and Landover-Sharmel and one inactive neighborhood association, Kevanna Park. There is a small residential area west of 112th that is not part of a neighborhood association. Because the corridor itself is somewhat small, this market strategy report uses a study area (the study area) encompassing all four neighborhood association areas (including the area without a neighborhood association) in order to provide a broader picture of the influence area that will shape what is possible. The study area does not include any areas west of I-205 because it is assumed that most people west of I-205 do not typically travel east into the corridor.

People Places Prosperity

Revitalizing Downtowns
 Creating Partnerships
 Targeting Real Estate Success
 Shaping Financial Strategies
 Strengthening Community
 Enabling Sustainability & Livability
 Making Cities Work

610 SW Alder Street Suite 1008
 Portland Oregon
 97205-3611
 p 503.222.1600
 f 503.222.5078

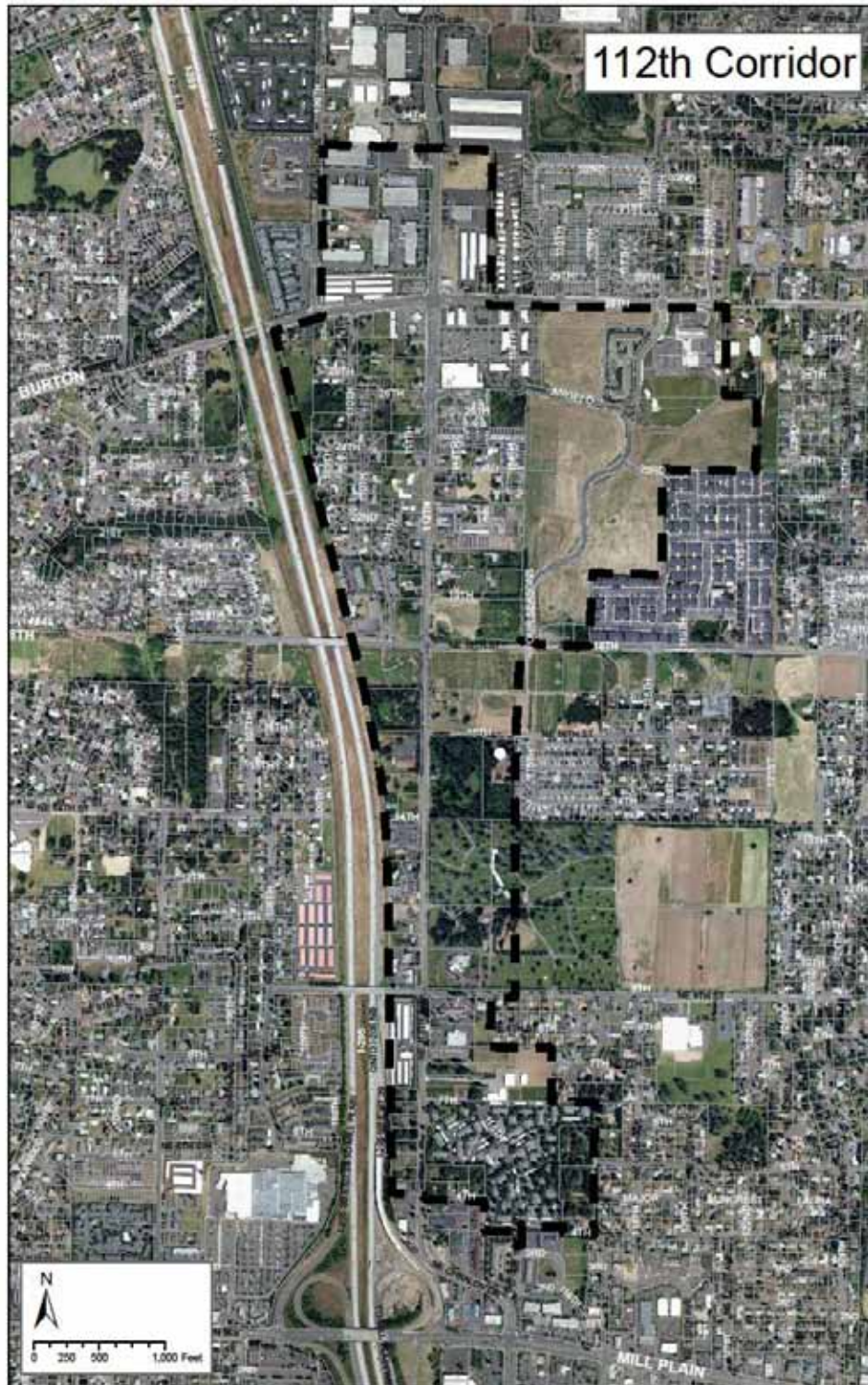
New York New York
 Bend Oregon
 Abilene Texas
 San Miguel de Allende Mexico

www.lelandconsulting.com

LELAND CONSULTING GROUP



Figure 1. 112th Corridor



Source: Makers, City of Vancouver

LELAND CONSULTING GROUP



Figure 2. Study Area Neighborhoods (Highlighted in Blue)



Source: City of Vancouver

The report summarizes existing conditions and key trends in the following areas:

- Demographics
- Employment
- Retail Market
- Residential Market
- Planned Development

KEY FINDINGS

A snapshot of the key findings from the analysis includes:

- **The study area is a family environment:** The study area is characterized by more family-based households (two or more related people living together), a younger median age, and a larger under-20 population than the city as a whole.
- **Incomes are higher:** Median household incomes in the area are slightly higher than those citywide.
- **Demographic shifts are coming:** Nationwide, the baby boomer generation is now beginning to enter their retirement years. At the same time, younger generations (namely "Generation Y") are entering the housing market. Both are expected to drive significant demand for multifamily housing such as apartments. Further, while growth in the region has slowed due to the economy, growth will return, driven by natural growth as well as renewed in-migration.
- **Senior housing is growing:** While there are only a couple of senior housing developments in place today, proposed projects and overall market trends indicate that there will be much more senior housing in the future.

LELAND CONSULTING GROUP



- **Retail dominates at the edges:** Retail services are dominated by the commercial strips at the north (Fourth Plain) and south (Mill Plain) ends of the corridor. The Four Seasons grocery/shopping center is centrally located between Fourth Plain and Mill Plain. Very few new retail projects in the corridor have been announced.
- **Large employment base:** The corridor and areas just north and east of the study area have a significant amount of employment, particularly high technology and manufacturing.
- **Good access:** The study area is well located within the region, has generally good access, and is near many major destinations. For these reasons, it is likely to continue to be a strong location for housing.

MARKET STRATEGY FOR THE 112TH CORRIDOR

The above snapshot and the detailed findings in this report highlight several key opportunities and challenges that will shape what is possible in the corridor over the next 20 years. The key implications of these conditions and the emerging market strategy for the subarea plan are as follows:

- **Housing in high demand:** The demand for housing, particularly attached housing such as apartments and townhomes will be strong, even in the immediate future, but especially over the long term. Development opportunity sites, especially those along 112th are most likely to redevelop as housing.
- **Limited retail along 112th:** Given the strong retail presence along Mill Plain and Fourth Plain boulevards and at the Four Seasons shopping center, there will only be limited opportunities for new retail along 112th. Since Mill Plain and Fourth Plain are generally close enough to 112th to meet the market demand of residents, most retail needs can be satisfied by existing retail centers.
- **Some new retail and services will still be supportable:** Although new retail development will be limited, some additional retail and services will be needed somewhere in the study area to support the new housing. Locally-serving uses that would serve residents could include restaurants, personal services (hair salons, dry cleaners), coffee shops, child care, medical offices, and financial services. Much of this demand can likely be accommodated in existing commercial centers with current vacancies or on vacant commercially-zoned land. Given the good access, size of parcels, and good visibility, the area around 28th Street and 112th Avenue is the most likely location of new commercial space. Coupled with the mixed-use vision for the Four Seasons development, commercial uses such as medical offices, financial services, and other small-scale commercial uses are also possible. The intersection of 18th and 112th, especially once 18th has direct access to I-205, is another potential location for commercial uses, however the steep slopes of the sites at this intersection will make access difficult.
- **Mixed-use centers are the wave of the future:** Demographic and market trends indicate that mixed-use urban centers with good pedestrian and transit access will be the most desirable places for development in the future. To the extent that the subarea plan accommodates and encourages this type of development, it will be better positioned to thrive and attract investment in the future. The location of any future park

LELAND CONSULTING GROUP



and ride facility should be coordinated to maximize the opportunity to develop a mixed-use node on adjacent and/or nearby land. In the context of a suburban location such as the 112th Corridor, mixed-use development does not necessarily need to imply vertical mixed uses (multiple uses in a single structure), but could include multiple uses on the same site or on adjacent sites.

- **Redevelopment will require an implementation strategy:** Several areas near 112th Avenue and 28th Street are zoned for commercial or mixed uses, but currently have other uses in place today (such as mini-storage and an electrical substation). Other barriers to mixed-use development include the presence of gas stations at key corners and limited pedestrian connectivity. Given the pattern of existing uses and parcelization (multiple ownerships), it is likely that some intervention or incentives will be needed to transition properties to new uses. Implementation actions could include pedestrian and road improvements that enhance connectivity and access to key sites, zoning that provides bonuses or other benefits for mixed-use projects, and the provision of public parking (which reduces development costs).

The remainder of the report provides detailed findings about demographic and market conditions impacting the area that contributed to the identification of the market strategy.

LELAND CONSULTING GROUP



Demographics

NATIONAL TRENDS

Several national trends will impact the future development potential of the corridor. These include:

- The oldest of the baby boomer generation turns 65 this year (2011). Over the next 20 years, America's over-65 population will more than double.
- Generation Y (also known as the echo boomers), which encompasses youth born approximately between 1982 and 2000, is the largest generational group in the United States with approximately 80 million people.
- Both the baby boomers and Generation Y have similar consumer preferences. They both share a desire for quality over quantity, a sense of community and place, and a desire to live in more urban environments. Combined, these two generations will greatly impact how cities evolve over the next 20 years, driving more demand for infill in urbanized areas and significantly increasing the demand for multifamily housing.
- Livability is an economic development draw. Particularly for the technology and knowledge-based industries that will comprise most job growth in the future, the quality of life of a community is a major factor in business location. Whereas in previous years employees moved to be close to their jobs, a new paradigm is emerging where it is the employers who move in order to be close to the talented workers they need to be successful. More and more, those workers are mobile and choose to live in communities with quality physical environments, outdoor recreation opportunities, cultural amenities, accessible transportation options, good schools, mixed-use urban centers, and other amenities.
- The vast majority of new households being formed during the next decade and beyond will be singles, couples, and seniors according to Harvard University's Joint Center for Housing Studies. These are the types of households most likely to locate in urban, transit oriented development, and infill locations—and thus to purchase goods and services, and support retailers in these neighborhoods.

LOCAL TRENDS

An overview of key demographic characteristics in the study area¹ is provided below.

Population and Households

- In 2010, as shown in Table 1, the study area's (four neighborhoods) population was estimated at 14,786, or approximately nine percent of the total population of the City of Vancouver (170,265)².

¹ For the purpose of the analysis of local demographic trends, the corridor market area encompasses all property within the Kevanna Park, Image, Landover-Sharmel and Fircrest neighborhood association boundaries. It also encompasses property north of NE 18th Street, south of NE 28th Street, east of 1-205 and west of 112th Avenue, an area that is currently not served by a neighborhood association (see Figure 2).

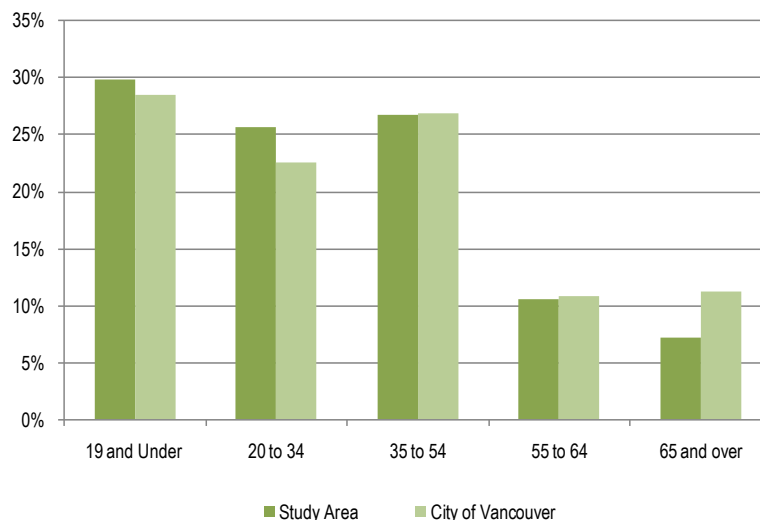
² Data for 2010 are estimates provided by ESRI Business Analyst. Neighborhood-level 2010 Census data will not be available until summer 2011.

LELAND CONSULTING GROUP



- Several population and household characteristics indicate that the study area's population is relatively young and family focused. These include:
 - A median age of 31.7 relative to 34.3 citywide.
 - A high percentage of family households (67 percent). Family households are those with two or more related individuals such as parents with children, a married couple, or a single parent with a child.
 - A slightly higher average household size of 2.7 relative to 2.5 citywide.
 - A relatively high percent of households with related children – 38 percent compared to 35 percent citywide.
 - In 2010, youth ages 19 and under comprised 30 percent of the population. Young adults ages 20 to 34 comprised 26 percent of the population.
 - Retirement age seniors ages 65 and over comprised only seven percent of the study area population in 2010, relative to 11 percent citywide.

Figure 3. Population by Age (2010 estimate)



Source: ESRI Business Analyst, U.S. Census, Leland Consulting Group

- Despite the relatively small senior population in the study area today, as more members of the baby boomer generation enter retirement age in the next decade, seniors are anticipated to comprise a larger share of the population. At the local level, as explained in more detail in the Planned Development section of this report, two large-scale residential developments in the study area are expected to add up to 220 units of housing targeted to seniors, including independent and assisted living facilities and managed care facilities. In addition to projects specifically oriented to seniors, up to 360 units of attached single-family housing (e.g., townhomes, condominiums, etc.) are also planned for the study area. Such projects typically appeal to smaller one- and two-person households, including empty nesters and retirees.

LELAND CONSULTING GROUP



- Estimated at \$61,581, the study area's median household income was more than \$5,000 higher than the median household income citywide (\$56,297) in 2010 (see Table 1). However, the discrepancy between the study area's per capita income (\$26,108) and the City's per capita income (\$25,706) was much smaller, which is explained by the higher percentage of households with children (i.e., non-wage earners) in the study area and by the slightly lower percentage of one- and two-person households.

Table 1. Population and Household Characteristics

Population/Household Characteristic	Study Area	City of Vancouver
Population, 2010 (est)	14,786	170,265
Households, 2010 (est)	5,569	67,052
Average Household Size, 2010 (est)	2.7	2.5
Percent 1 and 2 Person Households, 2000	58%	61%
Percent Family Households, 2010 (est)	66%	63%
Median Age, 2010 (est)	31.7	34.3
Median Household Income, 2010 (est.)	\$61,581	\$56,297
Per Capita Income, 2010 (est.)	\$26,108	\$25,706

Source: ESRI and Leland Consulting Group

Employment Trends

The study area is both a place where workers live (and commute to jobs elsewhere) as well as an employment area in its own right. This section of the report summarizes key findings about the types of jobs that are present in the area and the employment profiles of the residents who live there.

CORRIDOR JOB PROFILE

Key findings about the jobs in the area (irrespective of where the worker lives) include:

- Approximately 7,800 people work in the study area.
- The study area has a strong manufacturing employment base. As shown in Table 2, below, approximately 26 percent of all jobs were in this sector in 2008, the latest year for which data is available.
- Several major high-tech manufacturing facilities are located in the study area, including facilities operated by US Digital, Micropump, and SEH America, the study area's largest employer (see Figure 4).
- Jobs in the retail, accommodation, and food service industries (a single category) are another major source of employment in the study area. A combined 22 percent of all jobs in the area were in this sector in 2008.
- As shown in Figure 4, the study area has two major retail employment concentrations where I-205 intersects with Mill Plain Boulevard and Fourth Plain Boulevard. Due to their high visibility, convenient access to regional transportation routes, and high

LELAND CONSULTING GROUP



volumes of traffic, these locations are ideal for retail and commercial services such as restaurants, lodging, and other uses.

- Other industries with significant employment in the study area include the administration, support, waste management and remediation category, which comprise 11 percent of all jobs in the area and wholesale trade, with eight percent of study area jobs.
- Key drivers for job growth include overall population growth in the region as well as the area's central location and good access to I-205. The area will be even more competitive upon completion of the I-205 access improvements and the potential future construction of a new park and ride facility in the area.

Table 2. Study Area Jobs by Industry, 2008

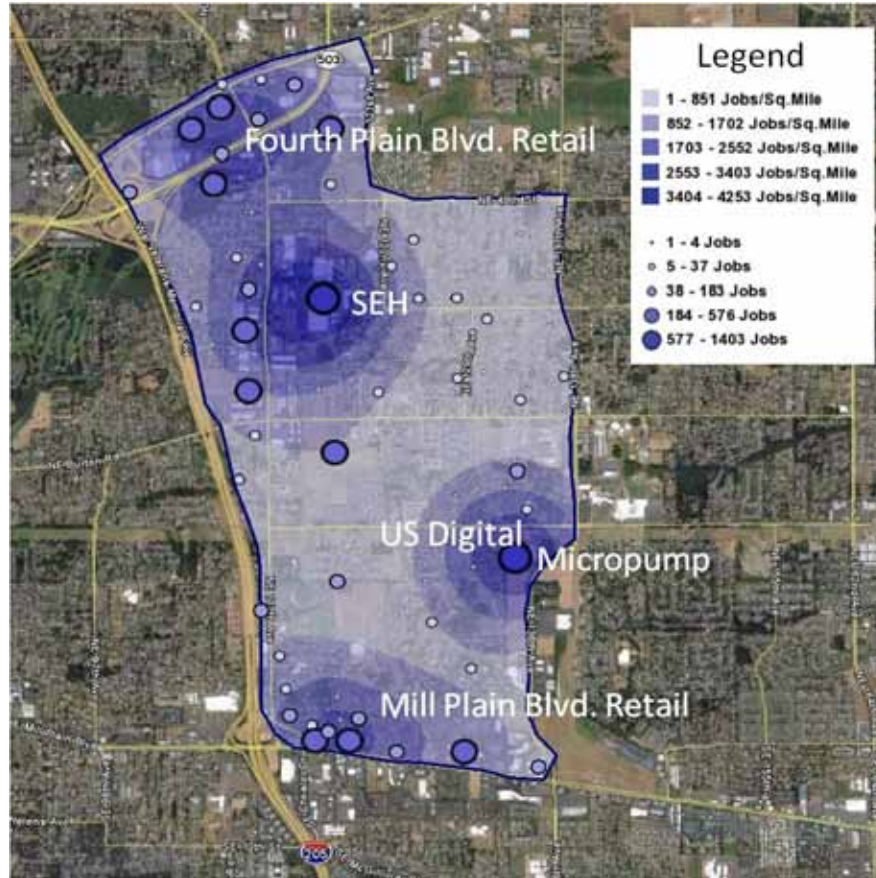
NAICS Industry Sector	Count	Share
Agriculture, Forestry, Fishing and Hunting	6	0%
Mining, Quarrying, and Oil and Gas Extraction	0	0%
Utilities	10	0%
Construction	421	5%
Manufacturing	2,061	26%
Wholesale Trade	652	8%
Retail Trade	713	9%
Transportation and Warehousing	67	1%
Information	21	0%
Finance and Insurance	306	4%
Real Estate and Rental and Leasing	104	1%
Professional, Scientific, and Technical Services	280	4%
Management of Companies and Enterprises	27	0%
Administration & Support, Waste Management and Remediation	877	11%
Educational Services	86	1%
Health Care and Social Assistance	538	7%
Arts, Entertainment, and Recreation	3	0%
Accommodation and Food Services	1,013	13%
Other Services (excluding Public Administration)	269	3%
Public Administration	415	5%
Total	7,869	100%

Source: U.S. Census Bureau – 2008 Local Employment Dynamics Data

LELAND CONSULTING GROUP



Figure 4. Study Area Employment Concentrations, 2008



Source: U.S. Census Bureau, Google Earth

EMPLOYMENT PROFILE OF STUDY AREA RESIDENTS

KEY FINDINGS:

- Many residents in the study area hold retail and service jobs. In 2008, 12 percent of study area residents worked in retail trade while 9 percent (or a combined 18 percent) worked in the educational services and accommodation and food services industries.
- Although 26 percent of all jobs in the study area are manufacturing jobs, only 11 percent of study area residents have manufacturing jobs (which could be located anywhere in the region).
- The health care and social assistance industry, which is anticipated to expand regionally and nationally as the baby boomer generation enters retirement age and the demand for healthcare services increases, employed 11 percent of study area residents in 2008.
- As shown in Table 4, more than half of study area residents (52 percent) work in Clark County. Among residents employed in Clark County, the vast majority (35 percent) worked close to home in Vancouver.

LELAND CONSULTING GROUP



- Approximately 32 percent of study area residents commute to work across the river in the Portland Metro area, excluding Clark County. Of those, 21 percent work in the City of Portland. This commuter population could benefit from improved access to I-205 and enhanced express bus routes (via a park and ride).

Table 3. Study Area Resident Employment by Industry (2008)

NAICS Industry Sector	Count	Share
Agriculture, Forestry, Fishing and Hunting	47	1%
Mining, Quarrying, and Oil and Gas Extraction	8	0%
Utilities	28	1%
Construction	385	7%
Manufacturing	597	11%
Wholesale Trade	338	6%
Retail Trade	635	12%
Transportation and Warehousing	236	5%
Information	103	2%
Finance and Insurance	175	3%
Real Estate and Rental and Leasing	103	2%
Professional, Scientific, and Technical Services	255	5%
Management of Companies and Enterprises	65	1%
Administration & Support, Waste Management and Remediation	321	6%
Educational Services	448	9%
Health Care and Social Assistance	578	11%
Arts, Entertainment, and Recreation	79	2%
Accommodation and Food Services	463	9%
Other Services (excluding Public Administration)	229	4%
Public Administration	167	3%
Total	5,260	100%

Source: U.S. Census Bureau – 2008 Local Employment Dynamics Data

LELAND CONSULTING GROUP



Table 4. Where Study Area Residents Work (2008)

	Count	Share
Vancouver city, WA	1,824	35%
Portland city, OR	1,095	21%
Seattle city, WA	175	3%
Camas city, WA	104	2%
Orchards CDP, WA	95	2%
Gresham city, OR	92	2%
Five Corners CDP, WA	77	2%
Beaverton city, OR	76	1%
Hazel Dell North CDP, WA	70	1%
Hazel Dell South CDP, WA	70	1%
All Other Locations	1,582	30%
Total	5,260	100%
Clark County Subtotal	2,743	52%
Portland Metro Area Subtotal ^{1/}	1,670	32%

^{1/} Includes employment within Multnomah, Washington and Clackamas Counties in Oregon; excludes employment in Clark County, Washington.

Source: U.S. Census Bureau – 2008 Local Employment Dynamics Data

Retail Market Profile

Retail opportunities will be driven by their response to the fundamentals of retail market potential:

- **Visibility.** Thousands of customers must pass and see the site on a daily basis. In urban areas, retailers look for corners and areas with high pedestrian and transit. Along urban arterials and in suburban areas, daily traffic volumes of approximately 20,000 are desirable for national retailers.
- **Accessibility.** The space must be very easy to get to; daily shopping or convenience retail should be on the way home (right) side of the street.
- **Central location vis-a-vis target markets.** The target market will vary depending on the type of retail, but in any case, the location should be central to that market area. For example, grocery anchored centers should be within approximately one mile of 10,000 residents.
- **Manageable competitive environment.** Most retailers will avoid an area if competitors are already located there. The exact opposite can be true, however, when retailers offer complementary products, making the area a destination for comparison shopping.
- **Demographic match.** Retailers choose sites located near their —target market customers.
- **Anchor tenants.** Retail developments are often —anchored by one tenant (for example, a supermarket) who then attracts other tenants.
- **Sense of place, safety, cleanliness.** This is particularly important to encouraging pedestrian activity.

LELAND CONSULTING GROUP



- **Contiguity.** Urban retail must be continuous, or many shoppers will stop and turn back. Empty storefronts, parking lots, and non-retail uses can create breaks in contiguity.
- **Parking capacity.** In an area where on-street parking is unlikely to be feasible, it will be important that retail sites have adequate interior parking.

KEY FINDINGS:

- As shown in Figures 5 to 7, the study area has two main retail concentrations, one at the north end along Fourth Plain Boulevard and the second at the south end along Mill Plain Boulevard. Both locations have convenient access to I-205, high visibility and high volumes of drive-by traffic. They also feature a critical mass of retail and commercial services and comparison shopping opportunities that are attractive to consumers, particularly among value and price conscious shoppers.
- There is a smaller neighborhood retail node at 28th and 112th that is anchored by a Safeway supermarket. Future growth in this area is challenged by the presence of an electrical substation and mini-storage warehouses on the north side of 28th. These uses limit the ability of the area to achieve a critical mass of commercial development without significant changes of use and/or relocation. Therefore, the type of retail and commercial uses that are likely in this area will continue to be smaller-scale and neighborhood serving. In either case, the vacant commercial site due east of the Safeway (at the northern edge of the Four Seasons development) is likely to develop as commercial and mixed-use before any redevelopment occurs elsewhere in the vicinity. In addition to retail, potential uses could include medical offices, financial services, and small flexible office spaces.
- All three retail areas have most retail development on the south side of the street, which is the “going home” side, a positive attribute for retail success.
- Due to several factors, including the study area’s abundant existing retail options, competition from Oregon, a relatively high citywide vacancy rate, and the fact that retail is already concentrated in locations that fulfill the requirements needed for it to succeed, the opportunity for new retail development along 112th is anticipated to be very limited.

LELAND CONSULTING GROUP



Figure 5. Retail Context (Mill Plain Boulevard to 28th Avenue)



Source: Google Earth and Leland Consulting Group

Figure 6. Retail Context (28th Avenue)



Source: Google Earth and Leland Consulting Group

LELAND CONSULTING GROUP



Figure 7. Retail Context (49th Street to Fourth Plain Boulevard)



Source: Google Earth and Leland Consulting Group

Residential Market Profile

As noted earlier, most new development in the corridor over the next 20 years is likely to be in housing. Currently, the study area is characterized by a diverse range of housing types and affordability levels, as described below.

- As shown in Table 5, in 2010, the study area had a similar proportion of homeowners (45 percent) and renters (47 percent) and a slightly lower homeownership rate than the City (49 percent).
- As shown in Table 6, in February 2011, study area median home values, which ranged from \$124,700 in Kevanna Park to as much as \$161,400 in Landover-Sharmel, were lower than the citywide median home value (\$169,000). It should be noted that these values are impacted by the housing market slowdown and could change significantly as the market recovers.
- In addition to families, the study area is anticipated to attract a growing number of seniors with unique needs and housing preferences with respect to form, price, amenities and other characteristics. This trend is supported by the fact that several hundred units of attached senior housing are planned for the study area.

LELAND CONSULTING GROUP

**Table 5. Housing Characteristics**

Housing Characteristic	Study Area	City of Vancouver
Housing Units, 2010 (estimate)	6,057	72,123
Owner Occupied Housing Units	45%	49%
Renter Occupied Housing Units	47%	44%
Vacant Housing Units	8%	7%
Housing Units by Units in Structure, 2000		
1-unit, Detached	55%	56%
1 to 4 units, Attached	10%	17%
5 to 9 units, Attached	13%	8%
10 or more units, Attached	13%	17%
Mobile Home	3%	3%
Other	1%	0%

Source: ESRI and Leland Consulting Group

Table 6. Median Home Value Data - Feb. 2011

Housing Data	Fircrest	Image	Kevanna Park	Landover-Sharmel	Vancouver
Current Median Home Value	\$148,400	\$148,000	\$124,700	\$161,400	\$169,200
Current Median Home Value per Square Foot	\$118	\$115	\$102	\$104	\$119
Change in Median Home Value over Prior Year	-13.4%	-13.4%	-22.2%	-11.0%	-9.4%

Source: Zillow and Leland Consulting Group

Planned Development

This section of the report summarizes the most current information on planned development in the study area identified in the December 2010 Draft 112th Corridor Plan Existing Conditions overview.

- As shown in Table 7, a total of 734 housing units are planned in or within close proximity to the corridor.
- The majority of planned units (584) are associated with developments whose status has been updated relatively recently, in 2009 or later (this includes planned development at the Four Seasons project). However, 150 housing units are associated with planned developments whose status has not been updated for over two years, most likely due to the market slowdown. Thus, there is some uncertainty as to when these projects will be built and, if so, whether they will reflect the most recent proposals or will be something entirely different.
- Attached single-family residences, of which 360 are planned for the study area, comprise the majority of planned housing units.
- A reported 220 units are planned for large senior and assisted living projects. One of these projects, Burton Ridge, is a 172-unit senior Veteran's Housing Administration

LELAND CONSULTING GROUP



project that will include a mix of independent and assisted living units as well as units within a “memory care” facility targeted to individuals with Alzheimer’s and other memory loss conditions.

- While a significant amount of residential development is planned for the study area, planned non-residential development is relatively limited. As shown in Table 8, an estimated 72,000 square feet of non-residential development is planned for the study area, the majority of which has not had a status update since pre-2009.
- While the largest planned non-residential development identified for the study area is a 35,000 square foot expansion of the Salvation Army facility at 1500 NE 112th Avenue, it is widely known that silicon wafer manufacturer SEH America, Inc. is considering a major expansion of its facility. Located in the industrial area east of 112th Avenue, north of 28th Street and south of 49th Street, the facility is adjacent to multiple undeveloped properties with the potential to accommodate an expansion.

Table 7. Planned Residential Development

Housing Types	Status Update Pre-2009 ^{1/}	Status Update 2009 or later ^{2/}
Detached single-family	106	4
Attached single-family	44	360
Senior / Assisted - attached	-	220
<i>Unit subtotals</i>	<i>150</i>	<i>584</i>
Total units		734

^{1/} Includes projects with most recent status update prior to 2009.

^{2/} Includes projects with most recent status update in 2009 or later.

Source: City of Vancouver and Leland Consulting Group

Table 8. Planned Non-Residential Development

Development Type	Status Update Pre-2009 ^{1/}	Status Update 2009 or later ^{2/}
Retail	11,000 ^{3/}	13,000
Other Commercial	35,000	unknown
Industrial	13,250	
<i>Subtotal</i>	<i>59,250</i>	<i>13,000</i>
Total		72,250

^{1/} Includes projects with most recent status update prior to 2009.

^{2/} Includes projects with most recent status update in 2009 or later.

^{3/} Square footage for the proposed Walgreens at 11200 NE 28th Avenue is estimated at 11,000 square feet, the typical retail square footage occupied by Walgreens in a neighborhood setting.

Source: City of Vancouver and Leland Consulting Group

MEMORANDUM

Date:	May 24, 2011	TG:	10220.00
To:	Phil Wuest, City of Vancouver		
From:	Michael Swenson Scott Lee		
cc:	Bob Bengford, Makers		
Subject:	112th Avenue Traffic Analysis Summary		

This memorandum summarizes the traffic analysis and primary findings of the work prepared by Transpo in support of the 112th Avenue Subarea Corridor Plan. The scope of the traffic analysis focused on the following areas:

- Reviewed future transit center locations and opportunities/constraints associated with each
- Reviewed traffic forecast along the 112th Corridor and immediate vicinity.
- Prepared alternative roadway cross sections for 112th, south of 18th Street focusing along the section near the cemetery

Transit Center Siting Summary

In the 2030 High Capacity Transit Plan for Clark County, a transit hub or transit oriented development was identified along the I-205 and 112th Avenue Corridors. The locations evaluated in this review included:

- South side of Burton Road between I-205 and 112th Avenue
- North side of 18th Street between I-205 and 112th Avenue
- Southwest and southeast quadrants of the NE 18th Street/112th Avenue intersection
- West side of 112th Avenue, south of existing BPA easements

Summary graphics were prepared for the February 8, 2011 public workshop (see attached). The following provides a summary of the access and development considerations associated with each location.

Table 1. Transit Oriented Development Siting Summary

Location	Access Considerations	Considerations
South side of Burton Road between I-205 and 112th Avenue	Access is possible from either Burton Road or 112th Avenue could be feasible	Potential for Transit Oriented Development in consideration of adjacent land uses Existing street network that could be utilized for access
Northwest and northeast quadrants of the NE 18th Street/112th Avenue intersection	Access could be from NE 18th Street or NE 112th Avenue. The access points along 112th Avenue would likely be in close proximity to the NE 18th Street/NE 112th Avenue intersection making full access challenging depending on queuing at this intersection. Direct transit access into the transit hub from I-205 frontage roads would be desirable for efficient transit operations, but would require special FHWA approval.	Transit facility is isolated from complementary land uses, limiting TOD potential

Southeast and southwest quadrants of the NE 18th Street/112th Avenue intersection	Access could be from NE 18th Street or NE 112th Avenue. The access points along 112th Avenue would likely be in close proximity to the NE 18th Street/NE 112th Avenue intersection making full access challenging depending on queuing at this intersection. Direct transit access into the transit hub from I-205 frontage roads would be desirable for efficient transit operations, but would require special FHWA approval.	Transit facility is isolated from complementary land uses, limiting TOD potential Development may be limited due to BPA easements and related development restrictions
West side of 112th Avenue, south of existing BPA easements	Transit access may be feasible direct to/from proposed NB off-ramp Access for general purpose would be feasible from 112th Avenue	Transit facility is isolated from complimentary land uses, limiting TOD potential

In addition to the transit center review, the effects of a 400 stall park-and-ride facility located near the intersection of 112th Avenue / 18th Street were reviewed. Consistent with the transit center siting summary, the access points to the park-and-ride may be restricted depending on the location relative to the intersection. Based on a 400 stall facility, the intersection volumes at 112th Avenue / 18th Street would increase traffic volumes by up to three percent. Assuming intersection improvements outlined in the *I-205/Mill Plain Interchange to NE 18th Street Project*, the intersection is anticipated to operate at LOS C and LOS D during future 2030 weekday AM and PM peak hour, respectively. Based on the minimal increase in total entering traffic volumes, intersection operations are not anticipated to degrade below acceptable levels of service during the weekday AM and PM peak hour. The impacts of the intersection are ultimately influenced by the nature of the TOD project, market draw, and site access.

Traffic Forecasting Review

Traffic forecasts from the *I-205/Mill Plain Interchange to NE 18th Street Project* were reviewed to access the impacts from the proposed I-205 northbound off and southbound on ramps at 18th Street, the widening of the 18th Street bridge to a seven-lane cross section, and intersection improvements at the intersection of 18th Street / 112th Avenue.

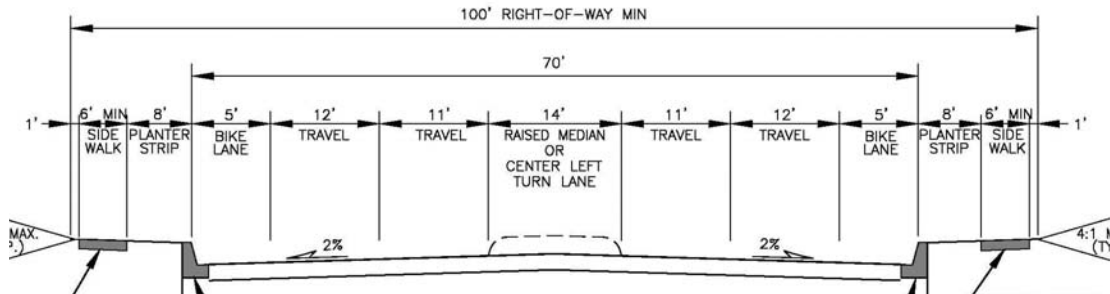
The construction of on/off-ramps to/from NE 18th Street reduces congestion on Mill Plain Road as well as 112th Avenue near Mill Plain Road during both the AM and PM peak hour. North of Mill Plain Road traffic volumes on 112th Avenue are forecasted to decrease both northbound and southbound during the weekday PM peak hour by approximately 350 vehicles northbound and 160 vehicles southbound. During the weekday AM peak hour northbound traffic volumes increase by 55 vehicles and southbound traffic volumes decrease by 440 vehicles.

Intersection volumes at 18th Street / 112th Avenue increase during the weekday AM and PM peak hour by 410 vehicles and 360 vehicles, respectively. South of 18th Street traffic volumes on 112th Avenue are forecasted to decrease both northbound and southbound during the weekday PM peak hour by approximately 305 vehicles northbound and 150 vehicles southbound. During the weekday AM peak hour northbound traffic volumes increase by 115 vehicles and southbound traffic volumes decrease by 445 vehicles.

112th Avenue Street Section Options

The City's principal arterial street standard calls for 100 feet of right-of-way (ROW), as illustrated in the standard street section diagram below. This amount of ROW may not be available along the entire corridor, especially between 9th and 18th Streets. The conceptual striping plans presented in

this report incorporate each of the functions provided for in the City's street standard, but with a reduced footprint.



Conceptual striping plans were developed for the section of 112th Avenue in the vicinity of the Evergreen Memorial Gardens. Right of way in this section is limited on the east side of the road in consideration of the constraints related to burial plots on the cemetery grounds. The purpose of this exercise was to develop conceptual plans that identified street section options that maximized the expansion of the roadway (limited to sidewalks only) on the east and evaluated impacts to properties on the west side of 112th Avenue.

Traffic Volume Considerations

A review of traffic volumes forecasted along 112th Avenue between 18th Street and 9th Street during 2030 build conditions was completed to determine if the number of travel lanes along this stretch of roadway could be reduced. Roadways qualifying for reductions in travel lanes typically have traffic volumes of 20,000 vehicles (~10,000 per direction) or less per day. Based on the projected daily¹ and peak hour volumes along 112th Avenue during 2030 build conditions, the southbound travel lanes would be a candidate for a reduction from two travel lanes to one travel lane.

Operations Assessment

To check the reasonableness of a lane reduction along 112th Avenue, a level of service analysis was completed at 112th Avenue / 9th Street intersection under 2030 build conditions. With the reduction of lanes southbound the approach to 112th Avenue / 9th Street would reduce from two southbound through lanes to one southbound through lane. Analysis using Synchro 7.0 shows 112th / 9th Street is expected to operate at LOS B during the 2030 weekday AM and PM peak hour. This analysis assumes that all channelization improvements identified in the *I-205/Mill Plain Interchange to NE 18th Street Project* have been completed and no lane reductions occur at this location. Additional detailed traffic analysis would have to be conducted by the City Traffic Engineer prior to any potential lane configuration modifications.

Street Section Options

The street section options developed are described below. Both options described below assume a nominal expansion of the ROW on the east to accommodate a sidewalk only.

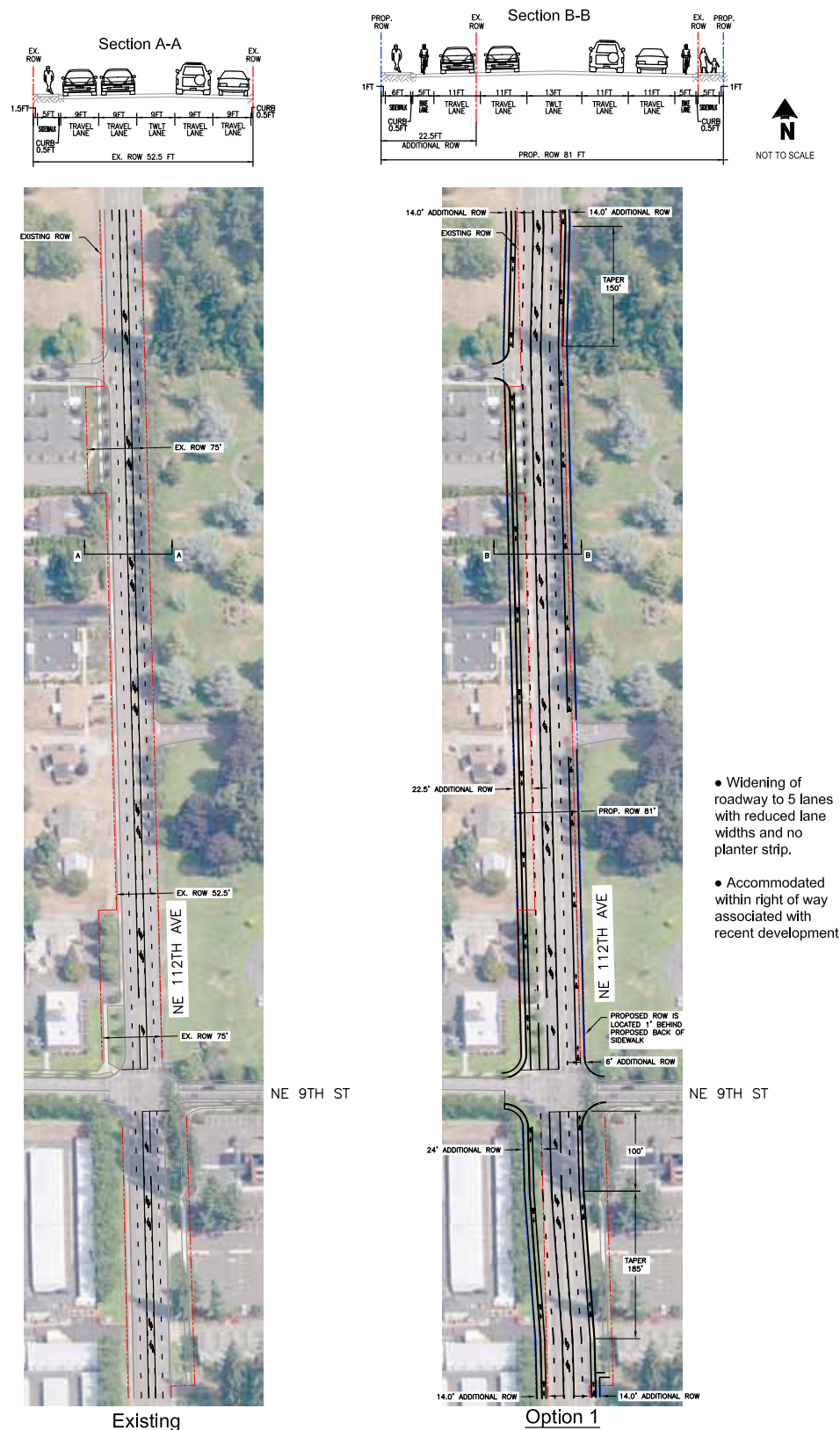
Option 1 – This option includes a 5 lane cross-section on 112th Avenue, assuming recent ROW dedications on the west side of 112th Avenue established the western limit of the ROW dedication

¹ ADT was derived based on the assumption the weekday PM peak hour represents eight percent of the ADT.

for future parcels. Several recent projects have been developed and the likelihood of redevelopment in the near future is minimal. To accommodate the 5 lane section (inclusive of sidewalks), the planter strip was removed and the lane widths reduced in this section.

Option 2 - This option includes a 4 lane cross-section with northbound and southbound bike lanes as well as a planter on the west side of 112th Avenue, resulting in a detached sidewalk. This assumes recent ROW dedications on the west side of 112th Avenue are established from ROW dedication for future parcels. With the detached sidewalk, the pedestrian environment is improved by increasing the distance between the traveled way and pedestrians.

The four lane section includes 2 northbound travel lanes, one southbound travel lane, and a center two-way left-turn lane. While the analysis generally supports the imbalanced geometry, the consistency and lane merging at the NE 18th intersection needs to be reviewed in more operational detail. This geometry is also based on the future conditions with the I-205 18th interchange improvements. The striping plan assumes full City arterial improvements with respect to the section including lane widths.



Conceptual Channelization / Cross Sections

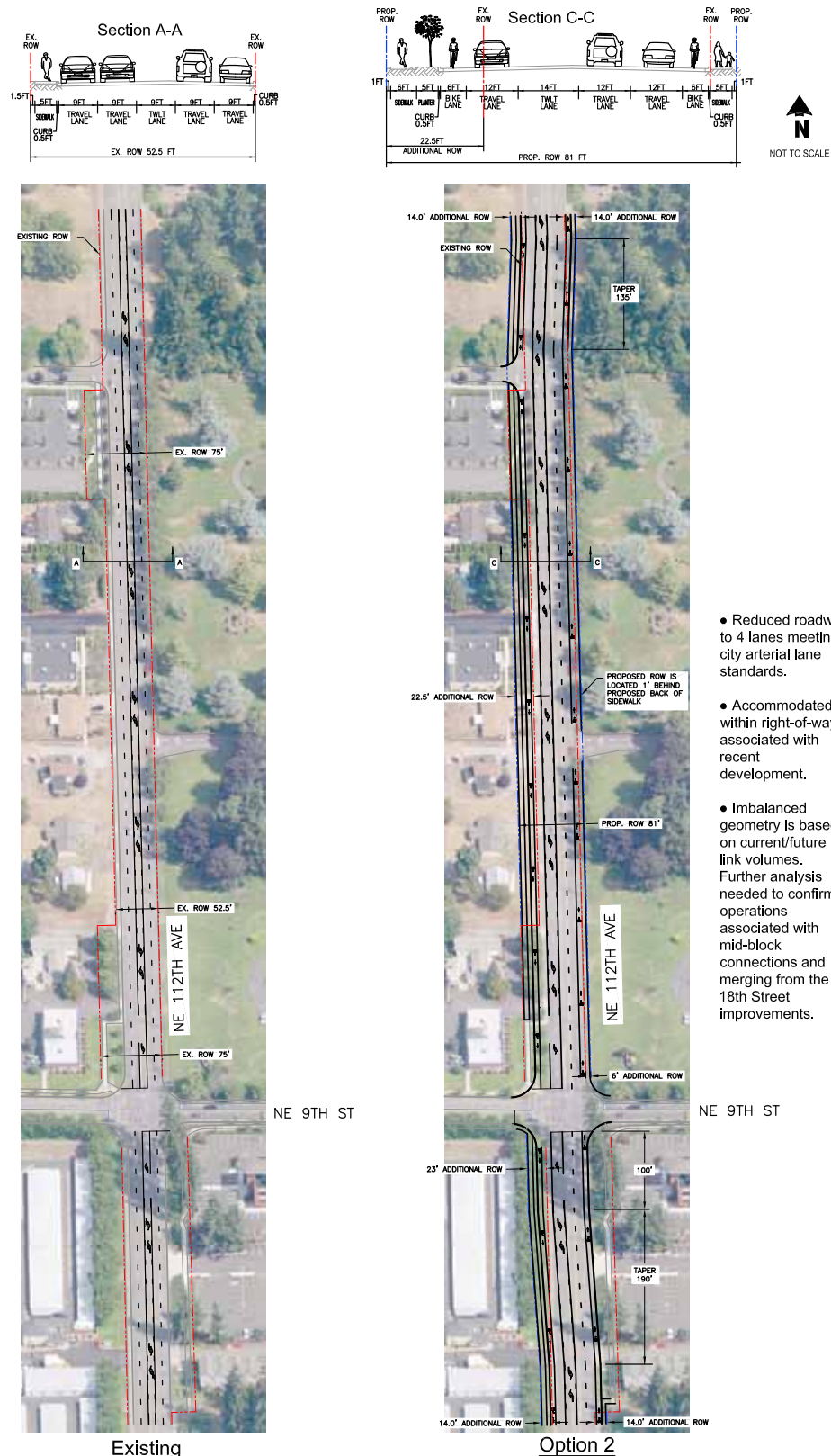
112th Corridor Subarea Plan - Vancouver, WA

M:\10\10220 112th Corridor Subarea Plan\CAD\Conceptual Striping.dwg<P1>Daniel Lai 4/5/2011 2:58 PM

FIGURE

1





Conceptual Channelization / Cross Sections

112th Corridor Subarea Plan - Vancouver, WA

M:\10\10220 112th Corridor Subarea Plan\CAD\Conceptual Striping.dwg<P2>Daniel Lai 5/24/2011 10:37 AM



FIGURE

2

112TH Corridor Subarea Plan

Illustrated Site Plan Example & Assumptions

The 112th Corridor Subarea Planning Team prepared an example site plan illustrating how a key area of the subarea could be developed consistent with the plan’s vision. The site plan is focused on the properties on the east side of NE 112th Avenue between NE 18th and 28th Streets. Areas that are illustrated with new development are either vacant or under developed per current zoning.

The site plan on the following page emphasizes the following overarching concepts and elements:

- Mixture of housing types that accommodates the area’s demographic diversity and responds to predicted future market demand.
- A hierarchy of connected streets that allow for good circulation and reduce pressure on surrounding arterials.
- An integrated and connected trail system that promotes walking and enhances the residential setting.
- A network of usable open spaces that serve the development and add character and identity.
- How to integrate individual developments with surrounding developments to provide a more efficient use of land, share amenities, and enhance the residential setting.
- How to configure buildings, parking areas and open spaces that enhance the character and safety of streets and create focal points of activity.

The following pages include:

Page 2:	Figure 1. Illustrated Site Plan
Page 3.	Figure 2. Site plan sub-areas Site plan land use statistics
Page 4.	Townhouse & Lowrise Apartment assumptions
Page 5	Walkup Apartment & Commercial assumptions
Page 6	Office Buildings, Streets & Internal Roads, and Trail Corridor assumptions

Figure 1. Illustrated Site Plan



Figure 2.

Site plan sub-areas



Site Plan Land Use Statistics

SITE AREA (see Site Area Key map)	NET AREA SF*	NET ACRES*	CURRENT ZONING	PROPOSED ZONING	COM. SF (retail & office)	DWELLING UNITS BY TYPE					TOTAL UNITS	DWELLING UNITS/ ACRE
						CONGREGATE CARE	2 over 1	3 over 1	WALK-UPS	TOWNHOMES		
1	67,022	1.54	R-18	R-18	0	0	0	0	0	19	19	12.35
2	151,806	3.48	R-18	R-22	0	0	0	0	0	46	46	13.20
3	359,142	8.24	R-18	R-22	0	0	0	63	56	32	151	18.31
4	159,398	3.66	R-18	R-22	0	0	46	0	0	20	66	18.04
5	195,031	4.48	R-18	R-22	0	0	92	0	0	0	92	20.55
6	385,519	8.85	R-18/MX	COM	120,350	0	0	0	0	0	0	0.00
7**	457,657	10.51	R-18	R-22	127,575	0	20	132	0	78	230	21.89
8***	185,514	4.26	R-18	R-22	0	0	16	28	0	41	85	19.96
12	410,689	9.43	R-18	R-30	0	85	0	183	0	0	268	28.43
13	433,662	9.96	R-18	R-30	0	0	0	132	96	6	234	23.50
14	78,035	1.79	R-18	MX	23,200	0	0	0	0	0	0	0.00
TOTALS	2,883,476	66.20			271,125	85	174	538	152	242	1,191	
*area calculations exclude existing public rights-of-way												
**area calculations exclude office (195,076sf) and open space areas (70,270sf)												
***area calculations exclude open space area adjacent to NE 18th Street (51,888sf)												

Site Plan Development Assumptions

Townhouses

- Average floorplate 20'x35'
- Average 1,600sf living space,
- Units range from 15-25' wide, average 20' wide
- 1-2 car garage on ground floor with 2 floors above
- 2-3 bedrooms
- Private open space in rear averaging 15x25'
- Typical internal access 20' wide with 5-10' drive/entry
- Planting strip/tree for each unit



Left image – example of townhouses from street; Right image includes townhouses from private internal court; note planting strips in front of each unit.

Lowrise Apartments

- Average floorplate 65' wide and variable length
- In-building parking at grade or partially subgrade
- Two-three floors of apartments over parking
- Some open surface level parking with most buildings
- Average unit size 1,000sf
- Assume actual units vary from 600-1,500sf



Lowrise apartment example. In this example, parking is below grade. It's assumed that parking would occupy the first floor or a floor partially below grade.

Walkup Apartments

- Building size/layout based on Mission Hills complex
- Building floorplates average 65' x 85'
- Buildings are two-three floors
- Units are served by surface parking
- Average unit size 1,000sf
- Assume actual units vary from 600-1,500sf



Walk-up apartment examples – Mission Hills building on the left. Image on the right shows a good example with landscaping.

Commercial

- Building sizes and widths vary from 3,000-10,000 sf
- One drive-through restaurant is included
- All commercial uses are served by surface parking lots
- Building fronting on the new internal street (115th) have pedestrian-friendly facades (see example below)



Left image includes pedestrian-oriented facades along internal street. Right image shows another mixed-retail building.

Office Buildings

- Floorplates are 80-100' wide
- Parking includes some combination of below grade, at-grade in-building, and surface parking
- Two-floor of office uses above one parking level



Office building examples

Streets and Internal Roads

- NE 115th Ave in the commercial area features two lanes and on-street parking between intersections; On-street parking is not included in the office area
- Through streets in the residential areas have on-street parking on one side (NE 115th Ave, NE 22nd & 23rd Streets). Bicycle lanes are on opposite sides of street.
- Other private internal roads generally do not include parallel parking.
- Sidewalks, street trees, and planting strips are included on all public and private internal streets, except townhouse auto courts and surface parking lots feature shared auto/ped space.

Trail Corridors

- Most trails look and function like internal sidewalks, about 5' wide; Some of the longer, centralized trails connecting larger open spaces maybe wider (8-10') to allow for pedestrians and bicycle use.
- Trail corridors between buildings usually have 5-10' of landscaping on each side, then about 10-15' of semi-private open space for individual townhouse/apartment units in the adjacent uses. These spaces are separated from the trails by low level fencing and/or low hedges.



Trail examples



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

October 23, 2018

Project #: 22152

Eric Hahn, PE
City of Vancouver Public Works
4500 SE Columbia Way
Vancouver, WA 97668-1995

RE: Four Seasons South Subdivision (PRJ-156552/PIR-64574)

Dear Eric,

This letter documents the traffic impacts of the proposed Four Seasons South senior housing development located along NE 16th Street, between NE 112th Avenue and NE 115th Avenue. The proposed development includes opening NE 16th Street to through traffic between NE 112th Avenue and NE 118th Avenue. Site development is expected to commence in 2019 with full build-out and occupancy in 2020.

Based on the traffic analysis, and subject to City of Vancouver direction, the following traffic control improvements are recommended in conjunction with site development in accordance with City of Vancouver standards and the *Manual on Uniform Traffic Control Devices* (MUTCD):

- A stop sign should be installed on the NE 115th Avenue (northbound) approach to NE 16th Street.
- A stop sign should be installed on the NE 118th Avenue (southbound) approach to NE 16th Street.
- Stop signs should be installed on all three of the proposed site access (southbound) approaches to NE 16th Street.
- A stop sign should be installed on the NE 16th Street (westbound) approach to NE 112th Avenue.

In addition, a southbound left-turn lane should be striped on NE 112th Avenue at NE 16th Street in conjunction with site development. Recognizing the back-to-back northbound left-turn lane to the north and subject to City direction, the southbound turn lane should provide at least 50 feet of storage. No other off-site improvement mitigation needs were identified to support the proposed site development.

Finally, it is recommended that above-ground utilities, monuments, fencing, and vegetation be appropriately located and maintained on-site and at the NE 112th Avenue & NE 16th Street intersection to preserve adequate intersection sight lines per City of Vancouver standards.

The methodology of our analysis, pertinent findings, and our recommendations are documented in this report.

FILENAME: ||KITTELSON.COM|FS|H_PROJECTS|22|22152 - FOUR SEASONS SOUTH SUBDIVISION|REPORT|FINAL|SEPTEMBER 2018
TIA|22152_FOURSEASONS_UPDATEDREP_10232018.DOCX

INTRODUCTION

Four Seasons Subdivision, LLC, is proposing development of up to 70 age-restricted residential homes on approximately 9.55 acres located at 1611 NE 112th Avenue in Vancouver, WA. The four existing agricultural-related structures located on the site will be removed. The subdivision site is located north of NE 16th Street and east of NE 112th Avenue. Access to homes within the new subdivision will be via NE 16th Street, to both NE 112th Avenue and NE 118th Avenue. Figure 1 shows the site vicinity map and Figure 2 shows the proposed site plan.

SCOPE OF THE REPORT

This analysis determines the transportation-related impacts associated with the proposed senior housing development. The study intersections and overall study area for this project were determined based on a review of existing travel patterns, the traffic impact analysis requirements pursuant to Vancouver Municipal Code (VMC) Sections 11.80.080 and 11.80.130, the City's Traffic Study Guidelines, and direction provided by City of Vancouver staff during the August 23, 2018 pre-application meeting.

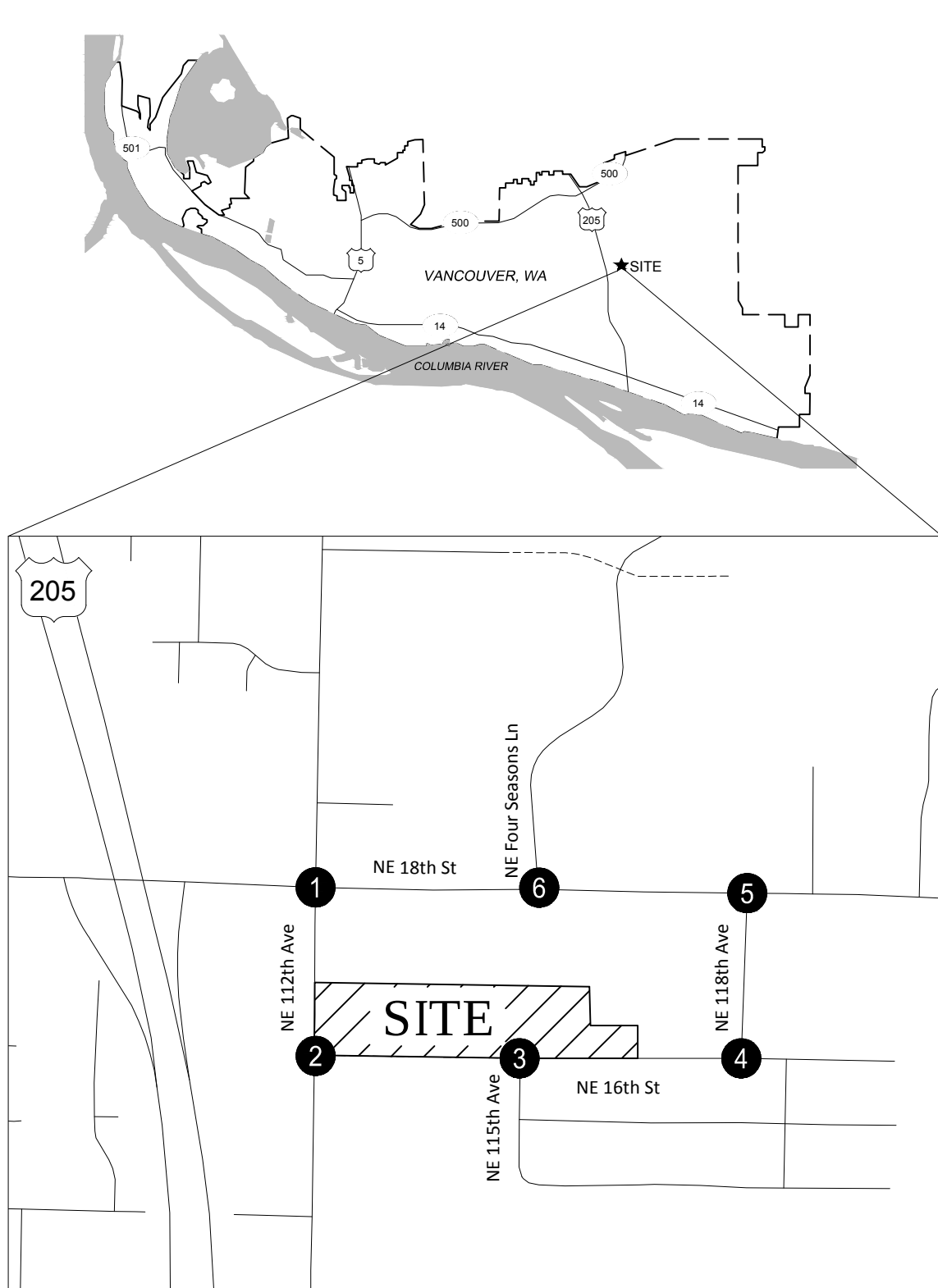
Analysis Periods

Weekday a.m. and p.m. peak hour traffic conditions were modeled at the study intersections. Traffic counts were collected in September 2018. Vehicle counts along NE 18th Street were generally increased to balance with adjacent intersections with no intermediate driveways. *Appendix "A" includes the count data at each of the study intersections. Note that though the Peak Hour Factors calculated at the NE 115th Avenue & NE 16th Street and NE 118th Avenue & NE 16th Street intersections during the p.m. system peak hour were 1.00 and 1.01, respectively, a more reasonable Peak Hour Factor of 0.80 was used for all existing and proposed internal neighborhood intersections during the a.m. and p.m. analysis periods.*

Study Intersections

Six study intersections were identified by City of Vancouver staff as shown in Figure 1 and listed below.

1. NE 18th Street & NE 112th Avenue
2. NE 16th Street & NE 112th Avenue
3. NE 16th Street & NE 115th Avenue
4. NE 16th Street & NE 118th Avenue
5. NE 18th Street & NE 118th Avenue
6. NE 18th Street & NE Four Seasons Lane



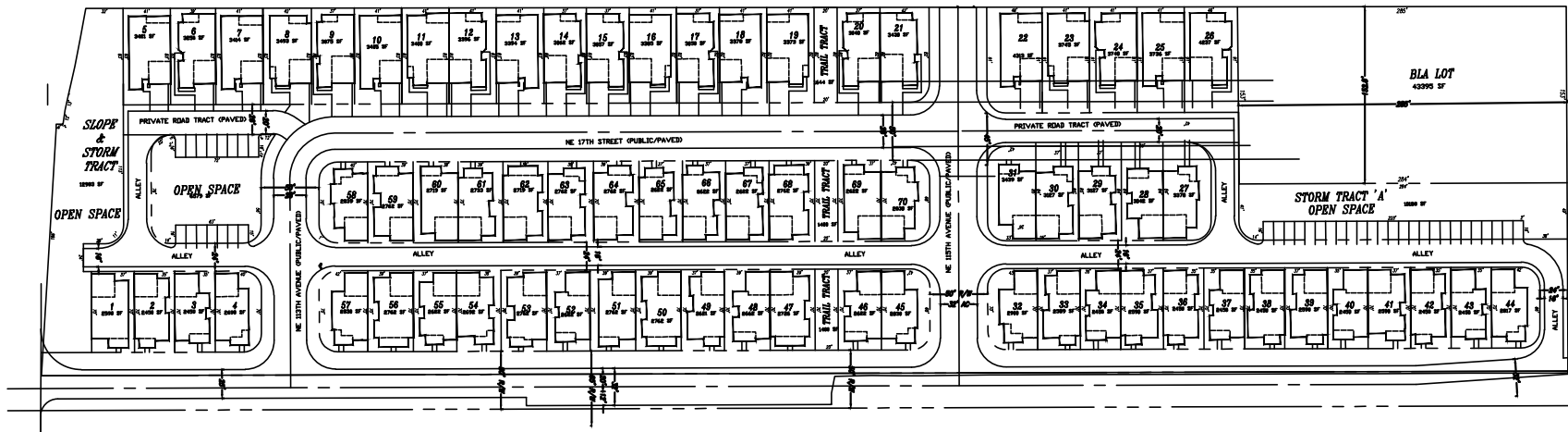
LEGEND

- Study Intersections

**Site Vicinity
Vancouver, Washington**

Figure
1

H:\12\122152 - Four Seasons South Subdivision\report\figs\122152_2018_Figures.dwg Oct 18, 2018 - 8:05am - clougherty Layout Tab: SitePlan



The remaining sections of this report address the following transportation issues:

- Trip generation and distribution estimates for the proposed senior housing development;
- Concurrency corridor trip assignment;
- Existing land use and transportation system conditions within the site vicinity;
- Forecast year of opening (2020) baseline traffic conditions during the weekday a.m. and p.m. peak hours;
- Forecast year of opening (2020) total traffic conditions with full build-out of the site during the weekday a.m. and p.m. peak hours;
- Five year build out (2025) with site traffic conditions during the weekday a.m. and p.m. peak hours;
- Study intersection crash history review;
- Signal warrant analysis at the NE 16th Street & NE 118th Avenue intersection;
- Forecast year of opening (2020) total traffic conditions with full build-out of the site, assuming alternate site access via the NE 18th Street & NE Four Seasons Lane intersection;
- Five year build out (2025) total traffic conditions with full build-out of the site, assuming alternate site access to the NE 18th Street & NE Four Seasons Lane intersection;
- Intersection sight distance analysis; and,
- Conclusions and recommendations.

ANALYSIS METHODOLOGY

Intersection Levels-of-Service

All level-of-service analyses described in this report were performed in accordance with the procedures stated in the *2000 Highway Capacity Manual* (Reference 1). *A description of level-of-service and the criteria by which they are determined is presented in Appendix "B."* Appendix "B" also indicates how level-of-service is measured and what is generally considered the acceptable range of level-of-service.

Peak 15-minute flow rates were used in the evaluation of all intersection levels of service to provide analyses based on a reasonable worst-case scenario. For this reason, the analyses reflect conditions that are only likely to occur for 15 minutes out of each average peak hour.

Operating Standards

City of Vancouver Municipal Code Section 11.80.130.B states the following:

A proposed development that adds at least five net new peak hour trips to an intersection approach operating at an LOS E or lower within the required traffic impact analysis area may be denied based upon any of the following:

- 1. For signalized intersections, when off-site intersection conditions are at a LOS F, or*
- 2. For signalized intersections, when the LOS E and the volume to capacity ratio is greater than 0.95, or*
- 3. For unsignalized intersections, when the volume to capacity ratio for any lane on any approach is greater than 0.95, and*
- 4. When significant traffic hazards would be caused or materially aggravated by the proposed development.*

All operational analyses were compared to these standards and were prepared using Synchro 10 software.

EXISTING CONDITIONS

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of roadways within the study area. These conditions will be compared with future conditions later in this report. Kittelson & Associates, Inc. (KAI) staff visited and inventoried the proposed development site and surrounding area in September 2018 to observe site conditions, adjacent land uses, existing traffic operations, and transportation facilities in the study area.

Site Conditions and Adjacent Land Uses

The majority of the study site is currently undeveloped. Four agricultural related buildings are located on the western portion of the site fronting NE 112th Avenue, accessible via a gated driveway connection to NE 112th Avenue, a gated driveway connection via NE 16th Street and an unpaved path to the NE 18th Street & Four Seasons Lane intersection. An existing water utility facility and existing residential development borders the site to the south along NE 16th Street, as well as some existing residential development to the east.

Adjacent Roadway Facilities

Table 1 summarizes the existing transportation facilities and roadways in the study area.

Access between NE 112th Avenue and NE 118th Avenue along NE 16th Street is currently gated approximately 60 feet west of NE 115th Avenue.

Table 1. Existing Transportation Facilities and Roadway Designations

Roadway	Functional Classification ¹	Number of Travel Lanes	Posted Speed (mph)	Sidewalks?	Bicycle Lanes?	Raised Median?	On-Street Parking?
NE 18 th Street	Principal Arterial	4-5	35	Yes	Yes	Portions	No
NE 112 th Avenue	Principal Arterial	4-5	35	Partial ²	Partial ³	No	No
NE 118 th Avenue	Local Collector	2	Not Posted	No	No	No	Yes ⁴
NE Four Seasons Lane	Collector Arterial	2	Not Posted	Yes	No	No	No
NE 16 th Street	Neighborhood Circulator	1-2 ⁵	Not Posted	Partial on South Side	No	No	Yes ⁵
NE 115 th Avenue	Neighborhood Circulator	2	Not Posted	Yes	No	No	Yes ⁴

¹ Source: *City of Vancouver Arterial Street System and Classification Map*, Adopted June 19, 2017

² Sidewalks are complete along both sides of NE 112th Street from NE 18th Street to the south for 350 feet towards NE 16th Street. From there, sidewalk continues to the south only on the west side of NE 112th Street.

³ A bike lane exists on both directions of NE 112th Avenue, beginning approximately 300 feet south of the intersection with NE 18th Street and continues to the north on both directions of NE 112th Avenue.

⁴ Roadway width available for parking but is not striped. Vehicles observed parking on both sides of roadway.

⁵ NE 16th Avenue currently narrows to one through lane and one row of parked cars (south side of roadway) approximately 325 feet west of NE 118th Avenue.

Pedestrian and Bicycle Facilities

As indicated by Table 1, sidewalks and bicycle facilities in the study area are generally intermittent and the available facilities appear to have been completed in conjunction with adjacent development projects as well as the recently completed I-205 interchange with NE 18th Street and NE 18th Street widening. Sidewalk facilities are not provided along the site frontage of NE 16th Street today.

Transit Facilities

C-Tran currently offers four fixed transit routes within the general site vicinity, though none are within a ¼ mile walking distance of the site (Reference 2). Each route is summarized below.

- Route 37 (Mill Plain/Fisher's) route operates between Downtown Vancouver and the Fisher's Landing Transit Center, including service just south of the project vicinity, along SE Mill Plain Boulevard. The service operates on weekdays from approximately 5:00 a.m. to 12:45 a.m., with 15-minute headways for most of the day. On weekends, the route operates with 20-minute headways Saturdays and 30-minute headways on Sundays.
- Route 177 (Evergreen Express) provides bus service between the Evergreen Park & Ride and the downtown Portland Transit Mall, including service along NE 18th Street. Service along this route operates weekdays only, with three morning trips southbound between approximately 6:00 a.m. and 7:00 a.m. and one afternoon southbound bus at 4:45 p.m. The northbound schedule operates one morning bus at 6:30 a.m. and three afternoon trips between approximately 3:50 p.m. and 5:20 p.m.

- Route 30 (Burton) route operates between Downtown Vancouver and the Fisher's Landing Transit Center, including service along NE 28th Street. The service operates on weekdays from approximately 5:30 a.m. to 9:30 p.m., with 30-minute headways for most of the day. On weekends, the route operates with 30-minute headways Saturdays and hourly headways on Sundays.
- Route 80 (Van Mall/Fisher's) provides bus service between the Vancouver Mall Transit Center and the Fisher's Landing Transit Center, including service along NE 28th Street. Service along this route operates weekdays between approximately 5:30 a.m. and 9:00 p.m. with 30-minute headways. The route operates with 45-minute headways on weekends.

The transit stops for Routes 30 and 80 are located approximately 0.75 miles north of the site at the NE 28th Street & NE Four Seasons Lane intersection. The transit stop to access Route 37 is located approximately one mile south of the project site at the NE 112th Ave (NE Chkalov Drive) and SE Mill Plain Boulevard. Additionally, the Evergreen Park and Ride is located approximately 1.25 miles east of the project site, for access to Route 177.

TRIP GENERATION

Trips for the proposed senior housing development were estimated using trip rates obtained from *Trip Generation Manual, 9th Edition* (Reference 3), as shown in Table 2. Overall, the development is estimated to generate a total of 258 net new trips, 42 (15 inbound / 27 outbound) occurring during the a.m. peak hour, and 34 (21 inbound / 13 outbound) during the p.m. peak hour. Note that the weekday a.m. and p.m. peak hour trip rates were calculated using the fitted curve equation in the *Trip Generation Manual*.

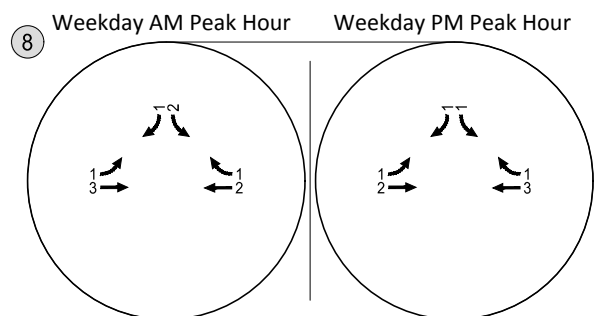
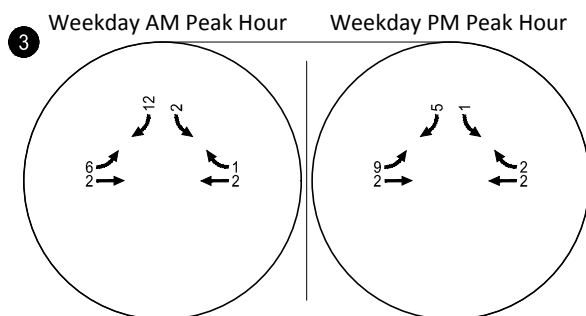
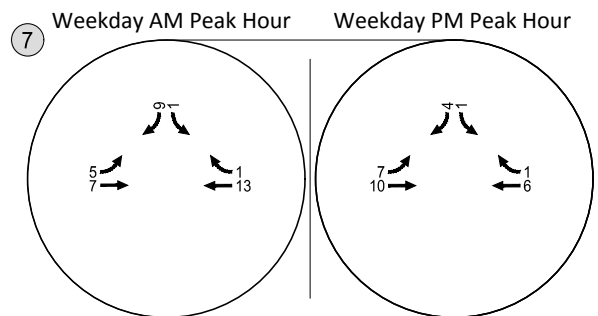
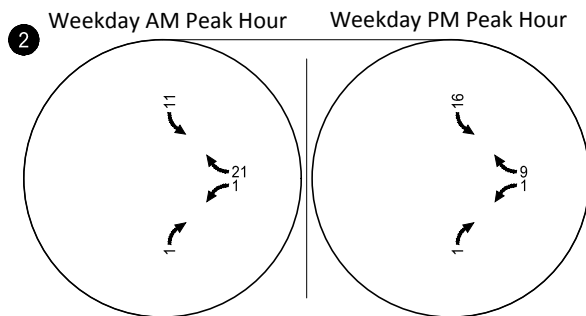
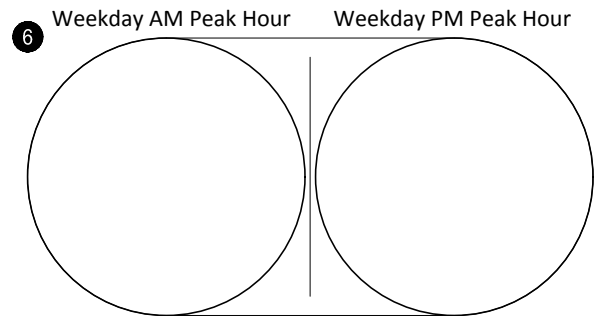
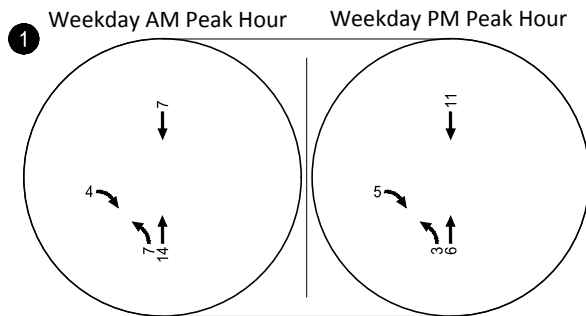
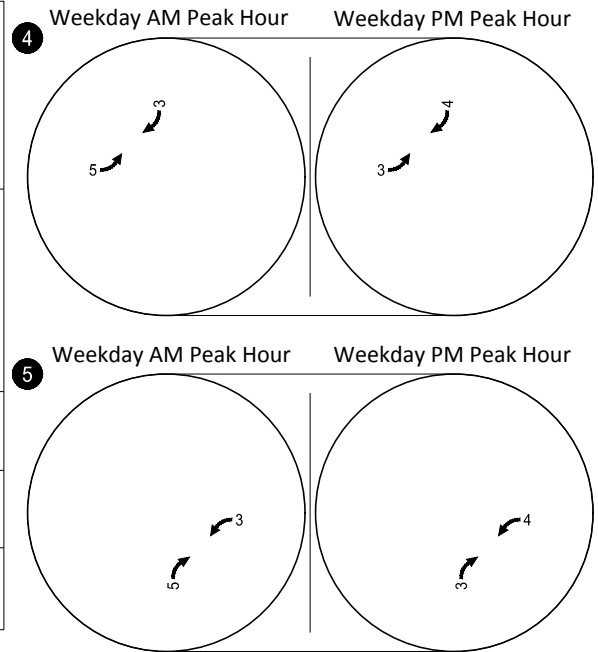
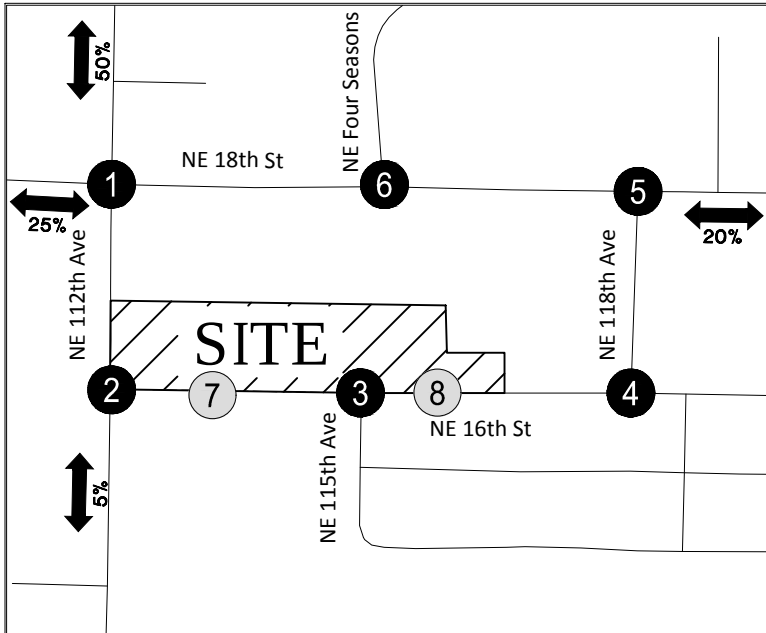
Table 2. Trip Generation Estimate

Land Use	ITE Code	Size (units)	Weekday Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Senior Adult Housing - Detached	251	70	258	42	15	27	34	21	13

TRIP DISTRIBUTION AND ASSIGNMENT

The site-generated trips shown in Table 2 were distributed to the study area roadways based on a trip distribution pattern derived from the Southwest Washington Regional Transportation Council travel demand model (select zone analysis of Transportation Analysis Zone 624) as well as existing travel patterns in the site vicinity.

Figure 3 shows the estimated trip distribution pattern and site-generated traffic volumes assigned to the six study intersections as well as to the new NE 16th Avenue connection from NE 115th Avenue to NE 112th Avenue. The estimated site distribution pattern was determined based on the travel demand model and considering existing traffic patterns, the site location and surrounding transportation system.



LEGEND

- Trip Distribution Percentage
- Study Intersections
- Site Access Intersections

**Trip Distribution Pattern and
Site-Generated Trips
Vancouver, Washington**

Figure
3

Concurrency Corridor Trip Assignment

Per City of Vancouver requirements, Table 3 summarizes the estimated number of site-generated weekday p.m. peak hour trips entering each of the City's adopted concurrency corridors. Assigned trips were recorded counting trips only once along each of the specified corridors.

Table 3. Concurrency Corridor Weekday PM Peak Hour Trip Assignment

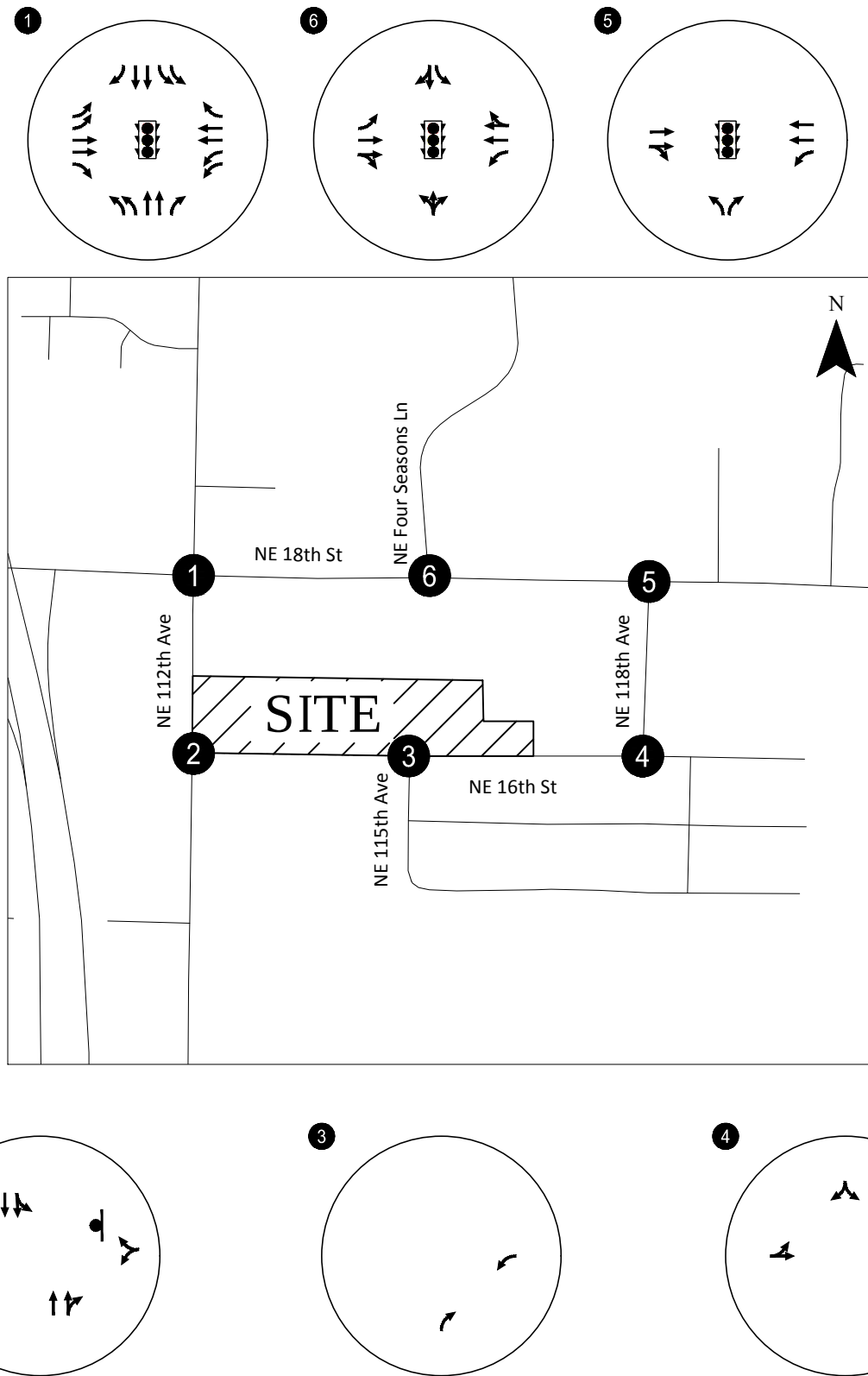
Corridor Name	Corridor Limit	PM Peak Trips to Corridor
Mill Plain Blvd.	Fourth Plain to I-5	-
	I-5 to Andresen	-
	Andresen to I-205	-
	I-205 to 136 th Ave.	-
	136 th Ave. to 164 th Ave.	-
	164 th Ave. to 192 nd Ave.	-
St. Johns / Ft. Van Way	Mill Plain to 63 rd St.	-
Fourth Plain Blvd.	Mill Plain to I-5	-
	I-5 to Andresen	-
	Andresen to I-205	-
	I-205 to 162 nd Ave.	-
Andresen Road	Mill Plain to SR500	-
	SR500 to 78 th St.	-
112 th Avenue	Mill Plain to 28 th St.	27
	28 th St. to 51 st St.	17
164 th /162 nd Avenue	SR14 to SE 1 st St.	-
	SE 1 st St. to Fourth Plain	-
Burton Road / 28 th Street	18 th St. to 112 th Ave.	8
	112 th Ave. to 138 th Ave.	2
	138 th Ave. to 162 nd Ave.	-
18 th Street	112 th Ave. to 138 th Ave.	7
	138 th Ave. to 164 th Ave.	2
136 th /137 th Avenue	Mill Plain to 28 th St.	1
	28 th St. to Fourth Plain	-
192 nd Avenue	SR14 to NE 18 th St.	-

STUDY INTERSECTION OPERATIONS REVIEW

This section provides an overview of operations at the study intersections under existing conditions as well as under future forecast background and total traffic conditions. The analysis determined that the study intersections all operate acceptably today and will continue to do so in the future, during both the weekday a.m. and p.m. peak hours. Figures 5 through 8 illustrate weekday a.m. and p.m. peak hour conditions under existing and future traffic conditions. Derivation of the existing and future conditions analysis at the study intersections is further described below.

Existing 2018 Traffic Conditions

Figure 4 illustrates the existing lane configuration and traffic control devices at each of the study intersections. Figure 5 presents the existing traffic volumes and corresponding intersection operations. All study intersections satisfy City of Vancouver operational thresholds under existing conditions. *Appendix "C" contains the existing operational analysis worksheets.*

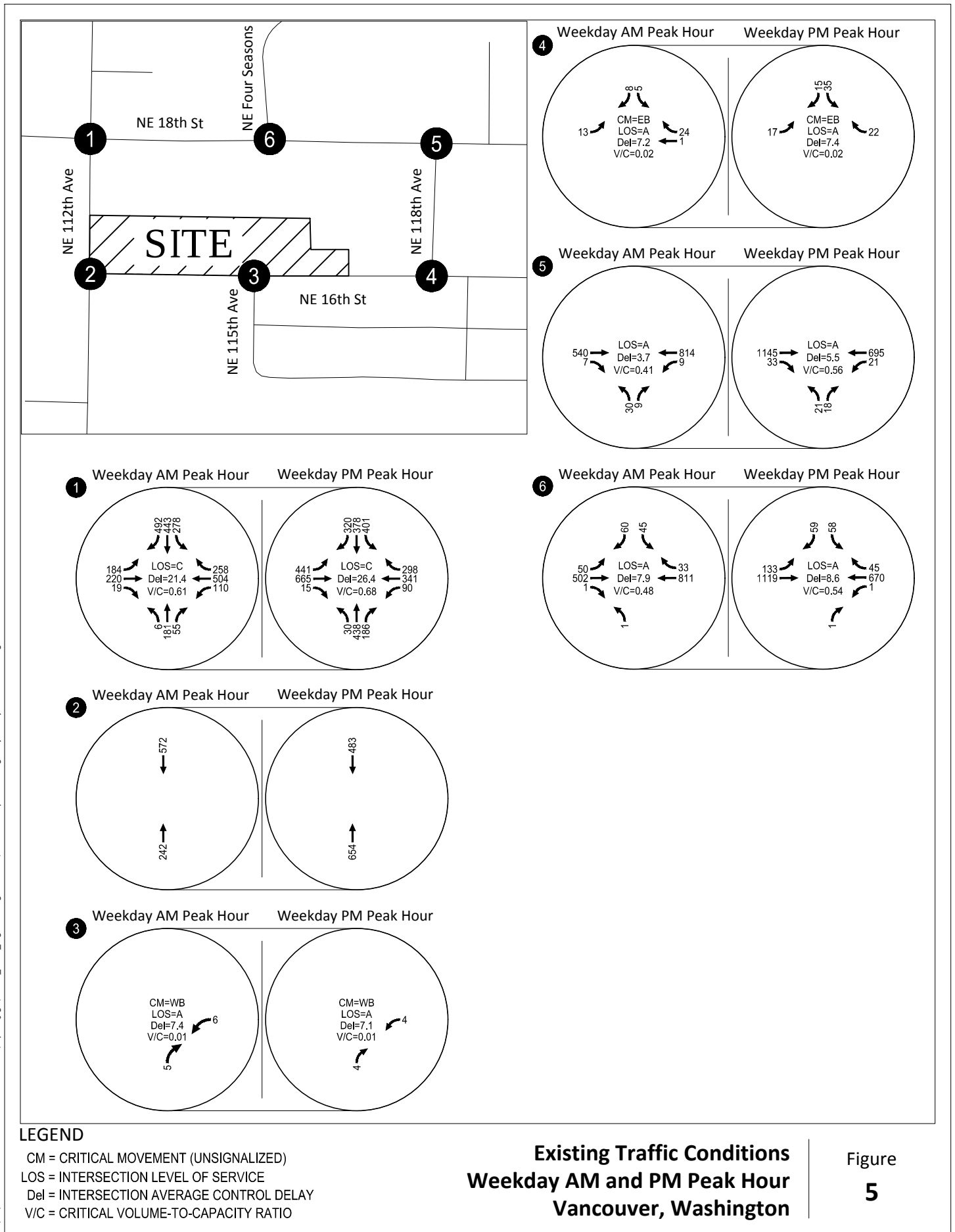


LEGEND

- # - Study Intersections
- - Stop Sign

Existing Lane Configurations and Traffic Control Devices
Vancouver, Washington

Figure
4



**Existing Traffic Conditions
Weekday AM and PM Peak Hour
Vancouver, Washington**

**Figure
5**

Opening Year 2020 Baseline Traffic Conditions

The year 2020 baseline traffic analysis identifies how the study area's transportation system will operate without the proposed development. This analysis includes the addition of estimated trips from general growth in the region (application of a 1.5 percent annual growth) but does not include traffic from the proposed development. In-process trips associated with the following nearby developments were also added to the study intersections:

- Four Seasons Subdivision residential development, currently under construction to the north of this study;
- Block 1618 Apartments, to be developed just west of this study site, across NE 112th Avenue;
- Mountain View Place Apartments, currently under construction to the in the northwest quadrant of the NE 112th Avenue and 18th Street intersection.

As shown in Figure 6, inclusive of regional growth, all of the study intersections continue to operate acceptably under year 2020 baseline conditions. *Appendix "D" contains the 2020 baseline operational analysis worksheets, as well as Figures D-1 through D-3, showing the in-process trip assignments for each development listed above.*

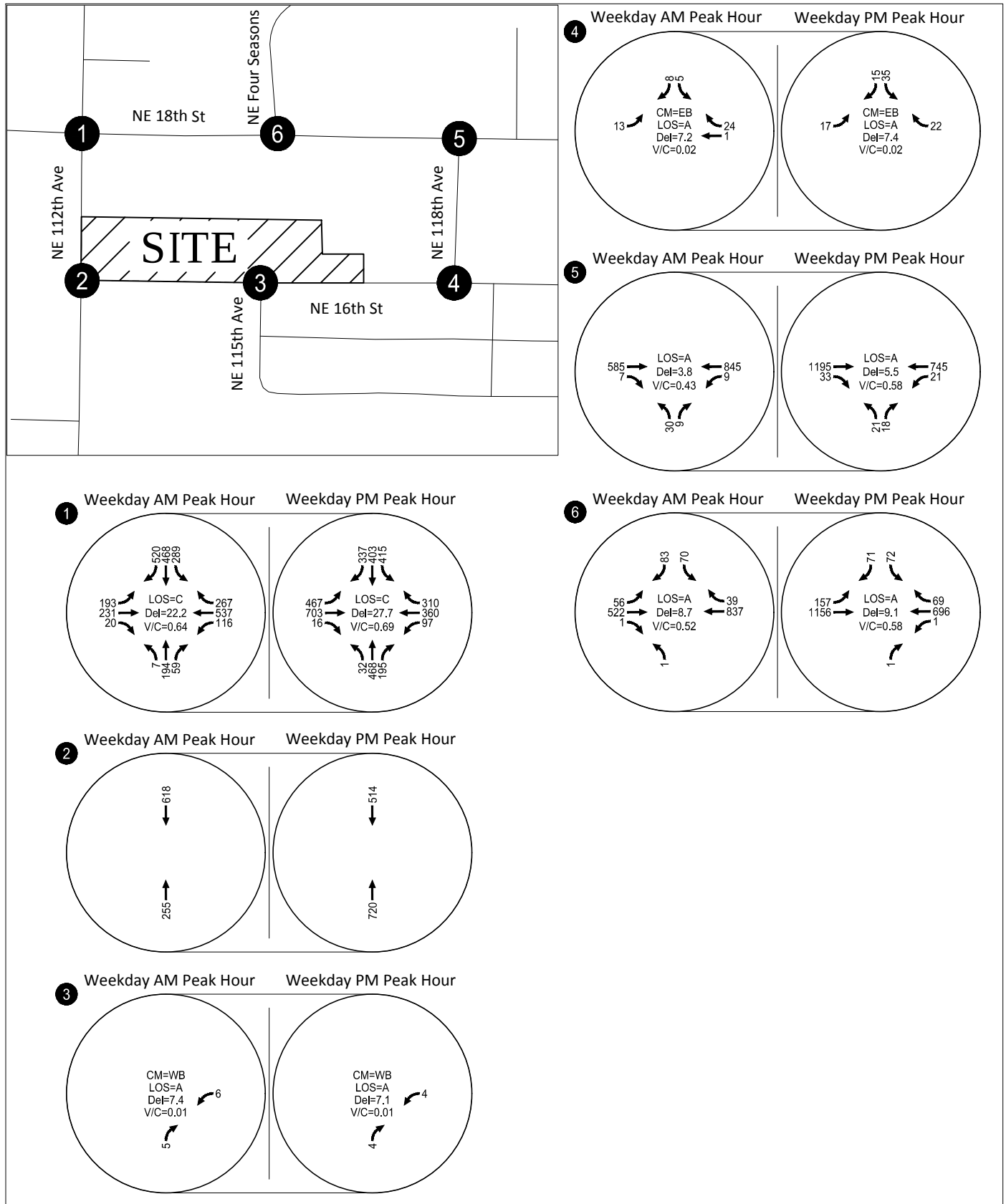
Opening Year 2020 With-Project Conditions

The site-generated trips in Figure 3 were added to the baseline traffic volumes in Figure 6 to produce year 2020 build-out traffic volumes. Also added to each study intersection were redistributed trips, due to existing neighborhood trips that would by 2020 be able to use the extension of NE 16th Street to NE 112th Avenue (provided in conjunction with site development) to enter and exit the existing neighborhood east of the site. It was assumed that the 80% of existing neighborhood trips currently using the NE 118th Street and NE 18th Street intersection for travel north, west or south would instead take the connection of NE 16th Street west to NE 112th Avenue.

Figure 7 illustrates the resultant "with-project" conditions. As shown in Figure 7, all study intersections operate acceptably under build-out year 2020 with-project traffic conditions. *Appendix "E" contains the year 2020 with-project operational analysis worksheets, as well as Figure E-1 showing the redistribution of existing trips.*

Future Five-year (2025) With-Project Conditions

Year 2025 traffic volumes were projected assuming continued 1.5 percent annual growth. In-process trips, site-generated trips estimated in Table 2, and redistributed trips as described above, were then added to each of the study intersections based on the estimated trip distribution pattern shown in Figure 3. Figure 8 illustrates the resultant "with-project" conditions for future year 2025. As shown in Figure 8, all study intersections continue to operate acceptably under future year 2025 traffic conditions. *Appendix "F" contains the year 2025 with project operational analysis worksheets.*

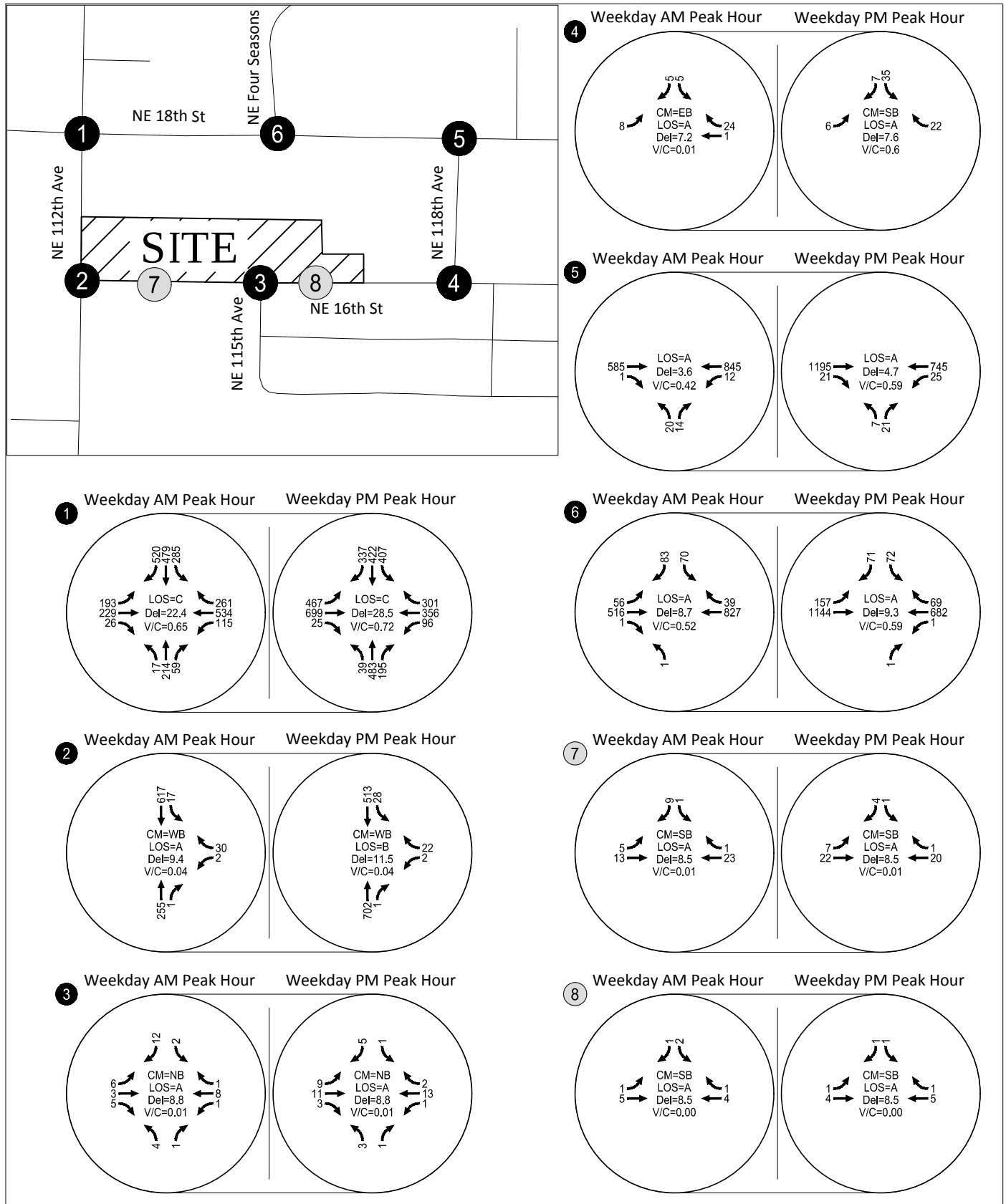


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 Del = INTERSECTION AVERAGE CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**Year 2020 Baseline Traffic Conditions
 Weekday AM and PM Peak Hour
 Vancouver, Washington**

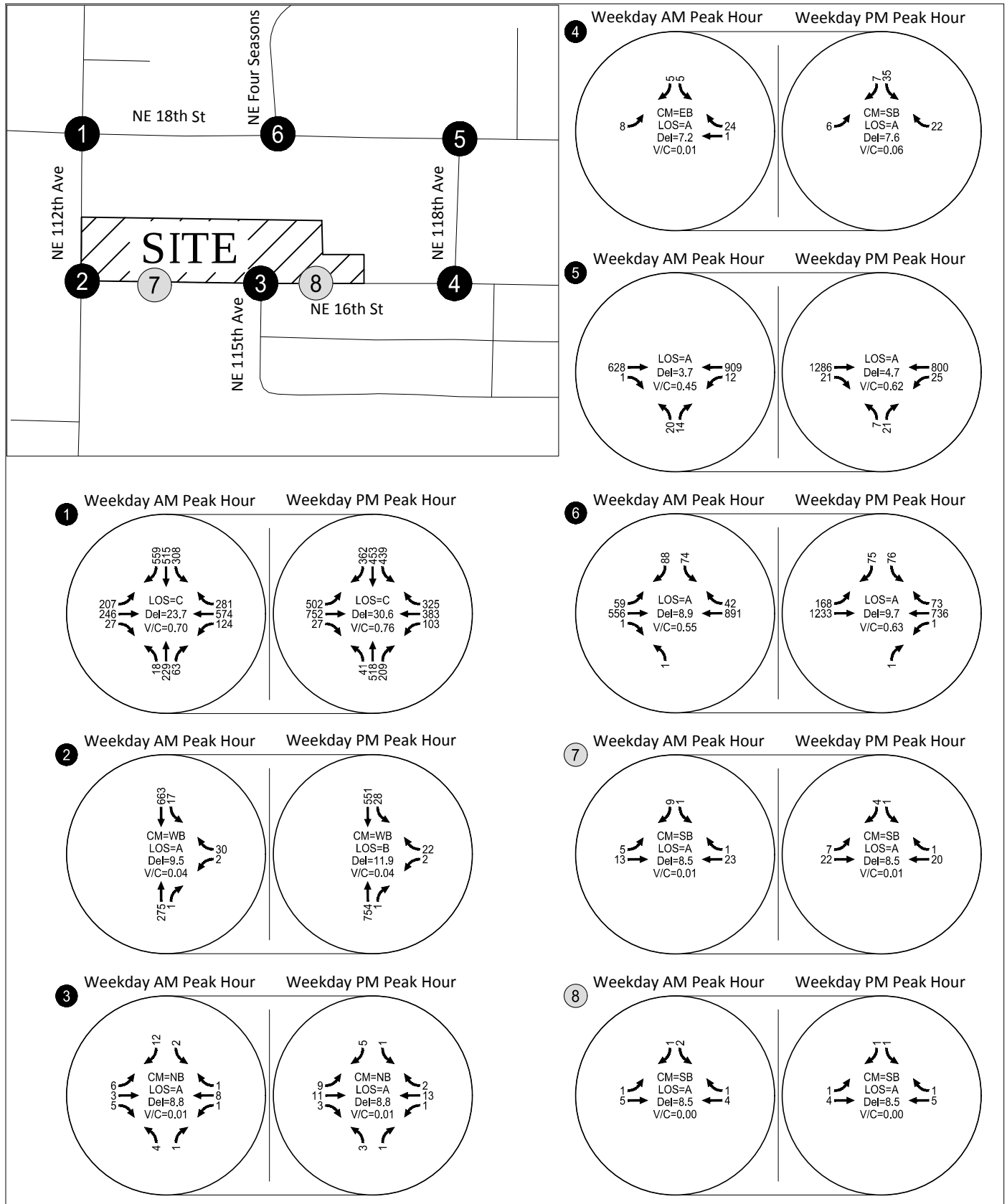
Figure
6

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 Del = INTERSECTION AVERAGE CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**Year 2020 Total Traffic Conditions
 Weekday AM and PM Peak Hour
 Vancouver, Washington**

Figure
7

**LEGEND**

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 Del = INTERSECTION AVERAGE CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**Year 2025 Total Traffic Conditions
 Weekday AM and PM Peak Hour
 Vancouver, Washington**

Figure
8

Signalized Intersection Queuing Analysis

Queue lengths were evaluated at each of the signalized study intersections to identify potential queue spillback occurring during year 2025 with weekday a.m. and p.m. peak hour project trips. Table 4 summarizes 95th percentile queue lengths estimated by Synchro 10 at the each of the study intersection's respective turn lanes. The 95th percentile queue lengths represent the worst-case queue that occurs 5% of the time during the peak hour.

Table 4. Year 2025 with Project Traffic 95th Percentile Queue Lengths at Signalized Study Intersections

Intersection	Queue Length (feet)	Eastbound		Westbound		Northbound		Southbound	
		Left	Right	Left	Right	Left	Right	Left	Right
NE 112 th Avenue & NE 18 th Street	Storage ¹	150	150	260	150	310	165	310	125
	AM Peak	125	0	100	100	25	25	175	250
	PM Peak	275*	0	75	225	50	125	225	50
NE Four Seasons Lane & NE 18 th Street	Storage ¹	200	-	175	-	-	-	125	-
	AM Peak	50	-	0	-	-	-	75	-
	PM Peak	100	-	25	-	-	-	100	-
NE 118 th Avenue & NE 18 th Street	Storage ¹	-	-	140	-	120	270 ²	-	-
	AM Peak	-	-	25	-	25	25	-	-
	PM Peak	-	-	25	-	25	25	-	-

Notes:

95th percentile queue lengths have been rounded up to the nearest car length, assuming one vehicle equals 25 feet;

Bold and highlighted cells indicate 95th percentile queue lengths greater than the storage length;

¹Storage measured as the length of white gore stripe for turn lane;

²There is approximately 270 feet of storage for the northbound right turn lane before potential blockage of an existing neighborhood driveway;

*95th percentile volume exceeds capacity, queue may be longer.

As shown in Table 4, the southbound right-turn movement at the NE 112th Avenue & NE 18th Street intersection is projected to experience 95th percentile queues that exceed the existing striped storage length during the weekday a.m. peak hour. Additionally, the westbound right-turn movement and the eastbound left-turn movement are projected to experience 95th percentile queues that exceed the existing striped storage length during the weekday p.m. peak hour. No queue storage length changes are recommended at this time recognizing that:

- The intersection was recently reconstructed, and several projects are planned in the area that will result in the continued evolution of traffic patterns at the intersection.
- The existing taper length for each movement can support storage of 3-4 additional vehicles.
- The proposed development adds no trips to the southbound right-turn, eastbound left-turn and westbound right-turn movements.
- Both the westbound and southbound right-turn lanes currently operate overlap right-turn phases and are projected to operate well under capacity.

Unsignalized Intersection Queueing Analysis

A 95th percentile queueing analysis was completed using HCM 2000 analysis at the unsignalized study intersections. All of the 95th percentile stop-controlled approach queues were projected to be one vehicle length or less and can be accommodated within available storage.

TRAFFIC SAFETY AND CIRCULATION

The traffic safety analysis reviewed potential safety and access issues related to the proposed development and includes consideration of reported collision data at study intersections. Intersection sight distance analysis is also provided.

Collision Analysis

The study intersection collision history was obtained from the Washington Department of Transportation for the period from January 1, 2013 to December 31, 2017. The data was reviewed in an effort to identify potential safety issues. Table 5 summarizes the crash frequency at the study intersections. Generally, the City of Vancouver considers a crash rate greater than one crash per million entering vehicles (MEV) to be an indicator that a potential geometric or operational issue may exist and that further evaluation should be considered.

Table 5. Study Intersection Crash Frequency and Severity (January 2013 through December 2017)

Intersection	No. of Crashes	Crash Type					Crash Severity		Crash Rate ¹
		Rear-End	Object	Turning	Angle	Other	Non-Injury	Injury	
112 th Avenue & NE 18 th St.	21	4	5	5	7	-	16	5	0.32
Four Season Ln. & NE 18 th St.	16	-	5	1	10	-	8	8	0.42
118 th Avenue & NE 18 th St.	5	1	-	-	1	3	1	4	0.14
118 th Avenue & NE 16 th St.	-	-	-	-	-	-	-	-	0
115 th Avenue & NE 16 th St.	-	-	-	-	-	-	-	-	0
112 th Avenue & NE 16 th St.	-	-	-	-	-	-	-	-	0

Note: ¹ Crash rate is calculated as the number of crashes per million entering vehicles. Average daily traffic volumes were estimated using p.m. peak hour total entering volume at the intersection.

As shown in Table 5, there were no reported crashes at three of the six study intersections and each of the study intersections has a crash rate less than 1.0 per million entering vehicles. Additionally, there were no reported crashes involving a fatality during the analysis period considered. Of the seventeen reported injury crashes, eight were related to excessive speed or distracted driving. It is further noted that the NE 18th Street & NE 118th Avenue intersection was widened and signalized in the past year.

No safety-based mitigation needs were identified through review of the available crash data. *Appendix "G" includes the crash data provided for each of the study intersections.*

Intersection Turn Lane Needs

The need for a southbound left-turn lane was evaluated at NE 112th Avenue and NE 16th Street. Utilizing the turn lane guidelines presented in the *WSDOT Design Manual*, it was determined that projected 2025 with-project traffic volumes satisfy the minimum WSDOT volume threshold for providing a southbound left-turn lane. Recognizing the back-to-back northbound left-turn lane to the north and subject to City direction, the existing striped median may be restriped to provide a southbound left-turn lane with at least 50 feet of storage. *Appendix "H" contains the turn lane warrant worksheets.*

Intersection Sight Distance Review

The location of the NE 16th Street connection to NE 112th Avenue was reviewed in the field and appears to offer adequate intersection sight distance. The final site plan design should ensure intersection sight clear areas are provided at each intersection in accordance with City of Vancouver standards. It is recommended that above-ground utilities, monuments, fencing, and vegetation be appropriately located and maintained on-site and at the NE 112th Avenue & NE 16th Street intersection to preserve adequate intersection sight lines per City of Vancouver standards.

Study Intersection Traffic Control Needs

Based on the traffic analysis, and subject to City of Vancouver direction, the following traffic control improvements are recommended in conjunction with site development in accordance with City of Vancouver standards and the *Manual on Uniform Traffic Control Devices* (MUTCD):

- A stop sign should be installed on the NE 115th Avenue (northbound) approach to NE 16th Street.
- A stop sign should be installed on the NE 118th Avenue (southbound) approach to NE 16th Street.
- Stop signs should be installed on all three of the proposed site access (southbound) approaches to NE 16th Street.
- A stop sign should be installed on the NE 16th Street (westbound) approach to NE 112th Avenue.

Intersection Signal Warrant Analysis

Per City of Vancouver request, a signal warrant analysis was completed for NE 16th Street & NE 112th Avenue intersection, in accordance with the *Manual on Uniform Traffic Control Devices*. Signal warrants are not met in the future five-year (2025) with-projection conditions at the NE 16th Street & NE 112th Avenue intersection. *Appendix "I" contains the signal warrant analysis worksheets.*

STUDY INTERSECTION OPERATIONS REVIEW – NORTH ACCESS SCENERIO

This section provides an overview of operations at the study intersections under future forecast total traffic conditions, assuming that the study site will have access to the signalized intersection of NE 18th Street & Four Seasons Lane. The analysis determined that the study intersections will continue to operate acceptably in the future under the alternative access.

Opening Year 2020 With-Project Conditions – North Access Scenario

The site-generated trips in Table 2 were re-distributed to the study intersections, assuming access to the site via the NE 18th Street & NE Four Seasons Lane signalized intersection. Figure 9 presents the site trip

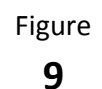
distribution for the north access scenario which were then added to the baseline traffic volumes in Figure 6 to produce the year 2020 North Access build-out traffic volumes shown in Figure 10. Also included at each study intersection were redistributed trips, due to existing neighborhood trips that would use the extension of NE 16th Street to NE 112th Avenue and also access the NE 18th Street & NE Four Seasons Lane signalized intersection.

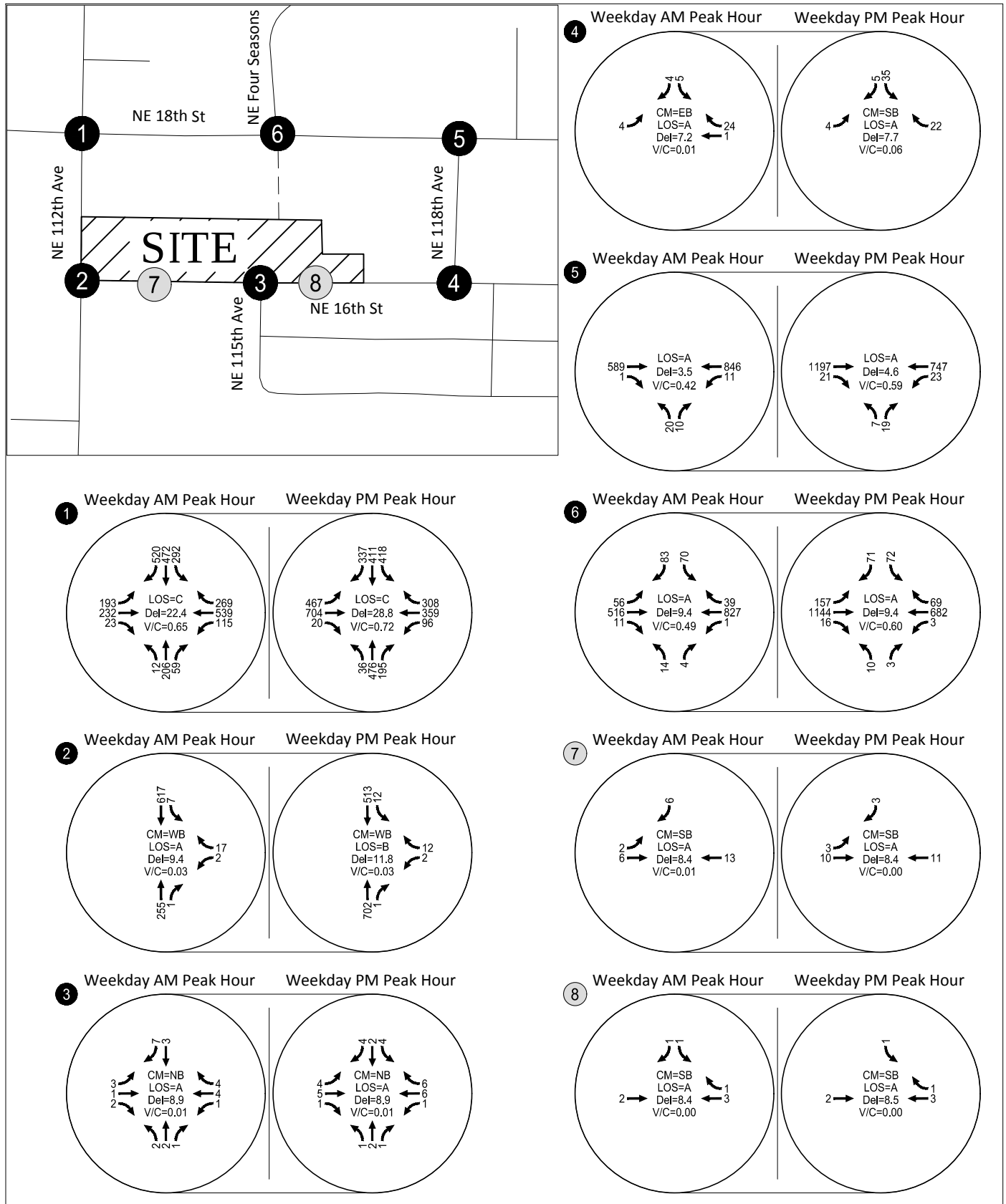
For the future scenario analysis purposes, it was assumed that the lane configuration and signal timing parameters for the northbound approach to the NE 18th Street & NE Four Seasons Lane intersection would match the existing southbound approach.

Figure 10 summarizes the resultant north access scenario “with-project” conditions. As shown in Figure 10, all study intersections operate acceptably under build-out year 2020 with-project traffic conditions. *Appendix “J” contains the year 2020 with-project – north access scenario operational analysis worksheets, as well as Figure J-1 showing the redistribution of existing neighborhood trips.*

Future Five-year (2025) With-Project Conditions – North Access Scenario

Year 2025 traffic volumes were projected assuming continued 1.5 percent annual growth. In-process trips, site-generated trips shown in Figure 9, and redistributed trips as described above, were then added to each of the study intersections based on the estimated trip distribution pattern shown in Figure 9. Figure 11 illustrates the resultant north access scenario “with-project” conditions for future year 2025. As shown in Figure 11, all study intersections continue to operate acceptably under future year 2025 traffic conditions. *Appendix “K” contains the year 2025 with project – north access scenario operational analysis worksheets.*



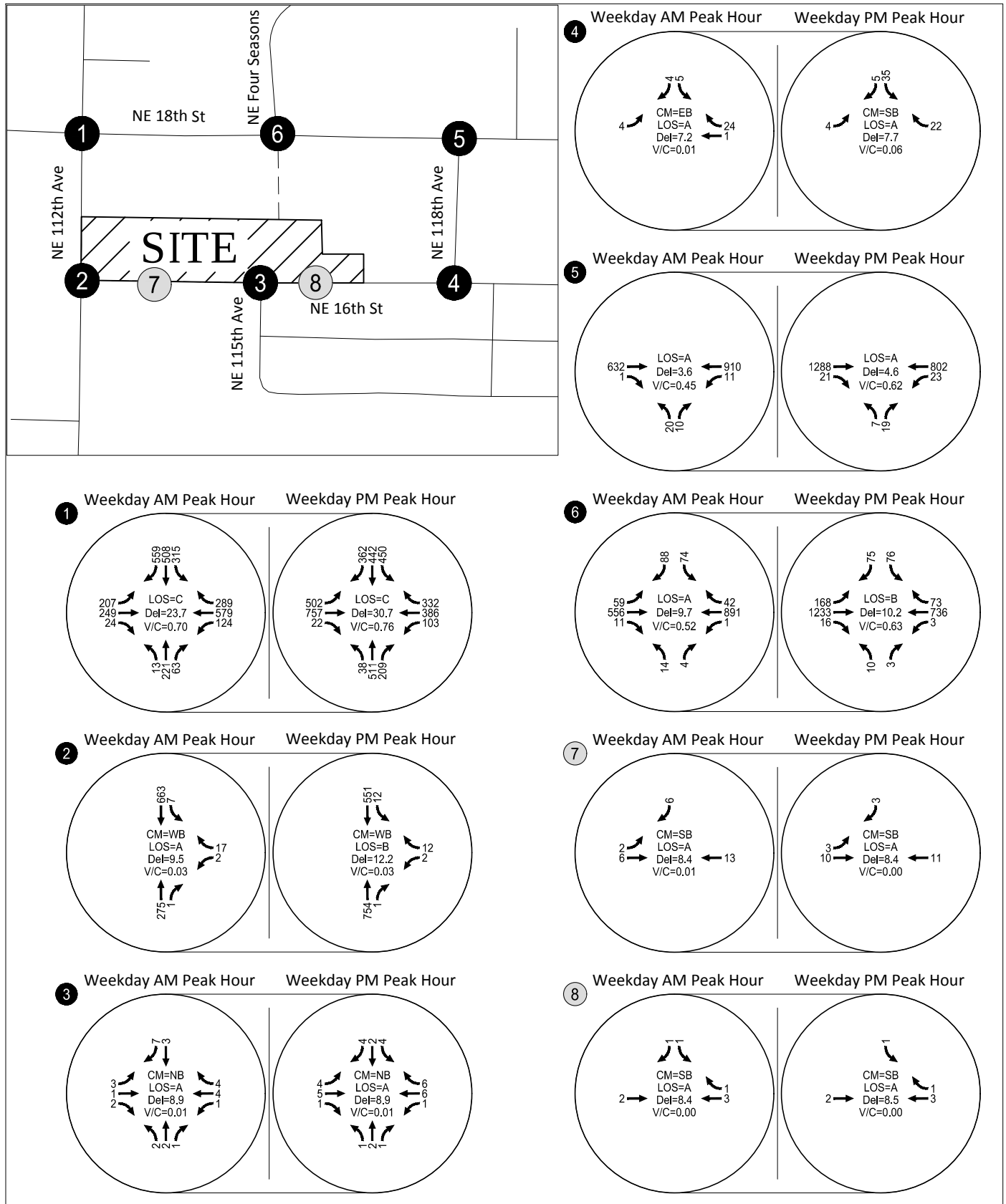


LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 Del = INTERSECTION AVERAGE CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**North Access Scenario - Year 2020 Total
 Traffic Conditions
 Vancouver, Washington**

Figure
10



LEGEND

CM = CRITICAL MOVEMENT (UNSIGNALIZED)
 LOS = INTERSECTION LEVEL OF SERVICE
 Del = INTERSECTION AVERAGE CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**North Access Scenario - Year 2025 Total
 Traffic Conditions
 Vancouver, Washington**

Figure
11

Signalized Intersection Queuing Analysis – North Access Scenario

Queue lengths were re-evaluated at each of the signalized study intersections to identify potential queue spillback occurring during year 2025 with weekday a.m. and p.m. peak hour project trips. Table 6 summarizes 95th percentile queue lengths estimated by Synchro 10 at the each of the study intersection's respective turn lanes.

Table 6. Year 2025 with Project Traffic 95th Percentile Queue Lengths at Signalized Study Intersections

Intersection	Queue Length (feet)	Eastbound		Westbound		Northbound		Southbound	
		Left	Right	Left	Right	Left	Right	Left	Right
NE 112 th Avenue & NE 18 th Street	Storage ¹	150	150	260	150	310	165	310	125
	AM Peak	125	0	100	100	25	25	175	225
	PM Peak	275*	0	75	225	50	125	225	50
NE Four Seasons Lane & NE 18 th Street	Storage ¹	200	-	175	-	125 ²	-	125	-
	AM Peak	50	-	25	-	25	-	75	-
	PM Peak	100	-	25	-	25	-	100	-
NE 118 th Avenue & NE 18 th Street	Storage ¹	-	-	175	-	175	270 ³	-	-
	AM Peak	-	-	25	-	25	25	-	-
	PM Peak	-	-	25	-	25	25	-	-

Notes:

95th percentile queue lengths have been rounded up to the nearest car length, assuming one vehicle equals 25 feet;

Bold and highlighted cells indicate 95th percentile queue lengths greater than the storage length;

¹Storage measured as the length of white gore stripe for turn lane;

²For North Access Scenario analysis, it was assumed that the northbound approach to the NE Four Seasons Lane & NE 18th Street intersection would be striped to include 125 feet of left turn storage, similar to the existing southbound approach;

³There is approximately 270 feet of storage for the northbound right turn lane before potential blockage of an existing neighborhood driveway;

*95th percentile volume exceeds capacity, queue may be longer.

As shown in Table 6, in the north access scenario, the southbound right-turn movement at the NE 112th Avenue & NE 18th Street intersection is projected to experience 95th percentile queues that exceed the existing striped storage length during the weekday a.m. peak hour. Additionally, the westbound right-turn movement and the eastbound left-turn movement are projected to experience 95th percentile queues that exceed the existing striped storage length during the weekday p.m. peak hour. No queue storage length changes are recommended at this time recognizing that:

- The intersection was recently reconstructed, and several projects are planned in the area that will result in the continued evolution of traffic patterns at the intersection.
- The existing taper length for each movement can support storage of 3-4 additional vehicles.
- The proposed development adds no trips to the southbound right-turn, eastbound left-turn and westbound right-turn movements.
- Both the westbound and southbound right-turn lanes currently operate overlap right-turn phases and are projected to operate well under capacity.

Unsignalized Intersection Queueing Analysis – North Access Scenario

All of the 95th percentile stop-controlled study intersection approach queues were projected to be one vehicle length or less and can be accommodated within available storage.

FINDINGS AND RECOMMENDATIONS

Based on the results of this Traffic Impact Analysis, the proposed Four Seasons South Subdivision can be developed while maintaining acceptable study intersection operations. The analysis developed the findings and recommendations listed below.

Findings

- The 70-unit senior housing development is estimated to generate a total of 258 net new trips, with 42 trips (15 inbound / 27 outbound) occurring during the a.m. peak hour, and 34 trips (21 inbound / 13 outbound) during the p.m. peak hour.
- All of the study intersections were found to operate acceptably under existing and future conditions with full build-out of the proposed development.
- No safety-based mitigation needs were identified based on review of historic crash data at the study intersections.
- Analysis of future year 2025 traffic volumes show that signal warrants are not met at the NE 112th Avenue & NE 16th Street intersection.
- All of the study intersections were found to also operate acceptably under future conditions with full build-out of the proposed development in the north access scenario.

Recommendations

- Subject to City of Vancouver direction, installation of the following traffic control improvements are recommended in conjunction with site development in accordance with City of Vancouver standards and the *Manual on Uniform Traffic Control Devices* (MUTCD):
 - A stop sign should be installed on the NE 115th Avenue (northbound) approach to NE 16th Street.
 - A stop sign should be installed on the NE 118th Avenue (southbound) approach to NE 16th Street.
 - Stop signs should be installed on all three of the proposed site access (southbound) approaches to NE 16th Street.
 - A stop sign should be installed on the NE 16th Street (westbound) approach to NE 112th Avenue.
- Above-ground utilities, monuments, fencing, and vegetation should be appropriately located and maintained on-site and at the NE 112th Avenue & NE 16th Street intersection to preserve adequate intersection sight lines per City of Vancouver standards.

- A southbound left-turn lane should be provided on NE 112th Avenue at NE 16th Street. Recognizing the back-to-back northbound left-turn lane to the north and subject to City direction, the southbound turn lane should provide at least 50 feet of storage.

We trust this memorandum adequately addresses the traffic impacts associated with the proposed senior housing development. Please contact us if you have any questions or comments regarding the contents of this analysis.

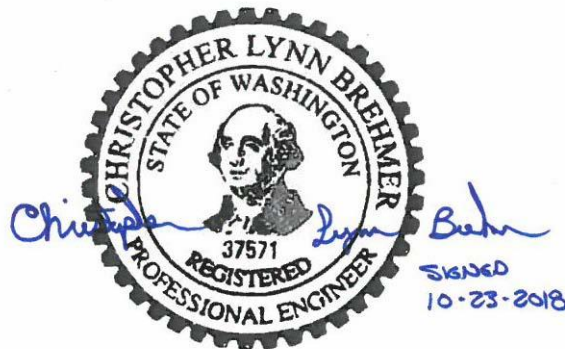
Sincerely,
KITTELSON & ASSOCIATES, INC.

Chris Brehmer

Chris Brehmer, P.E.
Senior Principal Engineer

Kristine Connolly

Kristine Connolly, P.E.
Senior Engineer



REFERENCES

- 1) Transportation Research Board. *Highway Capacity Manual 2000*.
- 2) C-Tran. <http://www.c-tran.com>. Accessed October 2018.
- 3) Institute of Transportation Engineers. *Trip Generation Manual, 9th Edition*. 2012.
- 4) U.S. Department of Transportation. *Manual on Uniform Traffic Control Devices*. 2009.

ATTACHMENTS

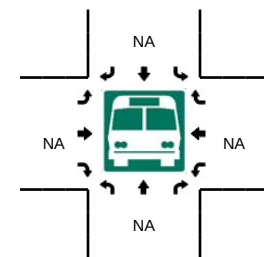
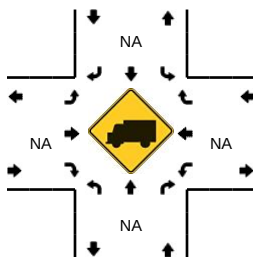
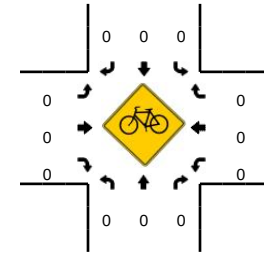
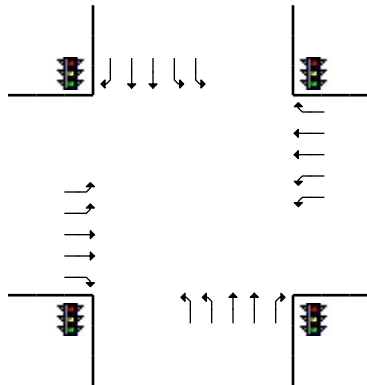
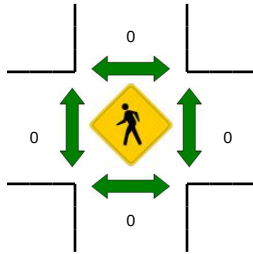
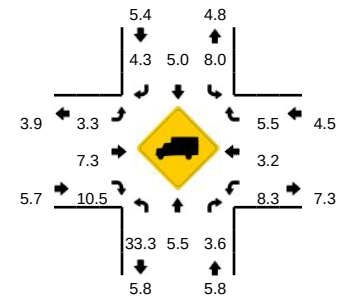
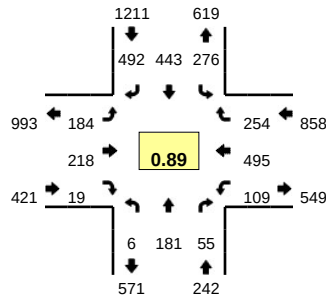
- Appendix A: Traffic Count Data
- Appendix B: Description of Level-of-Service Methods and Criteria
- Appendix C: 2018 Existing Operations Worksheets
- Appendix D: 2020 Baseline Operations Worksheets
- Appendix E: 2020 With Site Operations Worksheets
- Appendix F: 2025 With Site Operations Worksheets
- Appendix G: WSDOT Crash Data
- Appendix H: Left-turn Lane Warrant
- Appendix I: Signal Warrant Analysis Worksheets
- Appendix J: 2020 With Site Operations Worksheets – North Access Scenario
- Appendix K: 2025 With Site Operations Worksheets – North Access Scenario

Appendix A Traffic Count Data

LOCATION: NE 112th Ave -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784701
DATE: Thu, Sep 13 2018

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



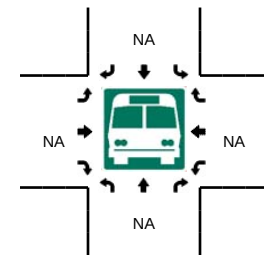
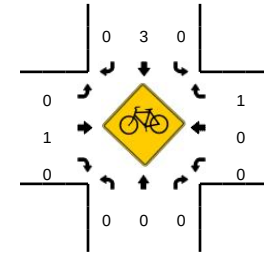
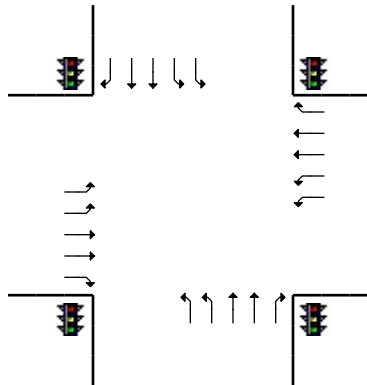
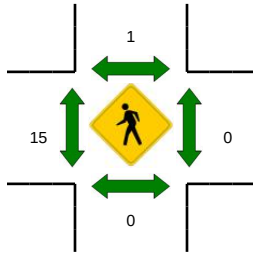
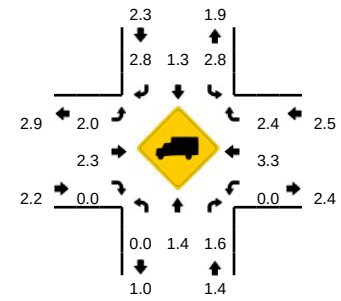
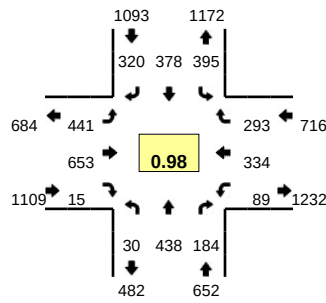
5-Min Count Period Beginning At	NE 112th Ave (Northbound)				NE 112th Ave (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	11	7	0	12	23	44	0	17	11	1	0	5	42	18	0	191	
7:05 AM	0	14	4	0	18	31	42	0	7	12	0	0	1	39	10	0	178	
7:10 AM	1	6	5	0	12	19	53	0	15	11	1	0	5	48	15	0	191	
7:15 AM	0	16	3	0	24	17	43	0	18	24	0	0	11	50	25	0	231	
7:20 AM	0	18	3	0	17	29	51	0	14	15	3	0	12	43	16	0	221	
7:25 AM	3	21	2	0	17	40	46	0	14	15	6	0	5	46	16	0	231	
7:30 AM	1	8	6	0	23	33	32	0	14	18	1	0	11	49	18	0	214	
7:35 AM	0	15	5	0	31	39	37	0	16	14	3	0	10	37	20	0	227	
7:40 AM	0	14	3	0	20	39	34	0	13	16	2	0	7	38	22	0	208	
7:45 AM	0	9	6	0	41	57	63	0	13	18	2	0	13	31	23	0	276	
7:50 AM	0	22	6	0	19	50	43	0	14	18	0	0	16	38	29	0	255	
7:55 AM	0	16	4	0	20	49	38	0	16	26	0	0	5	40	24	0	238	2661
8:00 AM	2	15	3	0	31	23	42	0	16	14	0	0	9	39	16	0	210	2680
8:05 AM	0	12	10	0	19	33	34	0	17	21	2	0	5	44	20	0	217	2719
8:10 AM	0	15	4	0	14	34	29	0	19	19	0	0	5	40	25	0	204	2732
8:15 AM	0	18	10	0	20	31	45	0	20	17	1	0	10	36	16	0	224	2725
8:20 AM	0	14	3	0	20	31	37	0	14	22	2	0	6	40	17	0	206	2710
8:25 AM	1	18	4	0	26	23	41	0	22	16	0	0	5	50	16	0	222	2701
8:30 AM	1	12	8	0	23	25	46	0	11	11	4	0	7	35	18	0	201	2688
8:35 AM	0	12	11	0	19	25	39	0	17	9	2	0	2	32	26	0	194	2655
8:40 AM	0	17	5	0	25	21	40	0	18	18	3	0	2	27	19	0	195	2642
8:45 AM	0	17	6	0	18	23	34	0	10	12	0	0	8	31	13	0	172	2538
8:50 AM	5	17	4	0	18	15	25	0	21	11	1	0	6	21	19	0	163	2446
8:55 AM	2	16	4	0	13	27	34	0	13	11	1	0	5	35	18	0	179	2387
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	188	64	0	320	624	576	0	172	248	8	0	136	436	304	0	3076	
Heavy Trucks	0	4	0	0	12	48	28	0	0	8	4	0	0	12	20	0	136	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: NE 112th Ave -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784702
DATE: Thu, Sep 13 2018

Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



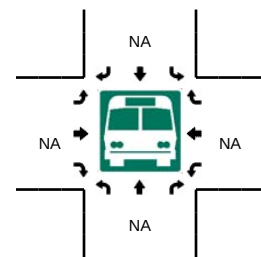
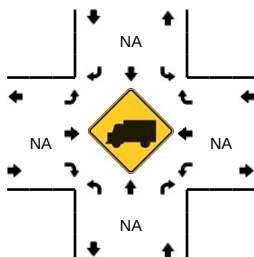
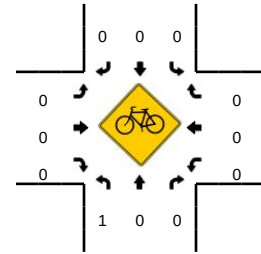
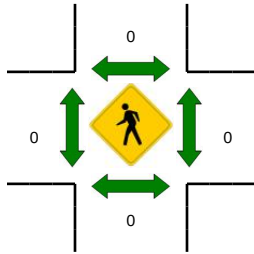
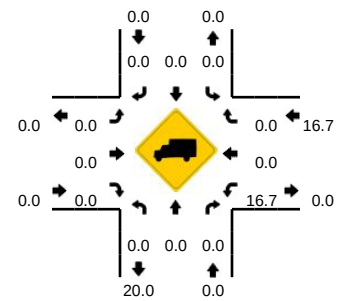
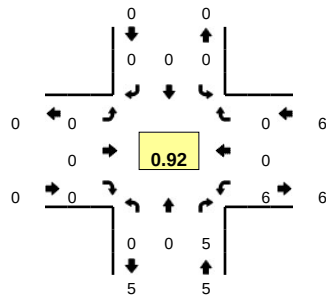
5-Min Count Period Beginning At	NE 112th Ave (Northbound)				NE 112th Ave (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	38	17	0	31	23	22	0	33	39	1	0	13	16	32	0	265	
4:05 PM	1	30	11	0	17	24	24	0	28	51	4	0	7	28	15	0	240	
4:10 PM	2	30	23	0	18	39	24	0	34	53	1	0	2	26	21	0	273	
4:15 PM	2	25	7	0	35	34	42	0	32	47	2	0	9	29	25	0	289	
4:20 PM	4	39	10	0	14	17	26	0	50	76	2	0	9	27	27	0	301	
4:25 PM	1	43	13	0	36	25	23	0	43	58	3	0	9	29	19	0	302	
4:30 PM	2	42	13	0	31	29	25	0	27	54	2	0	2	30	21	0	278	
4:35 PM	1	42	18	0	24	22	23	0	47	47	2	0	9	23	33	0	291	
4:40 PM	2	18	11	0	44	39	33	0	40	58	0	0	8	33	26	0	312	
4:45 PM	3	51	13	0	19	36	24	0	28	49	0	0	4	24	27	0	278	
4:50 PM	1	35	25	0	34	38	24	0	35	67	2	0	9	23	19	0	312	
4:55 PM	3	31	14	0	22	26	24	0	45	47	1	0	9	31	13	0	266	3407
5:00 PM	5	33	16	0	40	40	27	0	28	48	0	0	6	33	22	0	298	3440
5:05 PM	4	47	11	0	34	28	35	0	37	49	1	0	10	26	24	0	306	3506
5:10 PM	2	29	14	0	36	35	29	0	38	51	2	0	7	34	23	0	300	3533
5:15 PM	1	48	23	0	37	26	21	0	28	38	4	0	7	31	21	0	285	3529
5:20 PM	3	39	13	0	35	31	28	0	33	69	1	0	10	19	28	0	309	3537
5:25 PM	4	34	11	0	37	28	26	0	49	74	2	0	6	22	21	0	314	3549
5:30 PM	1	31	15	0	33	29	26	0	33	56	0	0	4	35	36	0	299	3570
5:35 PM	4	33	11	0	21	22	32	0	49	67	1	0	7	20	36	0	303	3582
5:40 PM	1	46	15	0	32	30	26	0	30	49	0	0	4	24	25	0	282	3552
5:45 PM	2	19	16	0	14	23	18	0	40	52	1	0	9	38	27	0	259	3533
5:50 PM	2	32	12	0	41	32	30	0	26	48	2	0	5	30	22	0	282	3503
5:55 PM	3	27	9	0	18	22	25	0	33	66	1	0	3	26	22	0	255	3492
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	32	484	188	0	436	340	300	0	440	724	28	0	92	288	280	0	3632	
Heavy Trucks	0	8	4		0	12	8		4	20	0		0	12	0		68	
Pedestrians		0				0				4				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	1		1	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: NE 115th Ave -- NE 16th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784703
DATE: Thu, Sep 13 2018

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

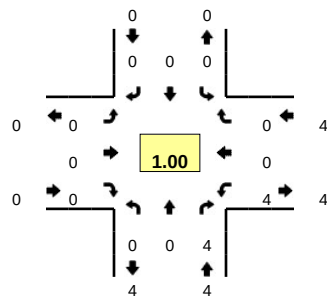


5-Min Count Period Beginning At	NE 115th Ave (Northbound)				NE 115th Ave (Southbound)				NE 16th St (Eastbound)				NE 16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:10 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:55 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	3	11
8:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	11
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	11
8:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	12
8:20 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13
8:25 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
8:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	11
8:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	4	15
8:50 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	16
8:55 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	16
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	4	12	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

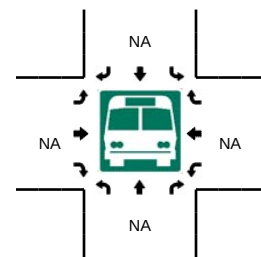
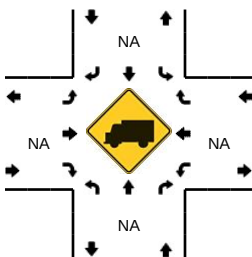
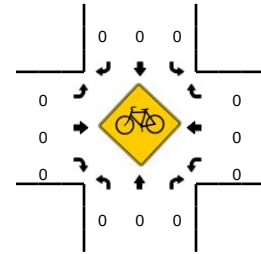
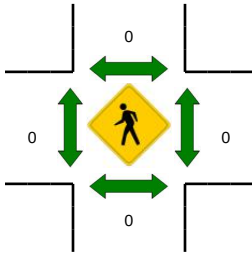
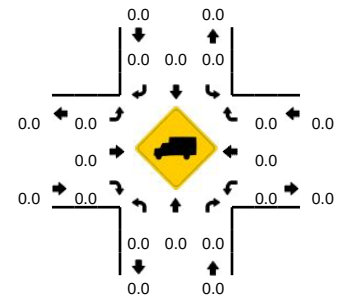
Comments:

LOCATION: NE 115th Ave -- NE 16th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784704
DATE: Thu, Sep 13 2018



Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

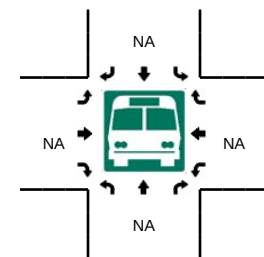
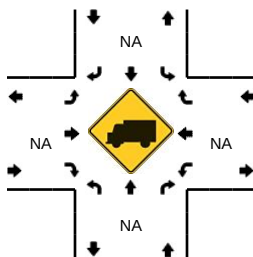
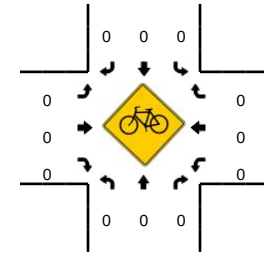
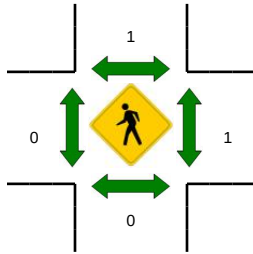
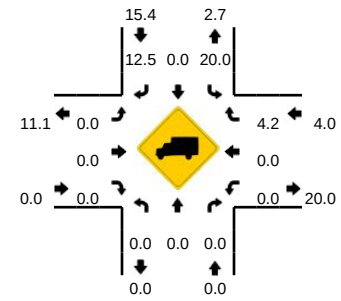
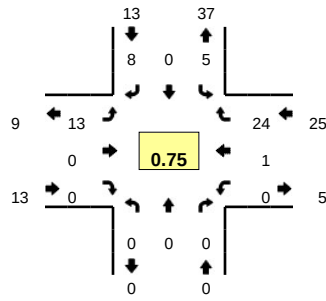
[illegible]

Comments:

LOCATION: NE 118th Ave -- NE 16th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784705
DATE: Thu, Sep 13 2018

Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

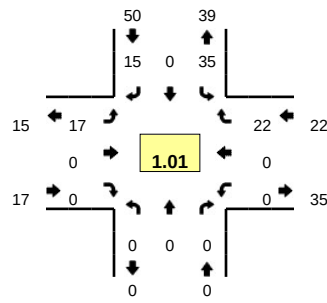


5-Min Count Period Beginning At	NE 118th Ave (Northbound)				NE 118th Ave (Southbound)				NE 16th St (Eastbound)				NE 16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	2	0	5	
7:05 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	0	6	
7:10 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	3	
7:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	4	
7:20 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:25 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	3	
7:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	
7:35 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	5	
7:40 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	3	
7:45 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	4	
7:50 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	0	2	0	5	
7:55 AM	0	0	0	0	1	0	0	0	4	0	0	0	0	0	3	0	8	48
8:00 AM	0	0	0	0	2	0	1	0	1	0	0	0	0	0	3	0	7	50
8:05 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	3	47
8:10 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	1	4	0	7	51
8:15 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3	50
8:20 AM	0	0	0	0	3	0	1	0	1	0	0	0	0	0	6	0	11	61
8:25 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	0	4	62
8:30 AM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3	0	5	65
8:35 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	4	64
8:40 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	4	65
8:45 AM	0	0	0	0	2	0	1	0	3	0	0	0	0	0	0	0	6	67
8:50 AM	0	0	0	0	2	0	0	0	2	0	0	0	0	1	2	0	7	69
8:55 AM	0	0	0	0	2	0	0	0	1	0	0	0	0	0	2	0	5	66
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	0	0	0	8	0	8	0	20	0	0	0	0	0	32	0	68	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

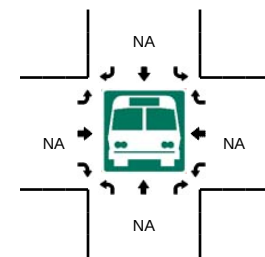
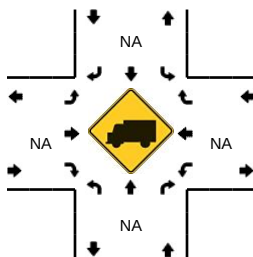
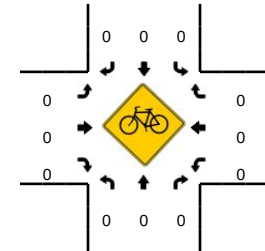
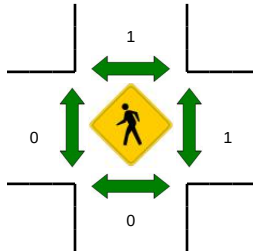
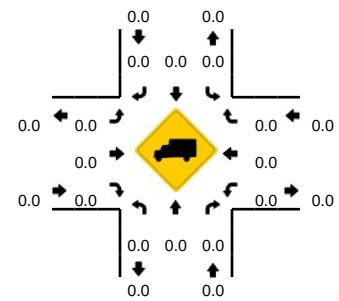
Comments:

LOCATION: NE 118th Ave -- NE 16th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784706
DATE: Thu, Sep 13 2018



Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

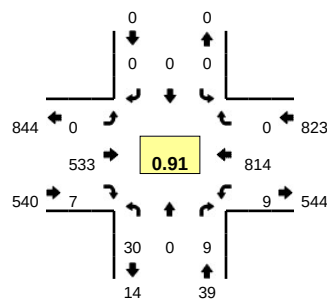


5-Min Count Period Beginning At	NE 118th Ave (Northbound)				NE 118th Ave (Southbound)				NE 16th St (Eastbound)				NE 16th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	6	0	1	0	1	0	0	0	0	0	0	0	8	
4:05 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	5	0	7	
4:10 PM	0	0	0	0	3	0	1	0	2	0	0	0	0	0	2	0	8	
4:15 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	5	
4:20 PM	0	0	0	0	4	0	0	0	1	0	0	0	0	0	2	0	7	
4:25 PM	0	0	0	0	3	0	2	1	0	0	0	0	0	0	2	0	8	
4:30 PM	0	0	0	0	1	0	3	0	1	0	0	0	0	0	0	0	5	
4:35 PM	0	0	0	0	6	0	0	0	0	0	0	0	0	0	1	0	7	
4:40 PM	0	0	0	0	3	0	2	0	1	0	0	0	0	0	3	0	9	
4:45 PM	0	0	0	0	2	0	3	0	2	0	0	0	0	0	3	0	10	
4:50 PM	0	0	0	0	3	0	0	0	3	0	0	0	0	0	2	0	8	
4:55 PM	0	0	0	0	4	0	1	0	1	0	0	0	0	0	0	0	6	88
5:00 PM	0	0	0	0	2	0	2	0	4	0	0	0	0	0	2	0	10	90
5:05 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	3	86
5:10 PM	0	0	0	0	2	0	4	0	0	0	0	0	0	0	1	0	7	85
5:15 PM	0	0	0	0	3	0	1	0	1	0	0	0	0	0	2	0	7	87
5:20 PM	0	0	0	0	3	0	0	0	1	0	0	0	0	0	1	0	5	85
5:25 PM	0	0	0	0	3	0	2	0	2	0	0	0	0	0	3	0	10	87
5:30 PM	0	0	0	0	3	0	0	0	1	0	0	0	0	0	3	0	7	89
5:35 PM	0	0	0	0	2	0	2	0	1	0	0	0	0	0	0	0	5	87
5:40 PM	0	0	0	0	4	0	1	0	0	0	0	0	0	0	1	0	6	84
5:45 PM	0	0	0	0	5	0	2	0	0	1	0	0	0	0	0	0	8	82
5:50 PM	0	0	0	0	3	0	3	0	1	0	0	0	0	0	0	0	7	81
5:55 PM	0	0	0	0	4	0	1	0	1	0	0	0	0	0	1	0	7	82
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	36	0	12	0	16	0	0	0	0	0	24	0	88	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

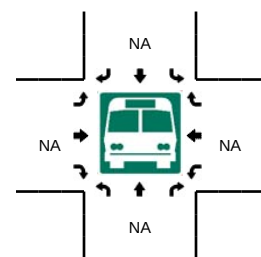
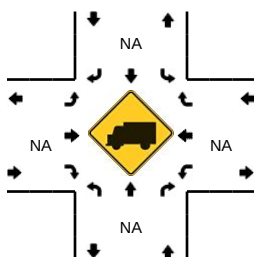
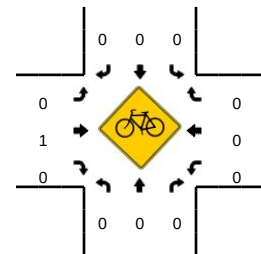
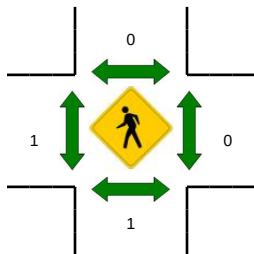
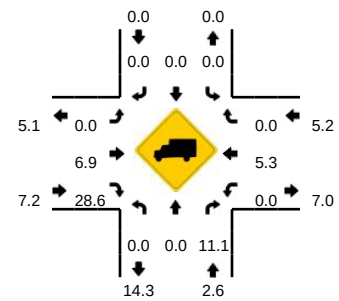
Comments:

LOCATION: NE 118th St -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784707
DATE: Thu, Sep 13 2018



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

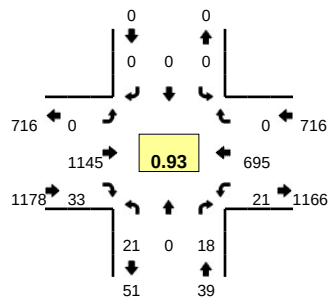


5-Min Count Period Beginning At	NE 118th St (Northbound)				NE 118th St (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	0	0	0	0	0	0	0	0	29	2	0	2	54	0	0	89	
7:05 AM	4	0	1	0	0	0	0	0	0	28	0	0	1	45	0	0	79	
7:10 AM	2	0	3	0	0	0	0	0	0	30	0	0	0	56	0	0	91	
7:15 AM	2	0	0	0	0	0	0	0	0	46	0	0	0	84	0	0	132	
7:20 AM	1	0	1	0	0	0	0	0	0	37	0	0	0	67	0	1	107	
7:25 AM	2	0	0	0	0	0	0	0	0	35	0	0	1	71	0	0	109	
7:30 AM	2	0	0	0	0	0	0	0	0	42	1	0	1	70	0	0	116	
7:35 AM	1	0	2	0	0	0	0	0	0	52	0	0	1	63	0	0	119	
7:40 AM	5	0	0	0	0	0	0	0	0	41	0	0	0	64	0	0	110	
7:45 AM	2	0	2	0	0	0	0	0	0	62	0	0	0	58	0	0	124	
7:50 AM	1	0	0	0	0	0	0	0	0	46	1	0	2	85	0	0	135	
7:55 AM	5	0	3	0	0	0	0	0	0	44	1	0	0	74	0	1	128	1339
8:00 AM	4	0	0	0	0	0	0	0	0	33	2	0	1	48	0	0	88	1338
8:05 AM	2	0	0	0	0	0	0	0	0	55	0	0	1	64	0	0	122	1381
8:10 AM	3	0	1	0	0	0	0	0	0	40	2	0	0	66	0	0	112	1402
8:15 AM	2	0	0	0	0	0	0	0	0	46	0	0	0	56	0	0	104	1374
8:20 AM	2	0	5	0	0	0	0	0	0	37	3	0	2	59	0	0	108	1375
8:25 AM	3	0	1	0	0	0	0	0	0	53	1	0	0	58	0	1	117	1383
8:30 AM	2	0	1	0	0	0	0	0	0	33	0	0	1	60	0	0	97	1364
8:35 AM	2	0	3	0	0	0	0	0	0	41	0	0	0	56	0	0	102	1347
8:40 AM	2	0	0	0	0	0	0	0	0	46	1	0	1	55	0	0	105	1342
8:45 AM	2	0	1	0	0	0	0	0	0	34	3	0	1	52	0	1	94	1312
8:50 AM	2	0	0	0	0	0	0	0	0	37	1	0	0	44	0	0	84	1261
8:55 AM	6	0	0	0	0	0	0	0	0	28	2	1	0	46	0	0	83	1216
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	32	0	20	0	0	0	0	0	0	608	8	0	8	868	0	4	1548	
Heavy Trucks	0	0	0	0	0	0	0	0	0	20	0	0	0	36	0	0	56	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

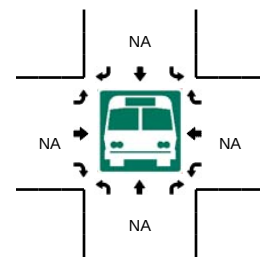
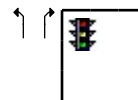
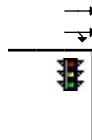
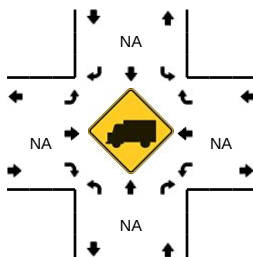
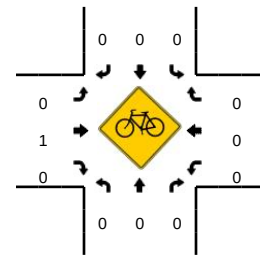
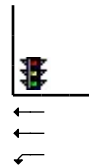
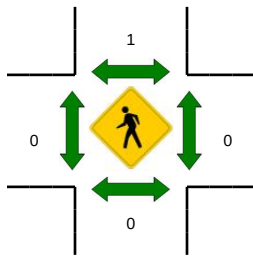
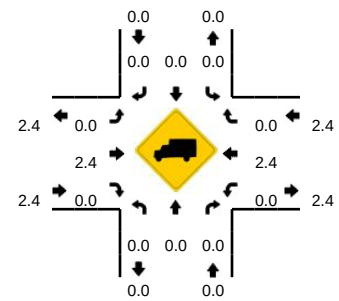
Comments:

LOCATION: NE 118th St -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784708
DATE: Thu, Sep 13 2018



Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

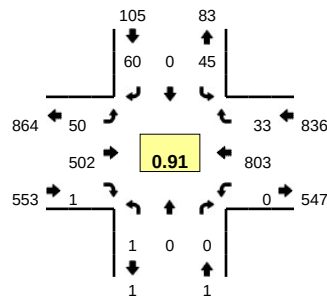


5-Min Count Period Beginning At	NE 118th St (Northbound)				NE 118th St (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	1	0	0	0	0	0	0	81	5	0	0	60	0	1	148	
4:05 PM	5	0	0	0	0	0	0	0	0	76	0	0	2	41	0	1	125	
4:10 PM	4	0	1	0	0	0	0	0	0	78	5	0	1	59	0	1	149	
4:15 PM	2	0	1	0	0	0	0	0	0	81	2	0	1	65	0	0	152	
4:20 PM	3	0	0	0	0	0	0	0	0	78	6	0	0	61	0	0	148	
4:25 PM	1	0	2	0	0	0	0	0	0	94	4	0	2	47	0	0	150	
4:30 PM	1	0	0	0	0	0	0	0	0	82	3	0	0	52	0	0	138	
4:35 PM	0	0	1	0	0	0	0	0	0	98	4	0	2	78	0	0	183	
4:40 PM	1	0	3	0	0	0	0	0	0	94	4	0	1	59	0	0	162	
4:45 PM	4	0	1	0	0	0	0	0	0	91	4	0	1	53	0	0	154	
4:50 PM	1	0	2	0	0	0	0	0	0	99	3	0	1	41	0	0	147	
4:55 PM	2	0	2	0	0	0	0	0	0	76	1	0	4	51	0	0	136	1792
5:00 PM	3	0	3	0	0	0	0	0	0	82	3	0	1	54	0	0	146	1790
5:05 PM	1	0	1	0	0	0	0	0	0	109	2	0	0	71	0	0	184	1849
5:10 PM	0	0	1	0	0	0	0	0	0	87	1	0	4	56	0	0	149	1849
5:15 PM	0	0	2	0	0	0	0	0	0	100	3	0	1	65	0	0	171	1868
5:20 PM	2	0	1	0	0	0	0	0	0	108	3	0	1	58	0	1	174	1894
5:25 PM	2	0	1	0	0	0	0	0	0	115	4	0	0	53	0	2	177	1921
5:30 PM	5	0	0	0	0	0	0	0	0	86	1	0	2	56	0	0	150	1933
5:35 PM	0	0	1	0	0	0	0	0	0	81	4	0	0	55	0	1	142	1892
5:40 PM	1	0	0	0	0	0	0	0	0	94	4	0	2	66	0	0	167	1897
5:45 PM	0	0	0	0	0	0	0	0	0	82	7	0	1	56	0	0	146	1889
5:50 PM	1	0	1	0	0	0	0	0	0	96	3	0	3	53	0	0	157	1899
5:55 PM	0	0	1	0	0	0	0	0	0	72	4	0	0	47	0	1	125	1888
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	16	0	16	0	0	0	0	0	0	1292	40	0	8	704	0	12	2088	
Heavy Trucks	0	0	0	0	0	0	0	0	0	36	0	0	0	12	0	0	48	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

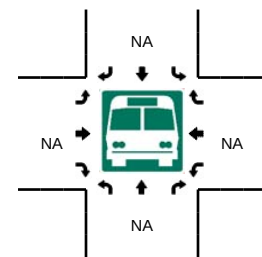
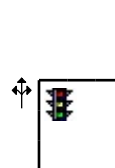
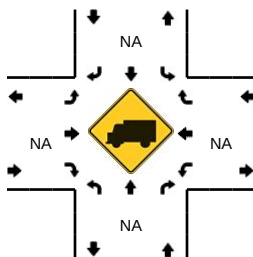
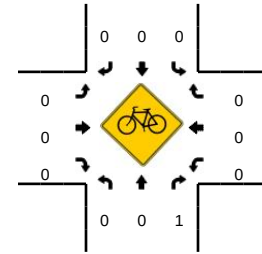
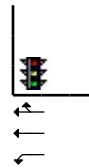
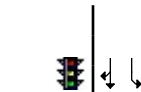
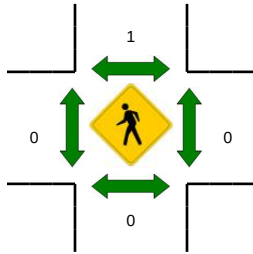
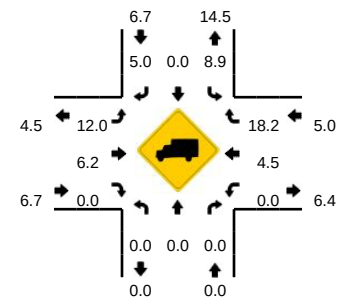
Comments:

LOCATION: NE 4 Seasons Ln -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784709
DATE: Thu, Sep 13 2018



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

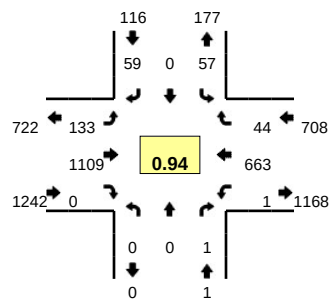


5-Min Count Period Beginning At	NE 4 Seasons Ln (Northbound)				NE 4 Seasons Ln (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	3	0	1	26	0	0	0	55	2	0	89	
7:05 AM	0	0	0	0	1	0	8	0	3	27	1	0	0	49	0	0	89	
7:10 AM	0	0	0	0	1	0	5	0	0	28	0	0	0	60	1	0	95	
7:15 AM	0	0	0	0	4	0	6	0	5	48	0	0	0	81	1	0	145	
7:20 AM	0	0	0	0	3	0	6	0	5	30	0	0	0	69	0	0	113	
7:25 AM	0	0	0	0	2	0	9	0	3	32	0	0	0	67	2	0	115	
7:30 AM	0	0	0	0	0	0	4	0	2	44	0	0	0	65	2	0	117	
7:35 AM	0	0	0	0	6	0	5	0	4	46	0	0	0	65	3	0	129	
7:40 AM	0	0	0	0	5	0	4	0	3	36	0	0	0	62	2	0	112	
7:45 AM	0	0	0	0	3	0	4	0	5	62	0	0	0	60	3	0	137	
7:50 AM	0	0	0	0	5	0	4	0	3	39	0	0	0	84	2	0	137	
7:55 AM	0	0	0	0	3	0	5	0	6	44	0	0	0	72	5	0	135	1413
8:00 AM	1	0	0	0	3	0	6	0	2	42	0	0	0	51	6	0	111	1435
8:05 AM	0	0	0	0	6	0	1	0	7	40	1	0	0	61	4	0	120	1466
8:10 AM	0	0	0	0	5	0	6	0	5	39	0	0	0	66	3	0	124	1495
8:15 AM	0	0	0	0	4	0	7	0	6	42	0	0	0	50	2	0	111	1461
8:20 AM	0	0	0	0	3	0	4	0	4	37	0	0	0	61	1	1	111	1459
8:25 AM	0	0	0	0	3	0	8	0	2	50	0	0	0	61	3	0	127	1471
8:30 AM	0	0	0	0	2	0	9	0	6	32	0	0	0	55	5	0	109	1463
8:35 AM	0	0	0	0	1	0	1	0	2	41	0	0	0	59	2	0	106	1440
8:40 AM	0	0	0	0	1	0	6	0	6	44	0	0	0	45	7	0	109	1437
8:45 AM	0	0	0	0	6	0	3	0	2	35	0	0	0	51	1	0	98	1398
8:50 AM	0	0	1	0	3	0	4	0	3	34	0	0	1	42	2	0	90	1351
8:55 AM	0	0	1	0	3	0	3	0	4	25	0	0	1	59	2	0	98	1314
Peak 15-Min Flowrates																		
	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	0	0	0	0	44	0	52	0	56	580	0	0	0	864	40	0	1636	
Heavy Trucks	0	0	0	0	0	0	4	0	0	16	0	0	0	28	8	0	56	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad																		
Stopped Buses																		

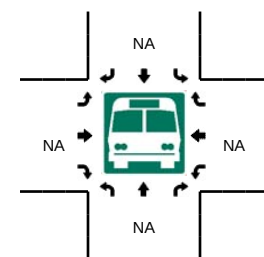
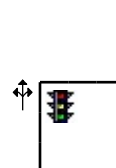
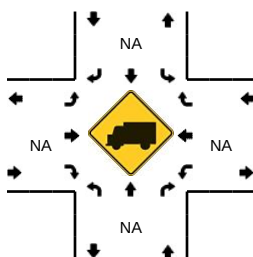
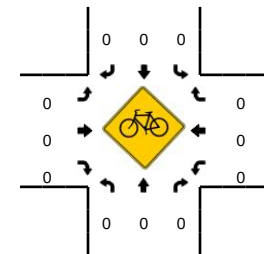
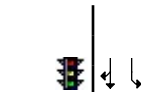
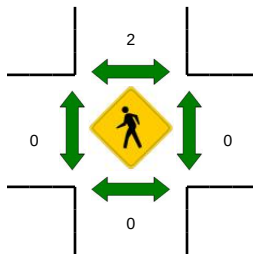
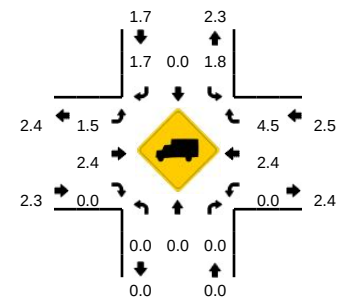
Comments:

LOCATION: NE 4 Seasons Ln -- NE 18th St
CITY/STATE: Vancouver, WA

QC JOB #: 14784710
DATE: Thu, Sep 13 2018



Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



5-Min Count Period Beginning At	NE 4 Seasons Ln (Northbound)				NE 4 Seasons Ln (Southbound)				NE 18th St (Eastbound)				NE 18th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	7	0	8	0	11	74	0	0	0	55	7	0	162	
4:05 PM	0	0	0	0	10	0	6	0	10	77	0	0	0	43	3	0	149	
4:10 PM	0	0	0	0	1	0	5	0	10	72	0	0	0	61	3	0	152	
4:15 PM	0	0	0	0	4	0	3	0	10	82	0	0	0	58	6	0	163	
4:20 PM	0	0	0	0	6	0	5	0	10	89	0	0	0	57	5	0	172	
4:25 PM	0	0	0	0	4	0	9	0	20	78	0	0	0	53	1	0	165	
4:30 PM	0	0	0	0	9	0	4	0	13	83	0	0	0	44	5	0	158	
4:35 PM	0	0	0	0	4	0	4	0	10	90	0	0	0	70	4	1	183	
4:40 PM	0	0	0	0	5	0	2	0	8	98	0	0	0	59	2	0	174	
4:45 PM	0	0	1	0	3	0	8	0	7	83	0	0	0	48	9	0	159	
4:50 PM	0	0	0	0	5	0	0	0	17	104	0	0	0	44	1	0	171	
4:55 PM	0	0	0	0	8	0	7	0	11	67	0	0	0	47	2	0	142	1950
5:00 PM	0	0	0	0	6	0	6	0	11	90	0	0	0	54	5	0	172	1960
5:05 PM	0	0	0	0	3	0	7	0	12	93	0	0	0	63	6	0	184	1995
5:10 PM	0	0	0	0	9	0	8	0	7	85	0	0	0	50	5	0	164	2007
5:15 PM	0	0	0	0	5	0	5	0	12	95	0	0	0	62	3	0	182	2026
5:20 PM	0	0	0	0	3	0	0	0	16	105	0	0	0	49	1	0	174	2028
5:25 PM	0	0	0	0	4	0	5	0	11	110	0	0	0	60	3	0	193	2056
5:30 PM	0	0	0	0	2	0	7	0	11	89	0	0	0	57	3	0	169	2067
5:35 PM	0	0	0	0	8	0	4	0	7	84	0	0	0	59	2	0	164	2048
5:40 PM	1	0	0	0	5	0	2	0	12	92	1	0	0	62	3	0	178	2052
5:45 PM	0	0	0	0	7	0	2	0	7	75	0	0	0	44	5	0	140	2033
5:50 PM	0	0	0	0	7	0	5	0	8	89	0	0	0	56	3	0	168	2030
5:55 PM	0	0	0	0	2	0	6	0	13	74	0	0	0	46	3	0	144	2032
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	48	0	40	0	156	1240	0	0	0	684	28	0	2196	
Heavy Trucks	0	0	0	0	0	0	4	0	0	32	0	0	0	12	0	0	48	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Appendix B Description of Level-of-Service Methods and Criteria

DESCRIPTION OF LEVEL-OF-SERVICE METHODS AND CRITERIA

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from “A” to “F”.¹

Signalized Intersections

The six level-of-service grades are described qualitatively for signalized intersections in Table B1. Additionally, Table B2 identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service “D” is generally considered to represent the minimum acceptable design standard.

Table B1 Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

¹Most of the material in this attachment is adapted from the Transportation Research Board, Highway Capacity Manual, (2000).

Table B2 Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Unsignalized Intersections

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The 2000 Highway Capacity Manual (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service “E” is generally considered to represent the minimum acceptable design standard.

Table B3 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	- Nearly all drivers find freedom of operation. - Very seldom is there more than one vehicle in queue.
B	- Some drivers begin to consider the delay an inconvenience. - Occasionally there is more than one vehicle in queue.
C	- Many times there is more than one vehicle in queue. - Most drivers feel restricted, but not objectionably so.
D	- Often there is more than one vehicle in queue. - Drivers feel quite restricted.
E	- Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. - There is almost always more than one vehicle in queue. - Drivers find the delays approaching intolerable levels.
F	- Forced flow. - Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.

Table B4 Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Appendix C 2018 Existing Operations Worksheets

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2018 Existing AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	207	247	21	124	566	290	7	203	62	312	498	553
v/c Ratio	0.47	0.29	0.03	0.35	0.69	0.33	0.03	0.39	0.10	0.57	0.42	0.53
Control Delay	34.3	22.5	0.1	35.6	29.8	2.9	37.3	29.4	2.1	32.7	20.0	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.3	22.5	0.1	35.6	29.8	2.9	37.3	29.4	2.1	32.7	20.0	5.3
Queue Length 50th (ft)	38	38	0	23	102	0	1	38	0	56	69	22
Queue Length 95th (ft)	99	97	0	67	227	42	9	85	12	138	166	117
Internal Link Dist (ft)		626			696			637			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	1070	1858	977	1020	1931	1259	829	1876	891	1530	2435	1254
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.13	0.02	0.12	0.29	0.23	0.01	0.11	0.07	0.20	0.20	0.44
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2018 Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	220	19	110	504	258	6	181	55	278	443	492
Future Volume (vph)	184	220	19	110	504	258	6	181	55	278	443	492
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	207	247	21	124	566	290	7	203	62	312	498	553
RTOR Reduction (vph)	0	0	15	0	0	177	0	0	43	0	0	220
Lane Group Flow (vph)	207	247	6	124	566	113	7	203	19	312	498	333
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	8.7	17.3	19.3	7.3	15.9	27.2	2.0	14.1	21.4	11.3	23.4	32.1
Effective Green, g (s)	8.7	17.3	19.3	7.3	15.9	27.2	2.0	14.1	21.4	11.3	23.4	32.1
Actuated g/C Ratio	0.12	0.25	0.28	0.10	0.23	0.39	0.03	0.20	0.31	0.16	0.33	0.46
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	422	833	505	338	796	701	75	686	585	523	1149	823
v/s Ratio Prot	0.06	0.07	0.00	0.04	c0.16	0.03	0.00	0.06	0.00	c0.10	0.14	c0.05
v/s Ratio Perm			0.00			0.05			0.01			0.16
v/c Ratio	0.49	0.30	0.01	0.37	0.71	0.16	0.09	0.30	0.03	0.60	0.43	0.40
Uniform Delay, d1	28.6	21.4	18.4	29.2	24.9	14.0	33.1	23.7	17.0	27.2	18.1	12.6
Progression 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
Incremental Delay, d2	0.3	0.1	0.0	0.2	2.5	0.0	0.2	0.1	0.0	1.2	0.1	0.1
Delay (s)	28.9	21.5	18.4	29.4	27.4	14.0	33.3	23.8	17.0	28.5	18.2	12.7
Level of Service	C	C	B	C	C	B	C	C	B	C	B	B
Approach Delay (s)		24.6			23.7			22.5			18.3	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			21.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			70.0				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			61.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2018 Existing AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↘			↗
Sign Control	Yield			Yield	Yield	
Traffic Volume (vph)	0	0	6	0	0	5
Future Volume (vph)	0	0	6	0	0	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	8	0	0	6
Direction, Lane #	WB 1	NB 1				
Volume Total (vph)	8	6				
Volume Left (vph)	8	0				
Volume Right (vph)	0	6				
Hadj (s)	0.49	-0.60				
Departure Headway (s)	4.4	3.3				
Degree Utilization, x	0.01	0.01				
Capacity (veh/h)	811	1078				
Control Delay (s)	7.4	6.3				
Approach Delay (s)	7.4	6.3				
Approach LOS	A	A				
Intersection Summary						
Delay			7.0			
Level of Service			A			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2018 Existing AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	13	0	1	24	5	8
Future Volume (vph)	13	0	1	24	5	8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	16	0	1	30	6	10
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	16	31	16			
Volume Left (vph)	16	0	6			
Volume Right (vph)	0	30	10			
Hadj (s)	0.20	-0.51	-0.04			
Departure Headway (s)	4.2	3.4	3.9			
Degree Utilization, x	0.02	0.03	0.02			
Capacity (veh/h)	855	1036	889			
Control Delay (s)	7.2	6.5	7.0			
Approach Delay (s)	7.2	6.5	7.0			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.8			
Level of Service			A			
Intersection Capacity Utilization			17.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing AM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	601	10	895	33	10
v/c Ratio	0.22	0.01	0.31	0.11	0.04
Control Delay	4.3	2.2	2.8	16.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	2.2	2.8	16.5	10.8
Queue Length 50th (ft)	0	0	0	5	0
Queue Length 95th (ft)	88	4	75	27	10
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3357	932	3438	1729	1394
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.18	0.01	0.26	0.02	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	540	7	9	814	30	9
Future Volume (vph)	540	7	9	814	30	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3357		1805	3438	1805	1455
Flt Permitted	1.00		0.42	1.00	0.95	1.00
Satd. Flow (perm)	3357		807	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	593	8	10	895	33	10
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	601	0	10	895	33	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	27.5		33.3	33.3	2.5	2.5
Effective Green, g (s)	27.5		33.3	33.3	2.5	2.5
Actuated g/C Ratio	0.60		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2015		604	2499	98	79
v/s Ratio Prot	0.18		0.00	c0.26	c0.02	0.00
v/s Ratio Perm			0.01			
v/c Ratio	0.30		0.02	0.36	0.34	0.01
Uniform Delay, d1	4.5		1.7	2.3	20.9	20.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	2.0	0.0
Delay (s)	4.5		1.7	2.3	22.9	20.5
Level of Service	A		A	A	C	C
Approach Delay (s)	4.5			2.3	22.3	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.41			
Actuated Cycle Length (s)			45.8		Sum of lost time (s)	15.0
Intersection Capacity Utilization			35.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2018 Existing AM Peak Hour Conditions

						
Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	55	553	927	1	49	66
v/c Ratio	0.14	0.24	0.50	0.00	0.20	0.12
Control Delay	6.7	5.8	13.3	17.0	19.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	5.8	13.3	17.0	19.5	0.5
Queue Length 50th (ft)	4	23	90	0	10	0
Queue Length 95th (ft)	30	111	284	4	42	0
Internal Link Dist (ft)		696	835	313		373
Turn Bay Length (ft)	200				125	
Base Capacity (vph)	813	3174	3114	986	959	1204
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.17	0.30	0.00	0.05	0.05
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	502	1	0	811	33	1	0	0	45	0	60
Future Volume (vph)	50	502	1	0	811	33	1	0	0	45	0	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	1.00			0.99			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1612	3405			3430			1805		1656	1538	
Flt Permitted	0.21	1.00			1.00			0.71		0.76	1.00	
Satd. Flow (perm)	352	3405			3430			1357		1320	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	55	552	1	0	891	36	1	0	0	49	0	66
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	56	0
Lane Group Flow (vph)	55	553	0	0	925	0	0	1	0	49	10	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.8	32.8			24.4			7.4		7.4	7.4	
Effective Green, g (s)	32.8	32.8			24.4			7.4		7.4	7.4	
Actuated g/C Ratio	0.65	0.65			0.49			0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	315	2224			1667			200		194	226	
v/s Ratio Prot	0.01	c0.16			c0.27						0.01	
v/s Ratio Perm	0.10							0.00		c0.04		
v/c Ratio	0.17	0.25			0.55			0.01		0.25	0.04	
Uniform Delay, d1	4.1	3.6			9.1			18.3		19.0	18.4	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0			0.2			0.0		0.3	0.0	
Delay (s)	4.2	3.6			9.3			18.3		19.2	18.4	
Level of Service	A	A			A			B		B	B	
Approach Delay (s)		3.7			9.3			18.3			18.7	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			7.9			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			50.2			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			44.3%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2018 Existing PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	450	679	15	92	348	304	31	447	190	409	386	327
v/c Ratio	0.64	0.68	0.02	0.31	0.61	0.52	0.11	0.65	0.32	0.68	0.30	0.33
Control Delay	35.8	29.7	0.1	42.4	37.2	17.3	42.0	35.9	13.0	38.5	21.1	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	29.7	0.1	42.4	37.2	17.3	42.0	35.9	13.0	38.5	21.1	2.0
Queue Length 50th (ft)	101	148	0	22	83	77	7	106	33	95	77	0
Queue Length 95th (ft)	206	269	0	57	158	177	26	194	100	187	136	34
Internal Link Dist (ft)		626			696			637			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	900	1623	918	918	1608	909	918	1639	867	1337	2108	1078
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.42	0.02	0.10	0.22	0.33	0.03	0.27	0.22	0.31	0.18	0.30

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2018 Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	441	665	15	90	341	298	30	438	186	401	378	320
Future Volume (vph)	441	665	15	90	341	298	30	438	186	401	378	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1597	3502	3505	1573	3502	3574	1583	3400	3574	1540
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1597	3502	3505	1573	3502	3574	1583	3400	3574	1540
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	450	679	15	92	348	304	31	447	190	409	386	327
RTOR Reduction (vph)	0	0	10	0	0	46	0	0	66	0	0	146
Lane Group Flow (vph)	450	679	5	92	348	258	31	447	124	409	386	181
Confl. Peds. (#/hr)	1						1	15				15
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	2%	2%	0%	0%	3%	2%	0%	1%	2%	3%	1%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	16.2	22.6	25.8	6.7	13.1	27.3	3.2	17.7	24.4	14.2	28.7	44.9
Effective Green, g (s)	16.2	22.6	25.8	6.7	13.1	27.3	3.2	17.7	24.4	14.2	28.7	44.9
Actuated g/C Ratio	0.20	0.28	0.32	0.08	0.16	0.34	0.04	0.22	0.30	0.17	0.35	0.55
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	684	984	605	288	565	625	138	779	573	594	1263	946
v/s Ratio Prot	c0.13	c0.19	0.00	0.03	0.10	0.07	0.01	c0.13	0.02	c0.12	0.11	0.04
v/s Ratio Perm			0.00			0.09			0.06			0.08
v/c Ratio	0.66	0.69	0.01	0.32	0.62	0.41	0.22	0.57	0.22	0.69	0.31	0.19
Uniform Delay, d1	29.9	26.2	18.9	35.1	31.7	20.8	37.8	28.4	21.3	31.4	19.0	9.1
Progression 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
Incremental Delay, d2	1.8	1.7	0.0	0.2	1.4	0.2	0.3	0.6	0.1	2.7	0.1	0.0
Delay (s)	31.7	27.9	18.9	35.3	33.1	20.9	38.1	29.0	21.3	34.1	19.1	9.1
Level of Service	C	C	B	D	C	C	D	C	C	C	B	A
Approach Delay (s)		29.3			28.4			27.2			21.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			26.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.68									
Actuated Cycle Length (s)			81.2				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			63.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↘			↗
Sign Control	Yield			Yield	Yield	
Traffic Volume (vph)	0	0	4	0	0	4
Future Volume (vph)	0	0	4	0	0	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	5	0	0	5
Direction, Lane #	WB 1	NB 1				
Volume Total (vph)	5	5				
Volume Left (vph)	5	0				
Volume Right (vph)	0	5				
Hadj (s)	0.20	-0.60				
Departure Headway (s)	4.1	3.3				
Degree Utilization, x	0.01	0.00				
Capacity (veh/h)	868	1081				
Control Delay (s)	7.1	6.3				
Approach Delay (s)	7.1	6.3				
Approach LOS	A	A				
Intersection Summary						
Delay			6.7			
Level of Service			A			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	17	0	0	22	35	15
Future Volume (vph)	17	0	0	22	35	15
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	21	0	0	28	44	19
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	21	28	63			
Volume Left (vph)	21	0	44			
Volume Right (vph)	0	28	19			
Hadj (s)	0.20	-0.60	-0.04			
Departure Headway (s)	4.3	3.5	4.0			
Degree Utilization, x	0.02	0.03	0.07			
Capacity (veh/h)	827	1017	887			
Control Delay (s)	7.4	6.6	7.3			
Approach Delay (s)	7.4	6.6	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.1			
Level of Service			A			
Intersection Capacity Utilization			17.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1266	23	747	23	19
v/c Ratio	0.49	0.05	0.26	0.09	0.08
Control Delay	7.5	3.2	2.9	21.3	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	3.2	2.9	21.3	11.7
Queue Length 50th (ft)	75	1	35	6	0
Queue Length 95th (ft)	223	7	60	24	15
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3459	614	3539	1539	1380
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.04	0.21	0.01	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Volume (vph)	1145	33	21	695	21	18
Future Volume (vph)	1145	33	21	695	21	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3524		1805	3539	1805	1615
Flt Permitted	1.00		0.18	1.00	0.95	1.00
Satd. Flow (perm)	3524		335	3539	1805	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1231	35	23	747	23	19
RTOR Reduction (vph)	1	0	0	0	0	18
Lane Group Flow (vph)	1265	0	23	747	23	1
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	30.3		37.0	37.0	3.7	3.7
Effective Green, g (s)	30.3		37.0	37.0	3.7	3.7
Actuated g/C Ratio	0.60		0.73	0.73	0.07	0.07
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2106		293	2582	131	117
v/s Ratio Prot	c0.36		0.00	c0.21	c0.01	0.00
v/s Ratio Perm			0.05			
v/c Ratio	0.60		0.08	0.29	0.18	0.01
Uniform Delay, d1	6.4		4.5	2.3	22.1	21.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		0.0	0.0	0.6	0.0
Delay (s)	6.7		4.5	2.4	22.7	21.8
Level of Service	A		A	A	C	C
Approach Delay (s)	6.7			2.4	22.3	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			5.5	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			50.7	Sum of lost time (s)		15.0
Intersection Capacity Utilization			45.2%	ICU Level of Service		A
Analysis Period (min)			15			

c Critical Lane Group

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

							
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	141	1190	1	761	1	62	63
v/c Ratio	0.27	0.50	0.00	0.44	0.00	0.25	0.11
Control Delay	6.9	9.3	7.0	13.8	0.0	21.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	9.3	7.0	13.8	0.0	21.6	0.4
Queue Length 50th (ft)	10	63	0	74	0	14	0
Queue Length 95th (ft)	63	362	2	223	0	55	0
Internal Link Dist (ft)		696		835	313		373
Turn Bay Length (ft)	200		175			125	
Base Capacity (vph)	893	3264	568	3147	1204	975	1203
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.36	0.00	0.24	0.00	0.06	0.05
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

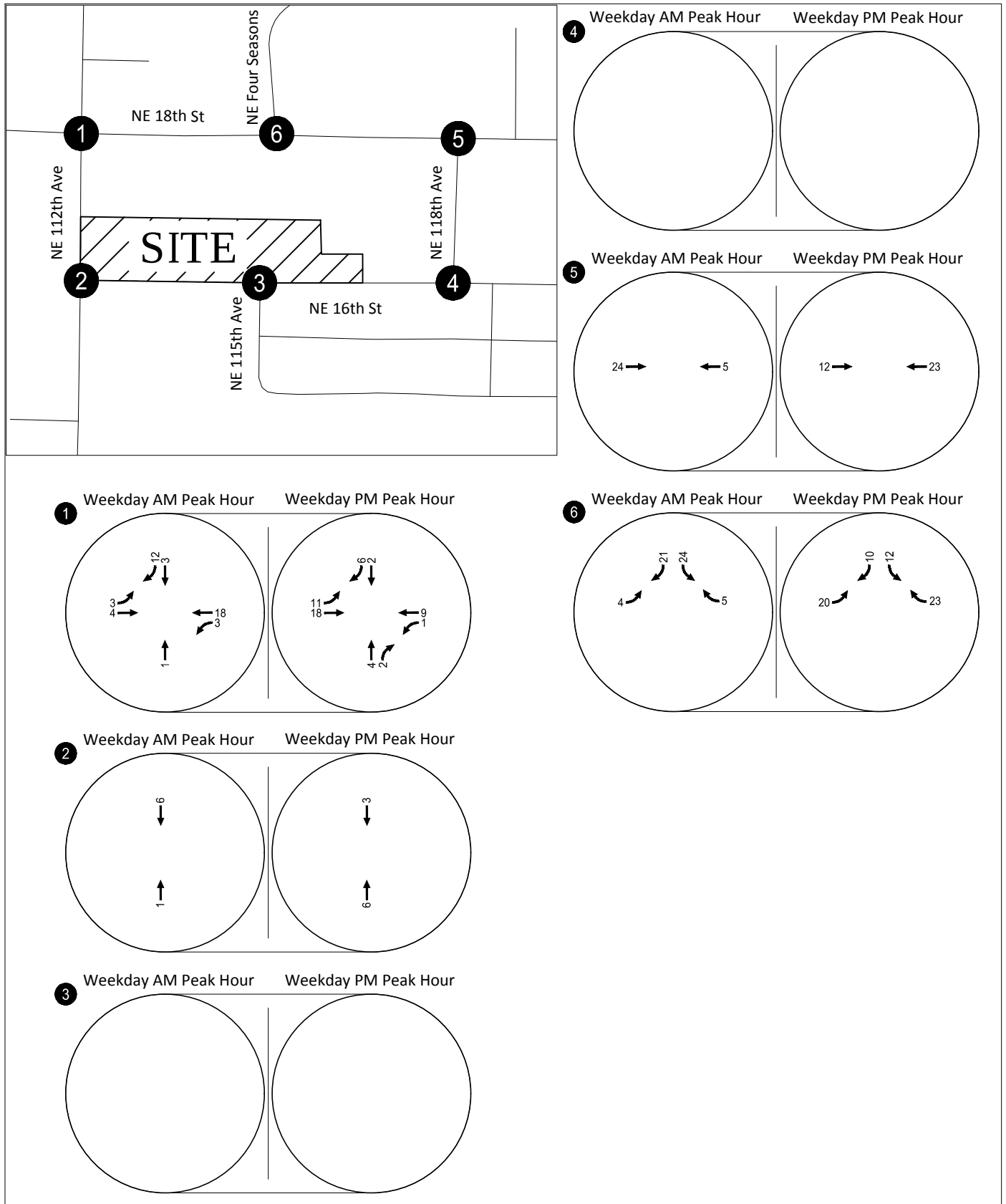
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2018 Existing PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	133	1119	0	1	670	45	0	0	1	58	0	59
Future Volume (vph)	133	1119	0	1	670	45	0	0	1	58	0	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1769	3539		1805	3494			1644		1770	1583	
Flt Permitted	0.27	1.00		0.22	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	506	3539		416	3494			1644		1410	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	141	1190	0	1	713	48	0	0	1	62	0	63
RTOR Reduction (vph)	0	0	0	0	4	0	0	1	0	0	55	0
Lane Group Flow (vph)	141	1190	0	1	757	0	0	0	0	62	8	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	2%	2%	0%	0%	2%	5%	0%	0%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.8	32.2		27.6	27.0			7.4		7.4	7.4	
Effective Green, g (s)	37.8	32.2		27.6	27.0			7.4		7.4	7.4	
Actuated g/C Ratio	0.68	0.58		0.50	0.49			0.13		0.13	0.13	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	479	2064		223	1709			220		189	212	
v/s Ratio Prot	c0.03	c0.34		0.00	0.22			0.00			0.01	
v/s Ratio Perm	0.17			0.00						c0.04		
v/c Ratio	0.29	0.58		0.00	0.44			0.00		0.33	0.04	
Uniform Delay, d1	3.7	7.2		6.9	9.2			20.7		21.6	20.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.2		0.0	0.1			0.0		0.4	0.0	
Delay (s)	3.9	7.5		6.9	9.3			20.7		22.0	20.8	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		7.1			9.3			20.7			21.4	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			8.6			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			55.2			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			57.5%			ICU Level of Service				B		
Analysis Period (min)			15									

c Critical Lane Group

Appendix D 2020 Baseline Operations Worksheets



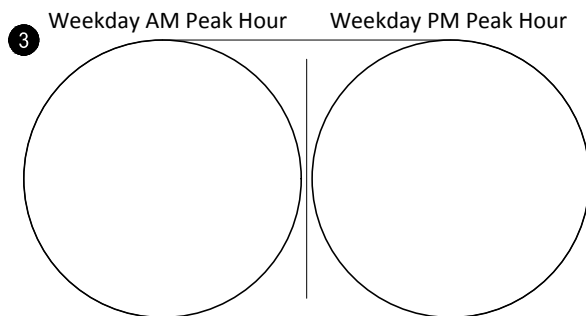
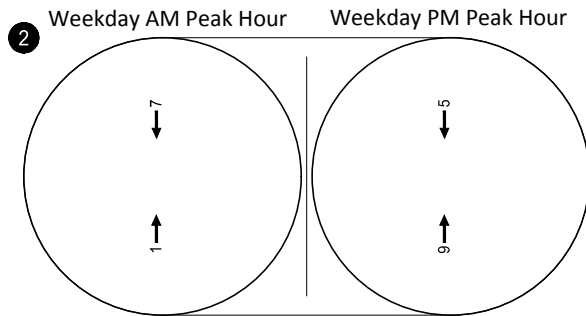
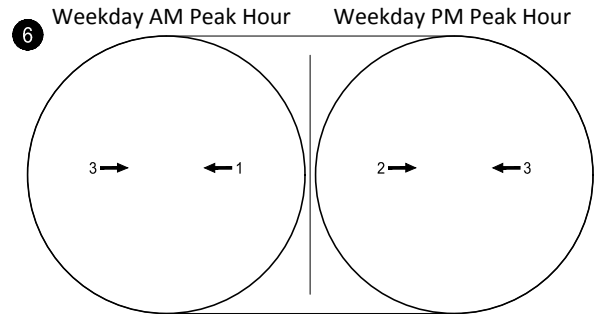
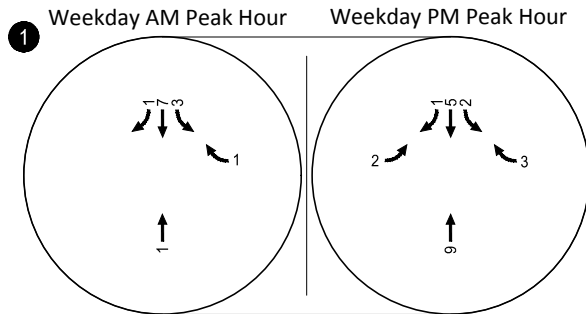
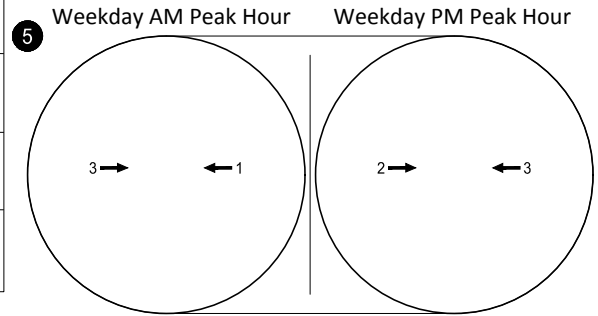
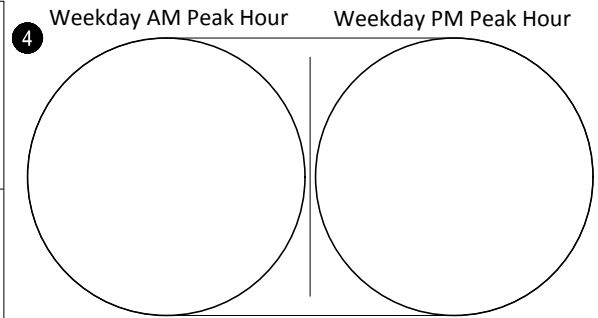
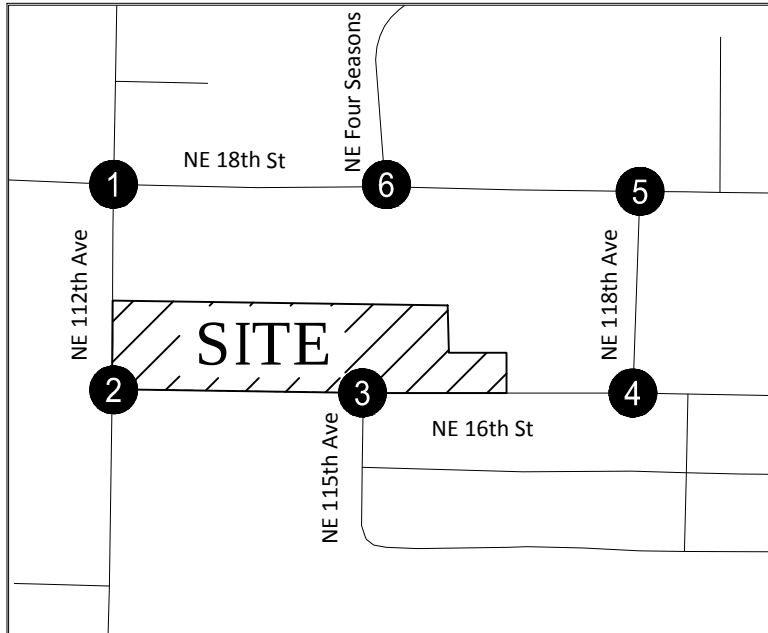
LEGEND

- #** - Study Intersections
- #** - Site Access Intersections

**In-Process Trips - Four Seasons Subdivision
Weekday AM and PM Peak Hour
Vancouver, Washington**

**Figure
D-1**

H:\2212152 - Four Seasons South Subdivision\report\figs\2212152_2018_Figures.dwg Oct 16, 2018 - 10:27am - cdougherty Layout Tab: IP_FSS

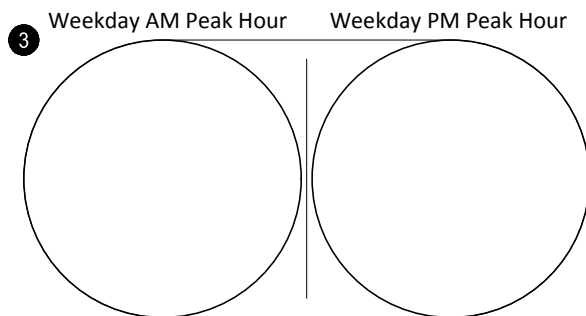
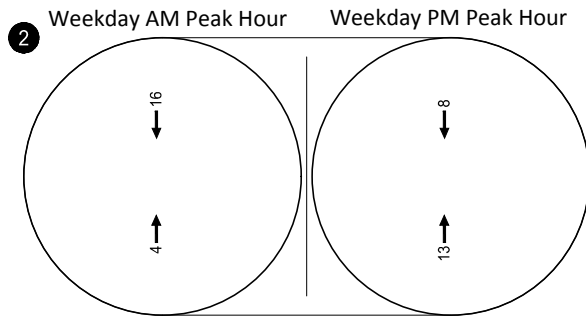
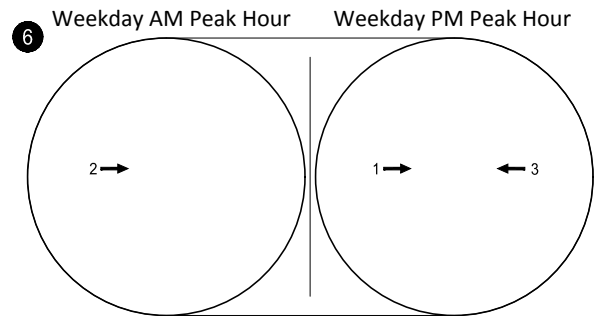
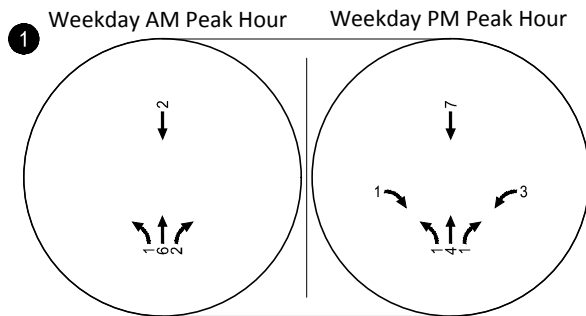
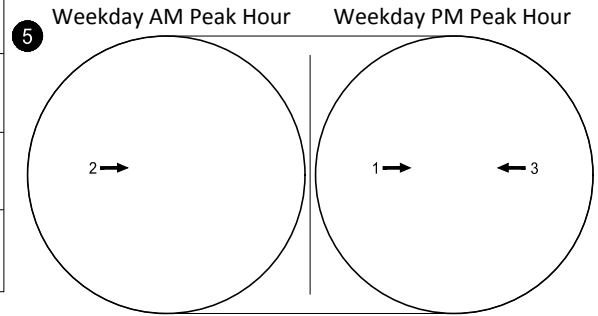
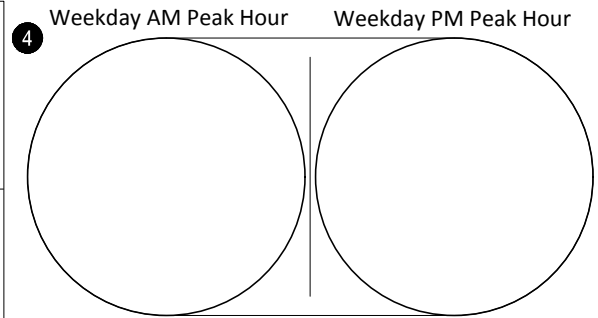
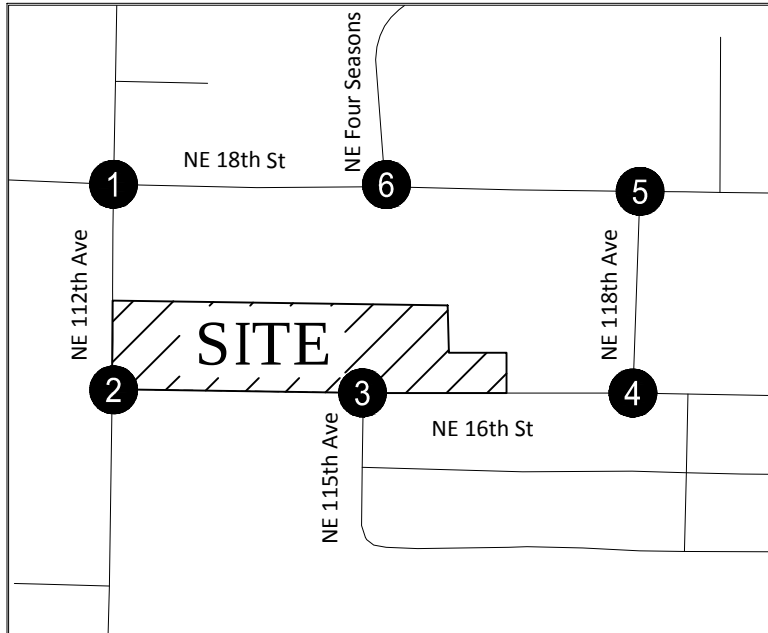


LEGEND

- # - Study Intersections
- # - Site Access Intersections

**In-Process Trips - Mountain View Apartments
Weekday AM and PM Peak Hour
Vancouver, Washington**

Figure
D-2



LEGEND

- #** - Study Intersections
- #** - Site Access Intersections

**In-Process Trips - Block 1618 Apartments
Weekday AM and PM Peak Hour
Vancouver, Washington**

**Figure
D-3**

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 Baseline AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	260	22	130	603	300	8	218	66	325	526	584
v/c Ratio	0.49	0.29	0.03	0.37	0.70	0.34	0.03	0.42	0.11	0.59	0.44	0.56
Control Delay	35.7	22.7	0.1	37.2	30.6	3.4	39.1	31.1	2.6	33.9	21.0	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	22.7	0.1	37.2	30.6	3.4	39.1	31.1	2.6	33.9	21.0	6.3
Queue Length 50th (ft)	42	42	0	25	114	4	1	43	0	61	77	30
Queue Length 95th (ft)	107	103	0	72	248	50	10	95	14	146	183	150
Internal Link Dist (ft)		626			696			637			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	1030	1789	972	982	1858	1243	797	1806	868	1473	2412	1236
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.15	0.02	0.13	0.32	0.24	0.01	0.12	0.08	0.22	0.22	0.47
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	231	20	116	537	267	7	194	59	289	468	520
Future Volume (vph)	193	231	20	116	537	267	7	194	59	289	468	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	217	260	22	130	603	300	8	218	66	325	526	584
RTOR Reduction (vph)	0	0	16	0	0	166	0	0	46	0	0	214
Lane Group Flow (vph)	217	260	6	130	603	134	8	218	20	325	526	370
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.1	18.8	20.8	7.5	17.2	29.2	2.0	14.4	21.9	12.0	24.4	33.5
Effective Green, g (s)	9.1	18.8	20.8	7.5	17.2	29.2	2.0	14.4	21.9	12.0	24.4	33.5
Actuated g/C Ratio	0.13	0.26	0.29	0.10	0.24	0.40	0.03	0.20	0.30	0.17	0.34	0.46
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	425	872	516	334	829	716	72	674	574	535	1153	822
v/s Ratio Prot	0.06	0.08	0.00	0.04	c0.17	0.03	0.00	0.06	0.00	c0.10	0.15	c0.06
v/s Ratio Perm			0.00			0.06			0.01			0.18
v/c Ratio	0.51	0.30	0.01	0.39	0.73	0.19	0.11	0.32	0.03	0.61	0.46	0.45
Uniform Delay, d1	29.7	21.7	18.6	30.5	25.6	14.1	34.5	25.0	17.9	28.2	18.9	13.3
Progression 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
Incremental Delay, d2	0.4	0.1	0.0	0.3	2.7	0.0	0.2	0.1	0.0	1.3	0.1	0.1
Delay (s)	30.2	21.7	18.6	30.7	28.3	14.1	34.7	25.1	17.9	29.5	19.1	13.5
Level of Service	C	C	B	C	C	B	C	C	B	C	B	B
Approach Delay (s)	25.2		24.5			23.7			19.2			
Approach LOS	C		C			C			B			
Intersection Summary												
HCM 2000 Control Delay			22.2		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			72.7		Sum of lost time (s)				20.0			
Intersection Capacity Utilization			64.5%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↘			↗
Sign Control	Yield			Yield	Yield	
Traffic Volume (vph)	0	0	6	0	0	5
Future Volume (vph)	0	0	6	0	0	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	8	0	0	6
Direction, Lane #	WB 1	NB 1				
Volume Total (vph)	8	6				
Volume Left (vph)	8	0				
Volume Right (vph)	0	6				
Hadj (s)	0.49	-0.60				
Departure Headway (s)	4.4	3.3				
Degree Utilization, x	0.01	0.01				
Capacity (veh/h)	811	1078				
Control Delay (s)	7.4	6.3				
Approach Delay (s)	7.4	6.3				
Approach LOS	A	A				
Intersection Summary						
Delay			7.0			
Level of Service			A			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	13	0	1	24	5	8
Future Volume (vph)	13	0	1	24	5	8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	16	0	1	30	6	10
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	16	31	16			
Volume Left (vph)	16	0	6			
Volume Right (vph)	0	30	10			
Hadj (s)	0.20	-0.51	-0.04			
Departure Headway (s)	4.2	3.4	3.9			
Degree Utilization, x	0.02	0.03	0.02			
Capacity (veh/h)	855	1036	889			
Control Delay (s)	7.2	6.5	7.0			
Approach Delay (s)	7.2	6.5	7.0			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.8			
Level of Service			A			
Intersection Capacity Utilization			17.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	651	10	929	33	10
v/c Ratio	0.24	0.01	0.32	0.11	0.04
Control Delay	4.4	2.2	2.9	16.4	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	2.2	2.9	16.4	10.8
Queue Length 50th (ft)	0	0	0	5	0
Queue Length 95th (ft)	97	4	80	27	10
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3358	909	3438	1728	1394
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.01	0.27	0.02	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	585	7	9	845	30	9
Future Volume (vph)	585	7	9	845	30	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3358		1805	3438	1805	1455
Flt Permitted	1.00		0.40	1.00	0.95	1.00
Satd. Flow (perm)	3358		768	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	643	8	10	929	33	10
RTOR Reduction (vph)	0	0	0	0	0	9
Lane Group Flow (vph)	651	0	10	929	33	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	27.5		33.3	33.3	2.5	2.5
Effective Green, g (s)	27.5		33.3	33.3	2.5	2.5
Actuated g/C Ratio	0.60		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2016		576	2499	98	79
v/s Ratio Prot	0.19		0.00	c0.27	c0.02	0.00
v/s Ratio Perm			0.01			
v/c Ratio	0.32		0.02	0.37	0.34	0.01
Uniform Delay, d1	4.5		1.7	2.3	20.9	20.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	2.0	0.0
Delay (s)	4.6		1.7	2.4	22.9	20.5
Level of Service	A		A	A	C	C
Approach Delay (s)	4.6			2.4	22.3	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.8		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			45.8		Sum of lost time (s)	15.0
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

						
Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	62	575	963	1	77	91
v/c Ratio	0.17	0.26	0.53	0.00	0.30	0.16
Control Delay	7.0	6.1	14.1	18.0	21.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	6.1	14.1	18.0	21.3	0.6
Queue Length 50th (ft)	5	27	102	0	18	0
Queue Length 95th (ft)	33	115	302	4	61	0
Internal Link Dist (ft)		696	835	313		373
Turn Bay Length (ft)	200				125	
Base Capacity (vph)	813	3162	3042	963	959	1203
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.32	0.00	0.08	0.08
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	522	1	0	837	39	1	0	0	70	0	83
Future Volume (vph)	56	522	1	0	837	39	1	0	0	70	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	1.00			0.99			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1612	3405			3424			1805		1656	1538	
Flt Permitted	0.19	1.00			1.00			0.70		0.76	1.00	
Satd. Flow (perm)	326	3405			3424			1326		1320	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	574	1	0	920	43	1	0	0	77	0	91
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	76	0
Lane Group Flow (vph)	62	575	0	0	960	0	0	1	0	77	15	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.8	32.8			24.4			8.2		8.2	8.2	
Effective Green, g (s)	32.8	32.8			24.4			8.2		8.2	8.2	
Actuated g/C Ratio	0.64	0.64			0.48			0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	295	2189			1638			213		212	247	
v/s Ratio Prot	0.01	c0.17			c0.28						0.01	
v/s Ratio Perm	0.12							0.00		c0.06		
v/c Ratio	0.21	0.26			0.59			0.00		0.36	0.06	
Uniform Delay, d1	4.6	3.9			9.6			18.0		19.1	18.1	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0			0.3			0.0		0.4	0.0	
Delay (s)	4.7	3.9			10.0			18.0		19.5	18.2	
Level of Service	A	A			A			B		B	B	
Approach Delay (s)		4.0			10.0			18.0			18.8	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			8.7			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			51.0			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			46.2%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 Baseline PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	477	717	16	99	367	316	33	478	199	423	411	344
v/c Ratio	0.64	0.67	0.02	0.35	0.64	0.55	0.13	0.69	0.33	0.70	0.32	0.33
Control Delay	36.2	30.2	0.1	44.2	39.5	19.4	43.6	38.3	13.9	40.6	21.8	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.2	30.2	0.1	44.2	39.5	19.4	43.6	38.3	13.9	40.6	21.8	2.0
Queue Length 50th (ft)	112	164	0	25	94	94	8	122	38	106	87	0
Queue Length 95th (ft)	220	292	0	61	168	192	27	210	107	192	145	35
Internal Link Dist (ft)		626			696			637			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	849	1532	921	866	1517	870	866	1547	842	1261	1989	1066
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.47	0.02	0.11	0.24	0.36	0.04	0.31	0.24	0.34	0.21	0.32
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	467	703	16	97	360	310	32	468	195	415	403	337
Future Volume (vph)	467	703	16	97	360	310	32	468	195	415	403	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1597	3502	3505	1573	3502	3574	1583	3400	3574	1540
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1597	3502	3505	1573	3502	3574	1583	3400	3574	1540
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	477	717	16	99	367	316	33	478	199	423	411	344
RTOR Reduction (vph)	0	0	11	0	0	39	0	0	66	0	0	149
Lane Group Flow (vph)	477	717	5	99	367	277	33	478	133	423	411	195
Confl. Peds. (#/hr)	1					1	15					15
Confl. Bikes (#/hr)			1									3
Heavy Vehicles (%)	2%	2%	0%	0%	3%	2%	0%	1%	2%	3%	1%	3%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	18.3	25.2	28.5	6.8	13.7	28.5	3.3	18.6	25.4	14.8	30.1	48.4
Effective Green, g (s)	18.3	25.2	28.5	6.8	13.7	28.5	3.3	18.6	25.4	14.8	30.1	48.4
Actuated g/C Ratio	0.21	0.30	0.33	0.08	0.16	0.33	0.04	0.22	0.30	0.17	0.35	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	735	1044	626	278	562	617	135	778	563	589	1259	962
v/s Ratio Prot	c0.14	c0.20	0.00	0.03	0.10	0.08	0.01	c0.13	0.02	c0.12	0.11	0.04
v/s Ratio Perm			0.00			0.10			0.07			0.08
v/c Ratio	0.65	0.69	0.01	0.36	0.65	0.45	0.24	0.61	0.24	0.72	0.33	0.20
Uniform Delay, d1	30.6	26.6	19.0	37.2	33.6	22.3	39.8	30.2	22.7	33.3	20.2	9.1
Progression 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
Incremental Delay, d2	1.5	1.5	0.0	0.3	2.1	0.2	0.3	1.0	0.1	3.5	0.1	0.0
Delay (s)	32.1	28.1	19.0	37.5	35.7	22.5	40.2	31.2	22.7	36.8	20.3	9.1
Level of Service	C	C	B	D	D	C	D	C	C	D	C	A
Approach Delay (s)		29.6			30.6			29.2			23.0	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			85.4				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			65.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations			↘			↗
Sign Control	Yield			Yield	Yield	
Traffic Volume (vph)	0	0	4	0	0	4
Future Volume (vph)	0	0	4	0	0	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	0	5	0	0	5
Direction, Lane #	WB 1	NB 1				
Volume Total (vph)	5	5				
Volume Left (vph)	5	0				
Volume Right (vph)	0	5				
Hadj (s)	0.20	-0.60				
Departure Headway (s)	4.1	3.3				
Degree Utilization, x	0.01	0.00				
Capacity (veh/h)	868	1081				
Control Delay (s)	7.1	6.3				
Approach Delay (s)	7.1	6.3				
Approach LOS	A	A				
Intersection Summary						
Delay			6.7			
Level of Service			A			
Intersection Capacity Utilization			6.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	17	0	0	22	35	15
Future Volume (vph)	17	0	0	22	35	15
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	21	0	0	28	44	19
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	21	28	63			
Volume Left (vph)	21	0	44			
Volume Right (vph)	0	28	19			
Hadj (s)	0.20	-0.60	-0.04			
Departure Headway (s)	4.3	3.5	4.0			
Degree Utilization, x	0.02	0.03	0.07			
Capacity (veh/h)	827	1017	887			
Control Delay (s)	7.4	6.6	7.3			
Approach Delay (s)	7.4	6.6	7.3			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.1			
Level of Service			A			
Intersection Capacity Utilization			17.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1320	23	801	23	19
v/c Ratio	0.51	0.06	0.28	0.09	0.08
Control Delay	7.6	3.2	2.9	22.0	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	3.2	2.9	22.0	12.1
Queue Length 50th (ft)	79	1	39	6	0
Queue Length 95th (ft)	236	7	64	25	16
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3433	596	3539	1520	1363
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.38	0.04	0.23	0.02	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1195	33	21	745	21	18
Future Volume (vph)	1195	33	21	745	21	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3525		1805	3539	1805	1615
Flt Permitted	1.00		0.16	1.00	0.95	1.00
Satd. Flow (perm)	3525		310	3539	1805	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1285	35	23	801	23	19
RTOR Reduction (vph)	1	0	0	0	0	18
Lane Group Flow (vph)	1319	0	23	801	23	1
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	2%	0%	0%	2%	0%	0%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	31.1		37.8	37.8	3.7	3.7
Effective Green, g (s)	31.1		37.8	37.8	3.7	3.7
Actuated g/C Ratio	0.60		0.73	0.73	0.07	0.07
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2128		276	2597	129	116
v/s Ratio Prot	c0.37		0.00	c0.23	c0.01	0.00
v/s Ratio Perm			0.06			
v/c Ratio	0.62		0.08	0.31	0.18	0.01
Uniform Delay, d1	6.5		4.8	2.4	22.5	22.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.0	0.0	0.7	0.0
Delay (s)	6.8		4.8	2.4	23.1	22.2
Level of Service	A		A	A	C	C
Approach Delay (s)	6.8			2.4	22.7	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			5.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			51.5		Sum of lost time (s)	15.0
Intersection Capacity Utilization			46.6%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2020 Baseline PM Peak Hour Conditions

							
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	167	1230	1	813	1	77	76
v/c Ratio	0.33	0.52	0.00	0.47	0.00	0.30	0.13
Control Delay	7.3	9.4	7.0	14.6	0.0	23.2	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	9.4	7.0	14.6	0.0	23.2	0.5
Queue Length 50th (ft)	13	71	0	86	0	18	0
Queue Length 95th (ft)	73	378	2	246	0	66	0
Internal Link Dist (ft)		696		835	313		373
Turn Bay Length (ft)	200		175			125	
Base Capacity (vph)	891	3255	559	3071	1175	947	1177
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.38	0.00	0.26	0.00	0.08	0.06
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

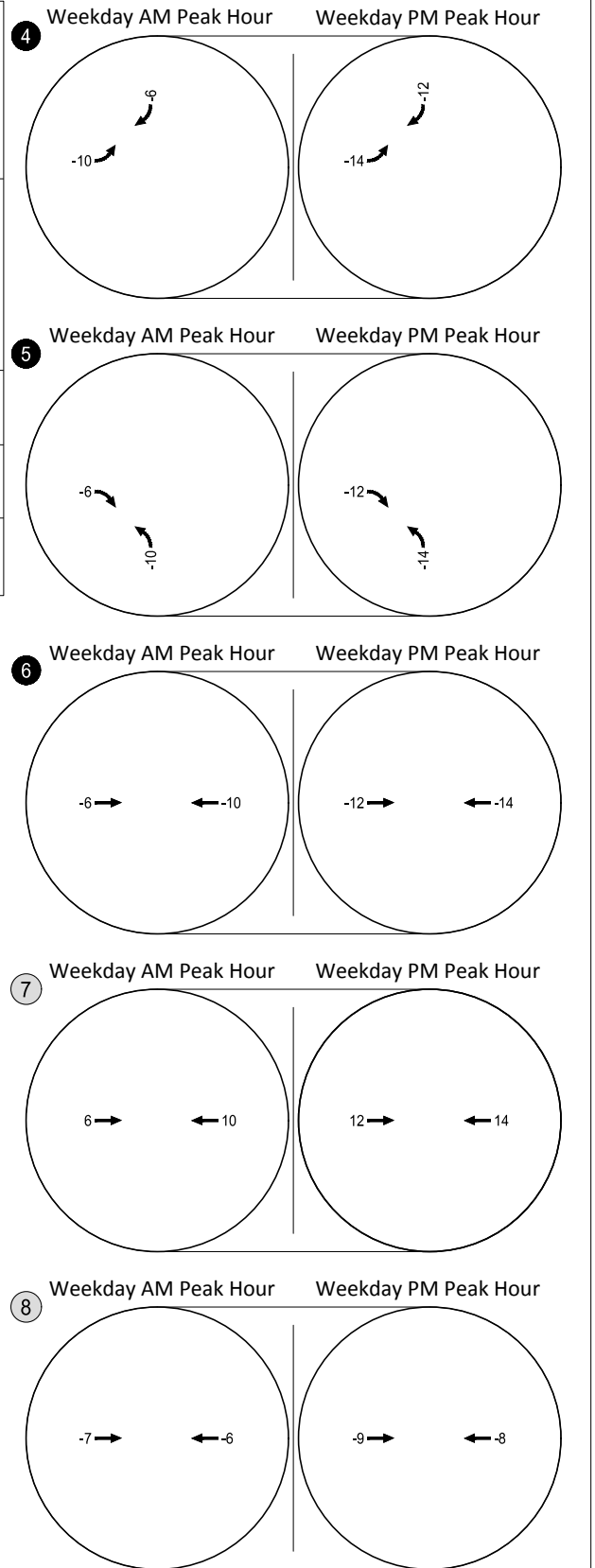
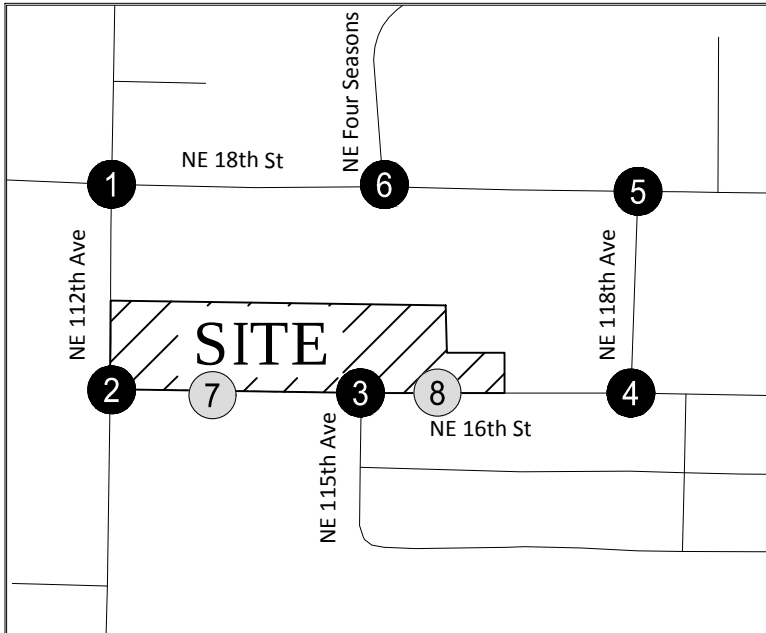
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Baseline PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1156	0	1	696	69	0	0	1	72	0	71
Future Volume (vph)	157	1156	0	1	696	69	0	0	1	72	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1769	3539		1805	3475			1644		1770	1583	
Flt Permitted	0.25	1.00		0.21	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	460	3539		397	3475			1644		1410	1583	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	167	1230	0	1	740	73	0	0	1	77	0	76
RTOR Reduction (vph)	0	0	0	0	6	0	0	1	0	0	66	0
Lane Group Flow (vph)	167	1230	0	1	807	0	0	0	0	77	10	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	2%	2%	0%	0%	2%	5%	0%	0%	0%	2%	0%	2%
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.2	32.6		27.4	26.8			7.6		7.6	7.6	
Effective Green, g (s)	38.2	32.6		27.4	26.8			7.6		7.6	7.6	
Actuated g/C Ratio	0.68	0.58		0.49	0.48			0.14		0.14	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	465	2067		210	1668			223		192	215	
v/s Ratio Prot	c0.04	c0.35		0.00	0.23			0.00			0.01	
v/s Ratio Perm	0.20			0.00						c0.05		
v/c Ratio	0.36	0.60		0.00	0.48			0.00		0.40	0.05	
Uniform Delay, d1	4.1	7.4		7.3	9.8			20.8		22.0	21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.3		0.0	0.1			0.0		0.5	0.0	
Delay (s)	4.2	7.7		7.3	9.9			20.8		22.5	21.0	
Level of Service	A	A		A	A			C		C	C	
Approach Delay (s)		7.3			9.9			20.8			21.8	
Approach LOS		A			A			C			C	
Intersection Summary												
HCM 2000 Control Delay			9.1			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			55.8			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			59.3%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Appendix E 2020 With Site Operations Worksheets



LEGEND

- # - Study Intersections
- # - Site Access Intersections

**Redistributed Trips
Weekday AM and PM Peak Hour
Vancouver, Washington**

**Figure
E-1**

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 Total Traffic AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	257	29	129	600	293	19	240	66	320	538	584
v/c Ratio	0.50	0.29	0.04	0.38	0.70	0.34	0.08	0.45	0.11	0.59	0.49	0.59
Control Delay	36.0	22.9	0.1	37.5	30.8	3.9	39.1	31.1	2.5	34.2	23.3	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	22.9	0.1	37.5	30.8	3.9	39.1	31.1	2.5	34.2	23.3	7.9
Queue Length 50th (ft)	43	43	0	26	117	8	3	47	0	62	105	57
Queue Length 95th (ft)	106	102	0	71	246	58	18	103	14	144	186	172
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	1019	1771	967	972	1840	1230	789	1788	872	1459	2320	1187
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.15	0.03	0.13	0.33	0.24	0.02	0.13	0.08	0.22	0.23	0.49
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	229	26	115	534	261	17	214	59	285	479	520
Future Volume (vph)	193	229	26	115	534	261	17	214	59	285	479	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	217	257	29	129	600	293	19	240	66	320	538	584
RTOR Reduction (vph)	0	0	20	0	0	151	0	0	47	0	0	204
Lane Group Flow (vph)	217	257	9	129	600	142	19	240	19	320	538	380
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.1	18.9	22.1	7.5	17.3	29.2	3.2	13.8	21.3	11.9	22.5	31.6
Effective Green, g (s)	9.1	18.9	22.1	7.5	17.3	29.2	3.2	13.8	21.3	11.9	22.5	31.6
Actuated g/C Ratio	0.13	0.26	0.31	0.10	0.24	0.40	0.04	0.19	0.30	0.17	0.31	0.44
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	429	884	546	337	841	722	116	651	566	535	1072	788
v/s Ratio Prot	0.06	0.08	0.00	0.04	c0.17	0.03	0.01	0.07	0.00	c0.10	0.16	c0.06
v/s Ratio Perm			0.01			0.06			0.01			0.18
v/c Ratio	0.51	0.29	0.02	0.38	0.71	0.20	0.16	0.37	0.03	0.60	0.50	0.48
Uniform Delay, d1	29.4	21.2	17.4	30.1	25.1	13.9	33.2	25.4	18.1	27.9	20.2	14.4
Progression 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
Incremental Delay, d2	0.3	0.1	0.0	0.3	2.4	0.0	0.2	0.1	0.0	1.2	0.1	0.2
Delay (s)	29.7	21.3	17.4	30.4	27.5	13.9	33.4	25.5	18.1	29.1	20.4	14.6
Level of Service	C	C	B	C	C	B	C	C	B	C	C	B
Approach Delay (s)		24.7			24.0			24.4			20.0	
Approach LOS		C			C			C			B	
Intersection Summary												
HCM 2000 Control Delay			22.4				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			72.1				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			64.5%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	30	255	1	17	617
Future Volume (Veh/h)	2	30	255	1	17	617
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	34	287	1	19	693
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						680
pX, platoon unblocked	0.89					
vC, conflicting volume	672	144			288	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381	144			288	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			99	
cM capacity (veh/h)	525	884			1286	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	36	191	97	250	462	
Volume Left	2	0	0	19	0	
Volume Right	34	0	1	0	0	
cSH	851	1700	1700	1286	1700	
Volume to Capacity	0.04	0.11	0.06	0.01	0.27	
Queue Length 95th (ft)	3	0	0	1	0	
Control Delay (s)	9.4	0.0	0.0	0.7	0.0	
Lane LOS	A			A		
Approach Delay (s)	9.4	0.0		0.3		
Approach LOS	A					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			38.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

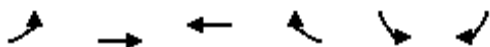
3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	3	5	1	8	1	4	0	1	2	0	12
Future Volume (Veh/h)	6	3	5	1	8	1	4	0	1	2	0	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	4	6	1	10	1	5	0	1	3	0	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	11			10			50	36	7	36	38	10
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			10			50	36	7	36	38	10
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	99
cM capacity (veh/h)	1621			1517			937	856	1081	969	853	1077
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	18	12	6	18								
Volume Left	8	1	5	3								
Volume Right	6	1	1	15								
cSH	1621	1517	958	1057								
Volume to Capacity	0.00	0.00	0.01	0.02								
Queue Length 95th (ft)	0	0	0	1								
Control Delay (s)	3.2	0.6	8.8	8.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.2	0.6	8.8	8.5								
Approach LOS			A	A								
Intersection Summary												
Average Delay				5.0								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	8	0	1	24	5	5
Future Volume (vph)	8	0	1	24	5	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	10	0	1	30	6	6
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	10	31	12			
Volume Left (vph)	10	0	6			
Volume Right (vph)	0	30	6			
Hadj (s)	0.20	-0.51	0.07			
Departure Headway (s)	4.2	3.4	4.1			
Degree Utilization, x	0.01	0.03	0.01			
Capacity (veh/h)	857	1042	867			
Control Delay (s)	7.2	6.5	7.1			
Approach Delay (s)	7.2	6.5	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.8			
Level of Service			A			
Intersection Capacity Utilization			16.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

					
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	644	13	929	22	15
v/c Ratio	0.24	0.02	0.32	0.08	0.06
Control Delay	4.3	2.1	2.8	16.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	2.1	2.8	16.5	10.3
Queue Length 50th (ft)	0	0	0	4	0
Queue Length 95th (ft)	94	5	75	21	12
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3373	916	3438	1732	1397
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.01	0.27	0.01	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

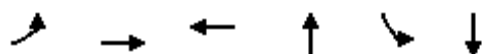
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	585	1	12	845	20	14
Future Volume (vph)	585	1	12	845	20	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3372		1805	3438	1805	1455
Flt Permitted	1.00		0.41	1.00	0.95	1.00
Satd. Flow (perm)	3372		774	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	643	1	13	929	22	15
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	644	0	13	929	22	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	27.6		33.4	33.4	2.4	2.4
Effective Green, g (s)	27.6		33.4	33.4	2.4	2.4
Actuated g/C Ratio	0.60		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2032		582	2507	94	76
v/s Ratio Prot	0.19		0.00	c0.27	c0.01	0.00
v/s Ratio Perm			0.02			
v/c Ratio	0.32		0.02	0.37	0.23	0.01
Uniform Delay, d1	4.5		1.7	2.3	20.8	20.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	1.3	0.1
Delay (s)	4.5		1.7	2.3	22.1	20.6
Level of Service	A		A	A	C	C
Approach Delay (s)	4.5			2.3	21.5	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			45.8		Sum of lost time (s)	15.0
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions



Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	62	568	952	1	77	91
v/c Ratio	0.16	0.25	0.53	0.00	0.30	0.16
Control Delay	7.0	6.1	14.0	18.0	21.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	6.1	14.0	18.0	21.2	0.6
Queue Length 50th (ft)	5	26	100	0	17	0
Queue Length 95th (ft)	33	114	297	4	61	0
Internal Link Dist (ft)		696	835	313		373
Turn Bay Length (ft)	200				125	
Base Capacity (vph)	816	3164	3048	967	963	1207
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.31	0.00	0.08	0.08
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

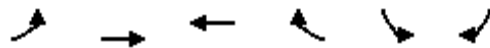
Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	516	1	0	827	39	1	0	0	70	0	83
Future Volume (vph)	56	516	1	0	827	39	1	0	0	70	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	1.00			0.99			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1612	3405			3424			1805		1656	1538	
Flt Permitted	0.20	1.00			1.00			0.70		0.76	1.00	
Satd. Flow (perm)	331	3405			3424			1326		1320	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	567	1	0	909	43	1	0	0	77	0	91
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	76	0
Lane Group Flow (vph)	62	568	0	0	949	0	0	1	0	77	15	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.7	32.7			24.3			8.2		8.2	8.2	
Effective Green, g (s)	32.7	32.7			24.3			8.2		8.2	8.2	
Actuated g/C Ratio	0.64	0.64			0.48			0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	298	2187			1634			213		212	247	
v/s Ratio Prot	0.01	c0.17			c0.28						0.01	
v/s Ratio Perm	0.12							0.00		c0.06		
v/c Ratio	0.21	0.26			0.58			0.00		0.36	0.06	
Uniform Delay, d1	4.6	3.9			9.6			17.9		19.0	18.1	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0			0.3			0.0		0.4	0.0	
Delay (s)	4.7	3.9			10.0			17.9		19.4	18.1	
Level of Service	A	A			A			B		B	B	
Approach Delay (s)		4.0			10.0			17.9			18.7	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay	8.7			HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio	0.52											
Actuated Cycle Length (s)	50.9			Sum of lost time (s)					15.0			
Intersection Capacity Utilization	45.9%			ICU Level of Service					A			
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

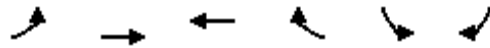
Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	13	23	1	1	9
Future Volume (Veh/h)	5	13	23	1	1	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	6	16	29	1	1	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	30				58	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	30				58	30
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1596				951	1051
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	22	30	12			
Volume Left	6	0	1			
Volume Right	0	1	11			
cSH	1596	1700	1042			
Volume to Capacity	0.00	0.02	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	2.0	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	2.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay		2.3				
Intersection Capacity Utilization		15.1%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2020 Total Traffic AM Peak Hour Conditions



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	5	4	1	2	1
Future Volume (Veh/h)	1	5	4	1	2	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	6	5	1	3	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	6				14	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	6				14	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1628				1010	1083
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	7	6	4			
Volume Left	1	0	3			
Volume Right	0	1	1			
cSH	1628	1700	1028			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.0	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		13.3%	ICU Level of Service	A		
Analysis Period (min)		15				

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 Total Traffic PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	477	713	26	98	363	307	40	493	199	415	431	344
v/c Ratio	0.64	0.71	0.04	0.37	0.64	0.48	0.21	0.73	0.34	0.71	0.37	0.32
Control Delay	37.1	32.2	0.1	45.6	40.6	18.5	45.6	40.1	14.0	41.8	23.7	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	32.2	0.1	45.6	40.6	18.5	45.6	40.1	14.0	41.8	23.7	1.8
Queue Length 50th (ft)	117	172	0	26	96	96	10	130	39	107	94	0
Queue Length 95th (ft)	224	301	0	61	168	189	31	222	108	190	155	35
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	818	1421	909	780	1476	909	633	1434	823	1170	1861	1117
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.50	0.03	0.13	0.25	0.34	0.06	0.34	0.24	0.35	0.23	0.31
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	467	699	25	96	356	301	39	483	195	407	422	337
Future Volume (vph)	467	699	25	96	356	301	39	483	195	407	422	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	477	713	26	98	363	307	40	493	199	415	431	344
RTOR Reduction (vph)	0	0	17	0	0	36	0	0	66	0	0	154
Lane Group Flow (vph)	477	713	9	98	363	271	40	493	133	415	431	190
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	18.8	25.6	30.4	7.0	13.8	29.2	4.8	18.4	25.4	15.4	29.0	47.8
Effective Green, g (s)	18.8	25.6	30.4	7.0	13.8	29.2	4.8	18.4	25.4	15.4	29.0	47.8
Actuated g/C Ratio	0.22	0.30	0.35	0.08	0.16	0.34	0.06	0.21	0.29	0.18	0.34	0.55
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	739	999	596	262	559	603	146	725	546	577	1153	949
v/s Ratio Prot	c0.14	c0.21	0.00	0.03	0.10	0.08	0.02	c0.14	0.02	c0.13	0.13	0.04
v/s Ratio Perm			0.01			0.10			0.07			0.08
v/c Ratio	0.65	0.71	0.02	0.37	0.65	0.45	0.27	0.68	0.24	0.72	0.37	0.20
Uniform Delay, d1	30.8	27.1	18.2	37.6	34.0	22.3	39.1	31.3	23.2	33.5	21.8	9.7
Progression 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
Incremental Delay, d2	1.5	2.0	0.0	0.3	2.0	0.2	0.4	2.1	0.1	3.6	0.1	0.0
Delay (s)	32.2	29.2	18.3	38.0	36.0	22.5	39.5	33.4	23.3	37.0	21.9	9.7
Level of Service	C	C	B	D	D	C	D	C	C	D	C	A
Approach Delay (s)		30.1			30.9			31.0			23.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.5				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			86.4				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			66.0%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	22	702	1	28	513
Future Volume (Veh/h)	2	22	702	1	28	513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	22	716	1	29	523
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.92					
vC, conflicting volume	1036	358			717	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	870	358			717	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			97	
cM capacity (veh/h)	263	644			893	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	24	477	240	203	349	
Volume Left	2	0	0	29	0	
Volume Right	22	0	1	0	0	
cSH	574	1700	1700	893	1700	
Volume to Capacity	0.04	0.28	0.14	0.03	0.21	
Queue Length 95th (ft)	3	0	0	3	0	
Control Delay (s)	11.5	0.0	0.0	1.6	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.5	0.0		0.6		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			45.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	11	3	1	13	2	3	0	1	1	0	5
Future Volume (Veh/h)	9	11	3	1	13	2	3	0	1	1	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	11	14	4	1	16	3	4	0	1	1	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	19			18			64	59	16	58	60	18
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	19			18			64	59	16	58	60	18
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	99
cM capacity (veh/h)	1611			1506			925	830	1069	937	829	1067
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	29	20	5	7								
Volume Left	11	1	4	1								
Volume Right	4	3	1	6								
cSH	1611	1506	951	1046								
Volume to Capacity	0.01	0.00	0.01	0.01								
Queue Length 95th (ft)	1	0	0	1								
Control Delay (s)	2.8	0.4	8.8	8.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	2.8	0.4	8.8	8.5								
Approach LOS			A	A								
Intersection Summary												
Average Delay				3.1								
Intersection Capacity Utilization				14.2%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	6	0	0	22	35	7
Future Volume (vph)	6	0	0	22	35	7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	0	0	28	44	9
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	8	28	53			
Volume Left (vph)	8	0	44			
Volume Right (vph)	0	28	9			
Hadj (s)	0.20	-0.53	0.38			
Departure Headway (s)	4.2	3.5	4.4			
Degree Utilization, x	0.01	0.03	0.06			
Capacity (veh/h)	830	1007	810			
Control Delay (s)	7.3	6.6	7.6			
Approach Delay (s)	7.3	6.6	7.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.3			
Level of Service			A			
Intersection Capacity Utilization			15.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1308	27	801	8	23
v/c Ratio	0.48	0.06	0.26	0.03	0.10
Control Delay	6.4	2.9	2.0	21.9	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.4	2.9	2.0	21.9	12.5
Queue Length 50th (ft)	0	1	0	1	0
Queue Length 95th (ft)	235	7	62	13	18
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3233	625	3438	1577	1274
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.04	0.23	0.01	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1195	21	25	745	7	21
Future Volume (vph)	1195	21	25	745	7	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3352		1805	3438	1805	1455
Flt Permitted	1.00		0.17	1.00	0.95	1.00
Satd. Flow (perm)	3352		329	3438	1805	1455
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1285	23	27	801	8	23
RTOR Reduction (vph)	1	0	0	0	0	22
Lane Group Flow (vph)	1307	0	27	801	8	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	32.3		38.9	38.9	2.1	2.1
Effective Green, g (s)	32.3		38.9	38.9	2.1	2.1
Actuated g/C Ratio	0.63		0.76	0.76	0.04	0.04
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2122		297	2622	74	59
v/s Ratio Prot	c0.39		0.00	c0.23	c0.00	0.00
v/s Ratio Perm			0.07			
v/c Ratio	0.62		0.09	0.31	0.11	0.02
Uniform Delay, d1	5.6		3.7	1.9	23.5	23.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.0	0.0	0.6	0.1
Delay (s)	6.0		3.7	1.9	24.2	23.6
Level of Service	A		A	A	C	C
Approach Delay (s)	6.0			2.0	23.7	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			51.0		Sum of lost time (s)	15.0
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

							
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	167	1217	1	799	1	77	76
v/c Ratio	0.35	0.53	0.00	0.48	0.00	0.32	0.13
Control Delay	7.6	9.6	7.0	15.1	0.0	24.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.6	7.0	15.1	0.0	24.4	0.5
Queue Length 50th (ft)	14	72	0	87	0	18	0
Queue Length 95th (ft)	74	381	2	247	0	68	0
Internal Link Dist (ft)		696		835	313		373
Turn Bay Length (ft)	200		175			125	
Base Capacity (vph)	807	3125	558	2953	1161	873	1136
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.39	0.00	0.27	0.00	0.09	0.07
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1144	0	1	682	69	0	0	1	72	0	71
Future Volume (vph)	157	1144	0	1	682	69	0	0	1	72	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1611	3406		1805	3375			1644		1656	1538	
Flt Permitted	0.25	1.00		0.22	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	428	3406		411	3375			1644		1320	1538	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	167	1217	0	1	726	73	0	0	1	77	0	76
RTOR Reduction (vph)	0	0	0	0	6	0	0	1	0	0	66	0
Lane Group Flow (vph)	167	1217	0	1	793	0	0	0	0	77	10	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	39.0	33.4		27.8	27.2			7.7		7.7	7.7	
Effective Green, g (s)	39.0	33.4		27.8	27.2			7.7		7.7	7.7	
Actuated g/C Ratio	0.69	0.59		0.49	0.48			0.14		0.14	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	436	2006		216	1619			223		179	208	
v/s Ratio Prot	c0.05	c0.36		0.00	0.23			0.00			0.01	
v/s Ratio Perm	0.22			0.00						c0.06		
v/c Ratio	0.38	0.61		0.00	0.49			0.00		0.43	0.05	
Uniform Delay, d1	4.1	7.4		7.4	10.0			21.2		22.5	21.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.0	0.1			0.0		0.6	0.0	
Delay (s)	4.3	7.8		7.4	10.1			21.2		23.1	21.4	
Level of Service	A	A		A	B			C		C	C	
Approach Delay (s)		7.4			10.1			21.2			22.2	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			9.3			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			56.7			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			58.9%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	22	20	1	1	4
Future Volume (Veh/h)	7	22	20	1	1	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	9	28	25	1	1	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	26				72	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26				72	26
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1601				932	1056
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	37	26	6			
Volume Left	9	0	1			
Volume Right	0	1	5			
cSH	1601	1700	1033			
Volume to Capacity	0.01	0.02	0.01			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.8	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.8	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			17.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2020 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	5	1	1	1
Future Volume (Veh/h)	1	4	5	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	5	6	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	7				14	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7				14	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1627				1010	1082
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	6	7	2			
Volume Left	1	0	1			
Volume Right	0	1	1			
cSH	1627	1700	1045			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.2	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.2	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix F 2025 With Site Operations Worksheets

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 Total Traffic AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	233	276	30	139	645	316	20	257	71	346	579	628
v/c Ratio	0.53	0.29	0.04	0.41	0.72	0.36	0.09	0.48	0.12	0.61	0.52	0.64
Control Delay	38.2	23.4	0.1	39.8	32.1	5.2	41.6	33.6	3.3	36.0	24.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	23.4	0.1	39.8	32.1	5.2	41.6	33.6	3.3	36.0	24.6	9.6
Queue Length 50th (ft)	50	48	0	29	135	19	4	55	0	73	121	83
Queue Length 95th (ft)	118	111	0	78	274	83	19	116	18	161	213	226
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	966	1677	957	921	1742	1202	748	1693	841	1381	2197	1167
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.16	0.03	0.15	0.37	0.26	0.03	0.15	0.08	0.25	0.26	0.54
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	246	27	124	574	281	18	229	63	308	515	559
Future Volume (vph)	207	246	27	124	574	281	18	229	63	308	515	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	233	276	30	139	645	316	20	257	71	346	579	628
RTOR Reduction (vph)	0	0	21	0	0	132	0	0	50	0	0	196
Lane Group Flow (vph)	233	276	9	139	645	184	20	257	21	346	579	432
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.7	20.9	24.1	7.9	19.1	32.2	3.2	14.3	22.2	13.1	24.2	33.9
Effective Green, g (s)	9.7	20.9	24.1	7.9	19.1	32.2	3.2	14.3	22.2	13.1	24.2	33.9
Actuated g/C Ratio	0.13	0.27	0.32	0.10	0.25	0.42	0.04	0.19	0.29	0.17	0.32	0.44
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	432	925	555	336	878	744	110	639	554	557	1091	792
v/s Ratio Prot	0.07	0.08	0.00	0.04	c0.18	0.04	0.01	0.08	0.00	c0.11	0.17	c0.07
v/s Ratio Perm			0.01			0.08			0.01			0.21
v/c Ratio	0.54	0.30	0.02	0.41	0.73	0.25	0.18	0.40	0.04	0.62	0.53	0.55
Uniform Delay, d1	31.2	21.9	17.9	32.0	26.2	14.2	35.2	27.2	19.3	29.2	21.3	15.5
Progression 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
Incremental Delay, d2	0.7	0.1	0.0	0.3	2.8	0.1	0.3	0.2	0.0	1.6	0.2	0.4
Delay (s)	31.8	21.9	17.9	32.3	29.0	14.3	35.5	27.3	19.4	30.8	21.6	15.9
Level of Service	C	C	B	C	C	B	D	C	B	C	C	B
Approach Delay (s)		26.0			25.2			26.2			21.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.7				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			76.2				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			68.0%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	30	275	1	17	663
Future Volume (Veh/h)	2	30	275	1	17	663
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	34	309	1	19	745
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.87					
vC, conflicting volume	720	155			310	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	394	155			310	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			98	
cM capacity (veh/h)	507	869			1262	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	36	206	104	267	497	
Volume Left	2	0	0	19	0	
Volume Right	34	0	1	0	0	
cSH	836	1700	1700	1262	1700	
Volume to Capacity	0.04	0.12	0.06	0.02	0.29	
Queue Length 95th (ft)	3	0	0	1	0	
Control Delay (s)	9.5	0.0	0.0	0.7	0.0	
Lane LOS	A			A		
Approach Delay (s)	9.5	0.0		0.2		
Approach LOS	A					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			39.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	3	5	1	8	1	4	0	1	2	0	12
Future Volume (Veh/h)	6	3	5	1	8	1	4	0	1	2	0	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	4	6	1	10	1	5	0	1	3	0	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	11			10			50	36	7	36	38	10
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	11			10			50	36	7	36	38	10
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	100	100	100	99
cM capacity (veh/h)	1621			1517			937	856	1081	969	853	1077
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	18	12	6	18								
Volume Left	8	1	5	3								
Volume Right	6	1	1	15								
cSH	1621	1517	958	1057								
Volume to Capacity	0.00	0.00	0.01	0.02								
Queue Length 95th (ft)	0	0	0	1								
Control Delay (s)	3.2	0.6	8.8	8.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.2	0.6	8.8	8.5								
Approach LOS			A	A								
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization			13.3%	ICU Level of Service			A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	8	0	1	24	5	5
Future Volume (vph)	8	0	1	24	5	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	10	0	1	30	6	6
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	10	31	12			
Volume Left (vph)	10	0	6			
Volume Right (vph)	0	30	6			
Hadj (s)	0.20	-0.51	0.07			
Departure Headway (s)	4.2	3.4	4.1			
Degree Utilization, x	0.01	0.03	0.01			
Capacity (veh/h)	857	1042	867			
Control Delay (s)	7.2	6.5	7.1			
Approach Delay (s)	7.2	6.5	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.8			
Level of Service			A			
Intersection Capacity Utilization			16.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	691	13	999	22	15
v/c Ratio	0.26	0.02	0.34	0.08	0.06
Control Delay	4.4	2.1	2.9	16.4	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	2.1	2.9	16.4	10.3
Queue Length 50th (ft)	0	0	0	4	0
Queue Length 95th (ft)	102	5	84	21	12
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3373	896	3438	1731	1396
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.01	0.29	0.01	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	628	1	12	909	20	14
Future Volume (vph)	628	1	12	909	20	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3372		1805	3438	1805	1455
Flt Permitted	1.00		0.39	1.00	0.95	1.00
Satd. Flow (perm)	3372		739	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	690	1	13	999	22	15
RTOR Reduction (vph)	0	0	0	0	0	14
Lane Group Flow (vph)	691	0	13	999	22	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	27.5		33.3	33.3	2.4	2.4
Effective Green, g (s)	27.5		33.3	33.3	2.4	2.4
Actuated g/C Ratio	0.60		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2029		557	2505	94	76
v/s Ratio Prot	0.20		0.00	c0.29	c0.01	0.00
v/s Ratio Perm			0.02			
v/c Ratio	0.34		0.02	0.40	0.23	0.01
Uniform Delay, d1	4.6		1.7	2.4	20.8	20.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	1.3	0.1
Delay (s)	4.6		1.7	2.4	22.1	20.6
Level of Service	A		A	A	C	C
Approach Delay (s)	4.6			2.4	21.5	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			45.7		Sum of lost time (s)	15.0
Intersection Capacity Utilization			37.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

						
Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	65	612	1025	1	81	97
v/c Ratio	0.18	0.27	0.55	0.00	0.32	0.18
Control Delay	7.0	6.0	14.3	19.0	22.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	6.0	14.3	19.0	22.9	0.7
Queue Length 50th (ft)	5	30	114	0	19	0
Queue Length 95th (ft)	34	122	329	4	69	0
Internal Link Dist (ft)		696	835	313		373
Turn Bay Length (ft)	200				125	
Base Capacity (vph)	793	3141	2991	934	935	1179
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.19	0.34	0.00	0.09	0.08
Intersection Summary						

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	556	1	0	891	42	1	0	0	74	0	88
Future Volume (vph)	59	556	1	0	891	42	1	0	0	74	0	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95			0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	1.00			0.99			1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00			0.95		0.95	1.00	
Satd. Flow (prot)	1612	3405			3424			1805		1656	1538	
Flt Permitted	0.18	1.00			1.00			0.69		0.76	1.00	
Satd. Flow (perm)	297	3405			3424			1319		1320	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	65	611	1	0	979	46	1	0	0	81	0	97
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	82	0
Lane Group Flow (vph)	65	612	0	0	1022	0	0	1	0	81	15	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	34.5	34.5			25.9			8.4		8.4	8.4	
Effective Green, g (s)	34.5	34.5			25.9			8.4		8.4	8.4	
Actuated g/C Ratio	0.65	0.65			0.49			0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0			5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0			1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	283	2220			1676			209		209	244	
v/s Ratio Prot	0.02	c0.18			c0.30						0.01	
v/s Ratio Perm	0.13							0.00		c0.06		
v/c Ratio	0.23	0.28			0.61			0.00		0.39	0.06	
Uniform Delay, d1	4.8	3.9			9.8			18.7		19.9	18.9	
Progression Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.0			0.5			0.0		0.4	0.0	
Delay (s)	4.9	3.9			10.3			18.7		20.4	18.9	
Level of Service	A	A			B			B		C	B	
Approach Delay (s)		4.0			10.3			18.7			19.6	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			8.9			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			52.9			Sum of lost time (s)				15.0		
Intersection Capacity Utilization			48.1%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	13	23	1	1	9
Future Volume (Veh/h)	5	13	23	1	1	9
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	6	16	29	1	1	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	30				58	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	30				58	30
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1596				951	1051
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	22	30	12			
Volume Left	6	0	1			
Volume Right	0	1	11			
cSH	1596	1700	1042			
Volume to Capacity	0.00	0.02	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	2.0	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	2.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization		15.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2025 Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	5	4	1	2	1
Future Volume (Veh/h)	1	5	4	1	2	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	6	5	1	3	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	6				14	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	6				14	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1628				1010	1083
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	7	6	4			
Volume Left	1	0	3			
Volume Right	0	1	1			
cSH	1628	1700	1028			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.0	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 Total Traffic PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	512	767	28	105	391	332	42	529	213	448	462	369
v/c Ratio	0.67	0.74	0.04	0.41	0.69	0.51	0.23	0.76	0.36	0.75	0.38	0.33
Control Delay	39.9	35.0	0.1	48.3	43.9	20.0	48.3	43.0	15.0	44.3	24.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	35.0	0.1	48.3	43.9	20.0	48.3	43.0	15.0	44.3	24.1	1.9
Queue Length 50th (ft)	136	202	0	29	111	114	11	148	48	124	106	2
Queue Length 95th (ft)	#272	346	0	66	188	214	34	244	121	209	166	38
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	764	1327	894	728	1379	870	592	1339	800	1093	1739	1112
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.58	0.03	0.14	0.28	0.38	0.07	0.40	0.27	0.41	0.27	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	502	752	27	103	383	325	41	518	209	439	453	362
Future Volume (vph)	502	752	27	103	383	325	41	518	209	439	453	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	512	767	28	105	391	332	42	529	213	448	462	369
RTOR Reduction (vph)	0	0	18	0	0	36	0	0	66	0	0	155
Lane Group Flow (vph)	512	767	10	105	391	296	42	529	147	448	462	214
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	20.5	28.0	32.8	7.2	14.7	31.6	4.8	19.7	26.9	16.9	31.8	52.3
Effective Green, g (s)	20.5	28.0	32.8	7.2	14.7	31.6	4.8	19.7	26.9	16.9	31.8	52.3
Actuated g/C Ratio	0.22	0.31	0.36	0.08	0.16	0.34	0.05	0.21	0.29	0.18	0.35	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	759	1029	599	254	561	607	137	730	539	596	1190	969
v/s Ratio Prot	c0.15	c0.23	0.00	0.03	0.11	0.09	0.02	c0.16	0.02	c0.14	0.13	0.05
v/s Ratio Perm			0.01			0.10			0.07			0.09
v/c Ratio	0.67	0.75	0.02	0.41	0.70	0.49	0.31	0.72	0.27	0.75	0.39	0.22
Uniform Delay, d1	32.6	28.7	19.1	40.3	36.4	23.7	41.9	33.5	24.9	35.5	22.7	9.7
Progression 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
Incremental Delay, d2	1.9	2.6	0.0	0.4	3.0	0.2	0.5	3.0	0.1	4.7	0.1	0.0
Delay (s)	34.5	31.3	19.1	40.7	39.5	23.9	42.4	36.6	25.0	40.2	22.7	9.8
Level of Service	C	C	B	D	D	C	D	D	C	D	C	A
Approach Delay (s)		32.3			33.4			33.7			25.1	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.6				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			91.8				Sum of lost time (s)			20.0		
Intersection Capacity Utilization			69.3%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	22	754	1	28	551
Future Volume (Veh/h)	2	22	754	1	28	551
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	22	769	1	29	562
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.91					
vC, conflicting volume	1108	385			770	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	928	385			770	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	96			97	
cM capacity (veh/h)	238	619			854	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	24	513	257	216	375	
Volume Left	2	0	0	29	0	
Volume Right	22	0	1	0	0	
cSH	546	1700	1700	854	1700	
Volume to Capacity	0.04	0.30	0.15	0.03	0.22	
Queue Length 95th (ft)	3	0	0	3	0	
Control Delay (s)	11.9	0.0	0.0	1.6	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.9	0.0		0.6		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			46.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	11	3	1	13	2	3	0	1	1	0	5
Future Volume (Veh/h)	9	11	3	1	13	2	3	0	1	1	0	5
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	11	14	4	1	16	3	4	0	1	1	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	19			18			64	59	16	58	60	18
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	19			18			64	59	16	58	60	18
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	100	100	99
cM capacity (veh/h)	1611			1506			925	830	1069	937	829	1067
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	29	20	5	7								
Volume Left	11	1	4	1								
Volume Right	4	3	1	6								
cSH	1611	1506	951	1046								
Volume to Capacity	0.01	0.00	0.01	0.01								
Queue Length 95th (ft)	1	0	0	1								
Control Delay (s)	2.8	0.4	8.8	8.5								
Lane LOS	A	A	A	A								
Approach Delay (s)	2.8	0.4	8.8	8.5								
Approach LOS			A	A								
Intersection Summary												
Average Delay				3.1								
Intersection Capacity Utilization				14.2%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	6	0	0	22	35	7
Future Volume (vph)	6	0	0	22	35	7
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	0	0	28	44	9
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	8	28	53			
Volume Left (vph)	8	0	44			
Volume Right (vph)	0	28	9			
Hadj (s)	0.20	-0.53	0.38			
Departure Headway (s)	4.2	3.5	4.4			
Degree Utilization, x	0.01	0.03	0.06			
Capacity (veh/h)	830	1007	810			
Control Delay (s)	7.3	6.6	7.6			
Approach Delay (s)	7.3	6.6	7.6			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.3			
Level of Service			A			
Intersection Capacity Utilization			15.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues
5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

	→	↙	←	↘	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1406	27	860	8	23
v/c Ratio	0.51	0.07	0.28	0.03	0.11
Control Delay	6.3	2.8	1.9	24.0	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.3	2.8	1.9	24.0	13.3
Queue Length 50th (ft)	0	1	0	2	0
Queue Length 95th (ft)	262	7	66	14	18
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3148	589	3438	1518	1227
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.05	0.25	0.01	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1286	21	25	800	7	21
Future Volume (vph)	1286	21	25	800	7	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3353		1805	3438	1805	1455
Flt Permitted	1.00		0.15	1.00	0.95	1.00
Satd. Flow (perm)	3353		290	3438	1805	1455
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1383	23	27	860	8	23
RTOR Reduction (vph)	1	0	0	0	0	22
Lane Group Flow (vph)	1405	0	27	860	8	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	35.0		41.5	41.5	2.1	2.1
Effective Green, g (s)	35.0		41.5	41.5	2.1	2.1
Actuated g/C Ratio	0.65		0.77	0.77	0.04	0.04
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2189		266	2661	70	57
v/s Ratio Prot	c0.42		0.00	c0.25	c0.00	0.00
v/s Ratio Perm			0.08			
v/c Ratio	0.64		0.10	0.32	0.11	0.02
Uniform Delay, d1	5.6		4.1	1.8	24.9	24.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5		0.1	0.0	0.7	0.1
Delay (s)	6.0		4.1	1.8	25.6	24.9
Level of Service	A		A	A	C	C
Approach Delay (s)	6.0			1.9	25.1	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.7		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			53.6		Sum of lost time (s)	15.0
Intersection Capacity Utilization			48.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues
6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

							
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	179	1312	1	861	1	81	80
v/c Ratio	0.38	0.56	0.00	0.51	0.00	0.33	0.14
Control Delay	7.8	9.7	7.0	15.4	0.0	26.3	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	9.7	7.0	15.4	0.0	26.3	0.5
Queue Length 50th (ft)	15	86	0	102	0	20	0
Queue Length 95th (ft)	78	423	2	272	0	78	0
Internal Link Dist (ft)		696		835	313		373
Turn Bay Length (ft)	200		175			125	
Base Capacity (vph)	802	3100	538	2873	1129	847	1107
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.00	0.30	0.00	0.10	0.07
Intersection Summary							

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	1233	0	1	736	73	0	0	1	76	0	75
Future Volume (vph)	168	1233	0	1	736	73	0	0	1	76	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.86		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1612	3406		1805	3376			1644		1656	1538	
Flt Permitted	0.23	1.00		0.19	1.00			1.00		0.76	1.00	
Satd. Flow (perm)	388	3406		358	3376			1644		1320	1538	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	179	1312	0	1	783	78	0	0	1	81	0	80
RTOR Reduction (vph)	0	0	0	0	6	0	0	1	0	0	69	0
Lane Group Flow (vph)	179	1312	0	1	855	0	0	0	0	81	11	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA			NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	40.5	35.0		28.8	28.3			7.9		7.9	7.9	
Effective Green, g (s)	40.5	35.0		28.8	28.3			7.9		7.9	7.9	
Actuated g/C Ratio	0.69	0.60		0.49	0.48			0.14		0.14	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0			1.0		1.0	1.0	
Lane Grp Cap (vph)	419	2041		188	1635			222		178	208	
v/s Ratio Prot	c0.05	c0.39		0.00	0.25			0.00			0.01	
v/s Ratio Perm	0.24			0.00						c0.06		
v/c Ratio	0.43	0.64		0.01	0.52			0.00		0.46	0.05	
Uniform Delay, d1	4.4	7.6		7.6	10.4			21.8		23.3	22.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.5		0.0	0.1			0.0		0.7	0.0	
Delay (s)	4.6	8.2		7.6	10.5			21.8		23.9	22.0	
Level of Service	A	A		A	B			C		C	C	
Approach Delay (s)		7.7			10.5			21.8			23.0	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			9.7			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			58.4			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			61.6%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	22	20	1	1	4
Future Volume (Veh/h)	7	22	20	1	1	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	9	28	25	1	1	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	26				72	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	26				72	26
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	100
cM capacity (veh/h)	1601				932	1056
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	37	26	6			
Volume Left	9	0	1			
Volume Right	0	1	5			
cSH	1601	1700	1033			
Volume to Capacity	0.01	0.02	0.01			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.8	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.8	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			17.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: NE 16th St & Site Access East

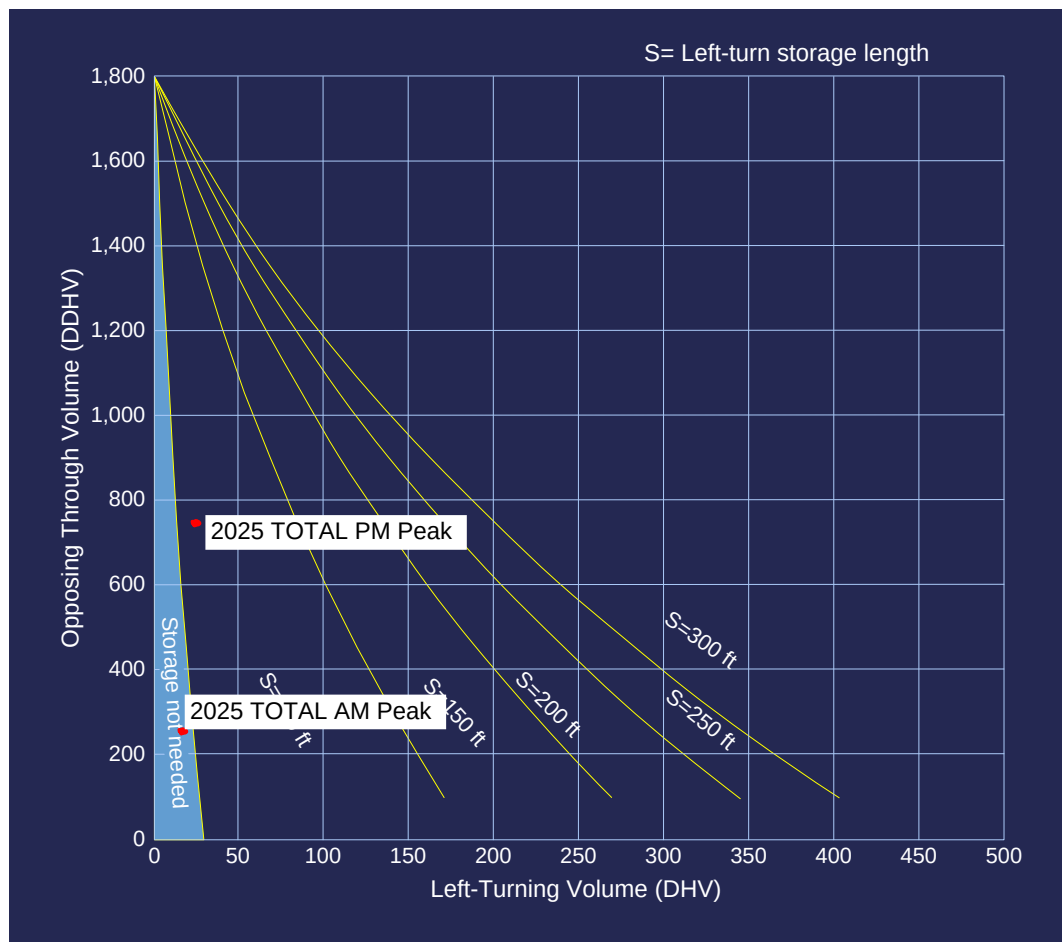
Four Seasons South Subdivision
Year 2025 Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	4	5	1	1	1
Future Volume (Veh/h)	1	4	5	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	5	6	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	7				14	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7				14	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1627				1010	1082
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	6	7	2			
Volume Left	1	0	1			
Volume Right	0	1	1			
cSH	1627	1700	1045			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.2	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	1.2	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix G WSDOT Crash Data

Appendix H Left-turn Lane Warrant

Exhibit 1310-7b Left-Turn Storage Guidelines: Four-Lane, Unsignalized



Determine the storage length on two-lane highways by using [Exhibits 1310-8a](#) through [8c](#). On four-lane highways, use [Exhibit 1310-7b](#). These lengths do not consider trucks. Use [Exhibit 1310-9](#) for storage length when trucks are present.

Use turn simulation software (such as AutoTURN®) to verify that left-turn movements for the design vehicle(s) do not have conflicts. Design opposing left-turn design vehicle paths with a minimum 4-foot (12-foot desirable) clearance between opposing turning paths.

Where one-way left-turn channelization with curbing is to be provided, evaluate surface water runoff and design additional drainage facilities if needed to control the runoff.

Provide illumination at left-turn lanes in accordance with the guidelines in [Chapter 1040](#).

Appendix I Signal Warrant Analysis Worksheets



KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230

Project #: 22152
Project Name: Four Seasons South
Analyst: CKD
Date: 10/17/2018
File: #N/A
Intersection: NE 16th & NE 112th Ave
Scenario: 2025 Total AM

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Analysis Traffic Volumes

Hour	Begin	End	Major Street		Minor Street	
			NB	SB	EB	WB
7:15 AM	8:15 AM		276	680	0	32
2nd Highest Hour			258	636	0	30
3rd Highest Hour			254	627	0	30
4th Highest Hour			247	609	0	29
5th Highest Hour			226	556	0	28
6th Highest Hour			222	548	0	28
7th Highest Hour			208	512	0	27
8th Highest Hour			194	477	0	26
9th Highest Hour			194	477	0	26
10th Highest Hour			190	468	0	24
11th Highest Hour			179	442	0	23
12th Highest Hour			168	415	0	23
13th Highest Hour			165	406	0	22
14th Highest Hour			158	389	0	19
15th Highest Hour			125	309	0	15
16th Highest Hour			118	291	0	14
17th Highest Hour			108	265	0	10
18th Highest Hour			93	230	0	8
19th Highest Hour			75	185	0	4
20th Highest Hour			36	88	0	3
21st Highest Hour			32	79	0	3
22nd Highest Hour			22	53	0	2
23rd Highest Hour			18	44	0	1
24th Highest Hour			18	44	0	1

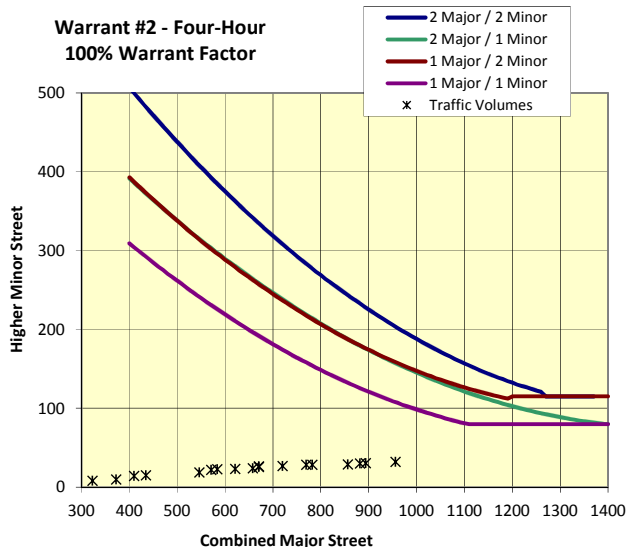
Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	90%
Major Street: 8th-Highest Hour / Peak Hour	70%
Minor Street: 4th-Highest Hour / Peak Hour	89%
Minor Street: 8th-Highest Hour / Peak Hour	83%

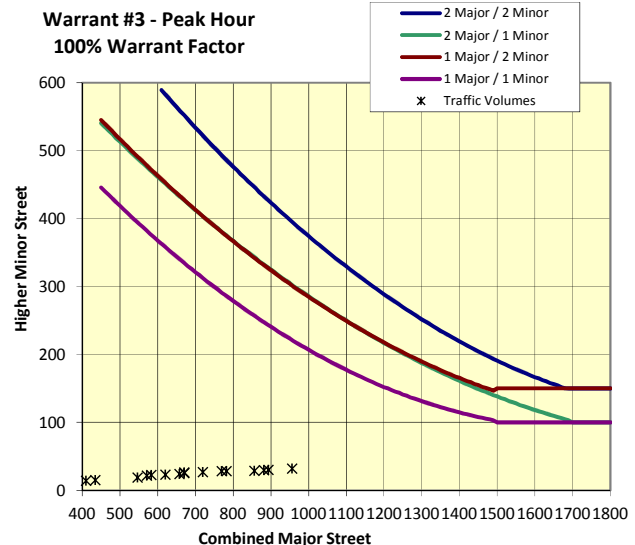
Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	600	150	0	No	No
	B	900	75	0	No	No
80%	A	480	120	0	No	No
	B	720	60	0	No	No
70%	A	420	105	0	No	No
	B	630	53	0	No	No
56%	A	336	84	0	No	No
	B	504	42	0	No	No

Warrant #2 - Four-Hour 100% Warrant Factor



Warrant #3 - Peak Hour 100% Warrant Factor





KITTELSON & ASSOCIATES, INC.
610 SW Alder, Suite 700
Portland, Oregon 97205
(503) 228-5230

Project #: 22152
Project Name: Four Seasons South
Analyst: CKD
Date: 10/17/2018
File: H:\22\22152 - Four Seasons South
Subdivision\excel\September 2018 TIA files\Signal
Warrant files\Signal Warrant Analysis 16th and
Intersection: NE 16th & NE 112th Ave
Scenario: 2025 Total PM

Warrant Summary

Warrant	Name	Analyzed?	Met?
#1	Eight-Hour Vehicular Volume	Yes	No
#2	Four-Hour Vehicular volume	Yes	No
#3	Peak Hour	Yes	No
#4	Pedestrian Volume	No	-
#5	School Crossing	No	-
#6	Coordinated Signal System	No	-
#7	Crash Experience	No	-
#8	Roadway Network	No	-
#9	Intersection Near a Grade Crossing	No	-

Input Parameters

Volume Adjustment Factor =	1.0
North-South Approach =	Major
East-West Approach =	Minor
Major Street Thru Lanes =	2
Minor Street Thru Lanes =	1
Speed > 40 mph?	No
Population < 10,000?	No
Warrant Factor	100%
Peak Hour or Daily Count?	Peak Hour
Major Street: 4th-Highest Hour / Peak Hour	90%
Major Street: 8th-Highest Hour / Peak Hour	70%
Minor Street: 4th-Highest Hour / Peak Hour	89%
Minor Street: 8th-Highest Hour / Peak Hour	83%

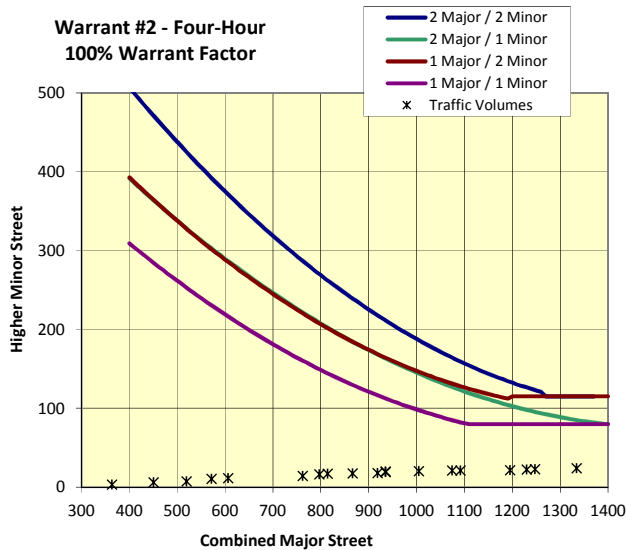
Analysis Traffic Volumes

Hour		Major Street		Minor Street	
Begin	End	NB	SB	EB	WB
4:35 PM	5:35 PM	755	579	0	24
2nd Highest Hour		706	541	0	23
3rd Highest Hour		696	534	0	22
4th Highest Hour		677	519	0	21
5th Highest Hour		618	474	0	21
6th Highest Hour		608	466	0	21
7th Highest Hour		569	436	0	20
8th Highest Hour		529	406	0	20
9th Highest Hour		529	406	0	19
10th Highest Hour		520	399	0	18
11th Highest Hour		490	376	0	17
12th Highest Hour		461	353	0	17
13th Highest Hour		451	346	0	16
14th Highest Hour		431	331	0	14
15th Highest Hour		343	263	0	11
16th Highest Hour		324	248	0	11
17th Highest Hour		294	226	0	7
18th Highest Hour		255	196	0	6
19th Highest Hour		206	158	0	3
20th Highest Hour		98	75	0	2
21st Highest Hour		88	68	0	2
22nd Highest Hour		59	45	0	1
23rd Highest Hour		49	38	0	1
24th Highest Hour		49	38	0	1

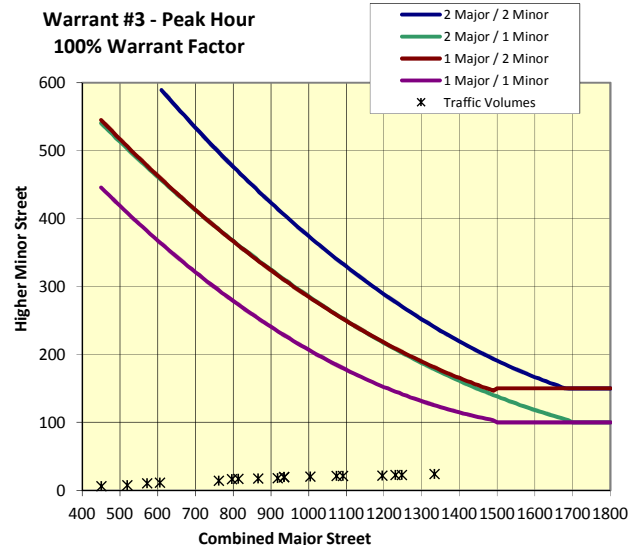
Warrant #1 - Eight Hour

Warrant Factor	Condition	Major Street Requirement	Minor Street Requirement	Hours That Condition Is Met	Condition for Warrant Factor Met?	Signal Warrant Met?
100%	A	600	150	0	No	No
	B	900	75	0	No	No
80%	A	480	120	0	No	No
	B	720	60	0	No	No
70%	A	420	105	0	No	No
	B	630	53	0	No	No
56%	A	336	84	0	No	No
	B	504	42	0	No	No

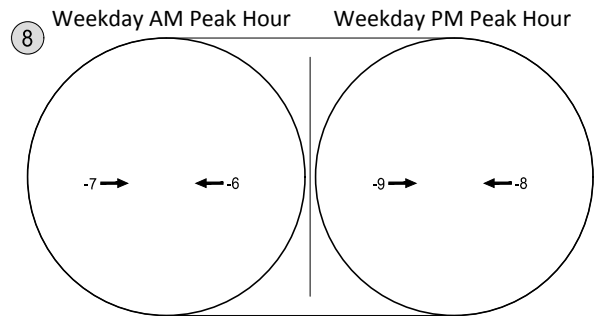
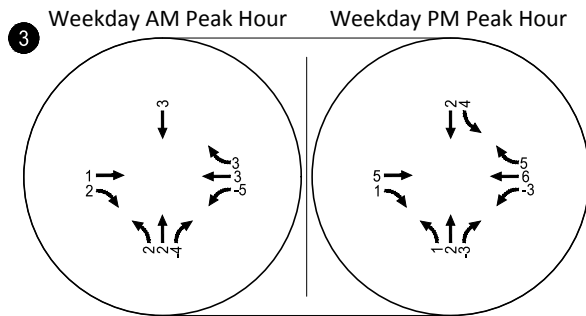
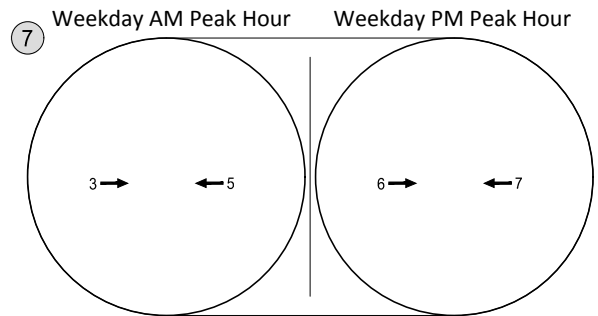
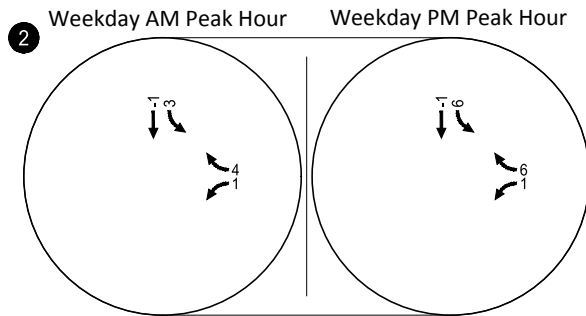
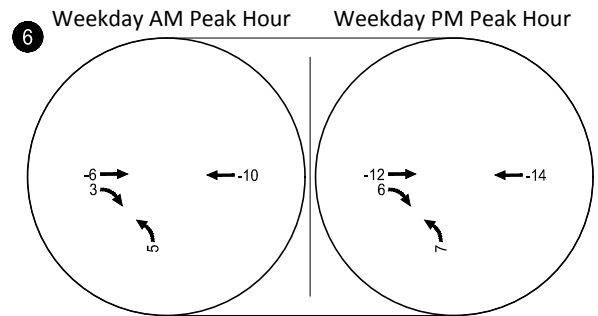
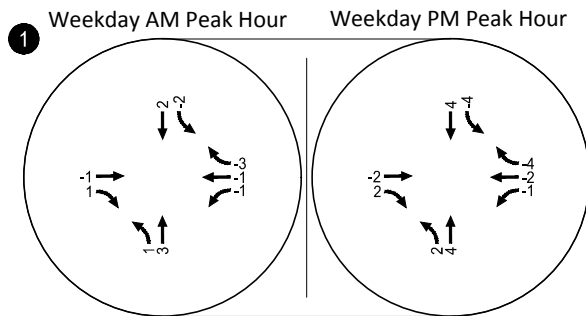
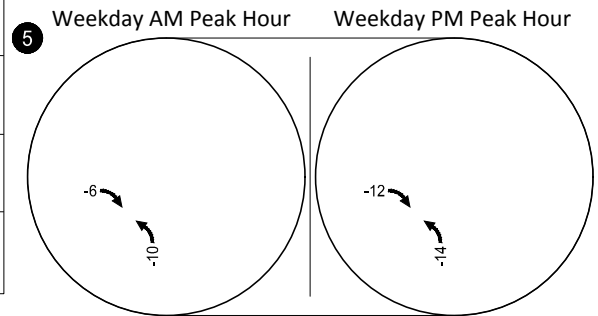
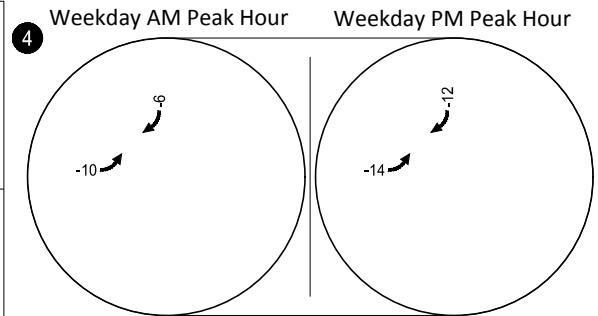
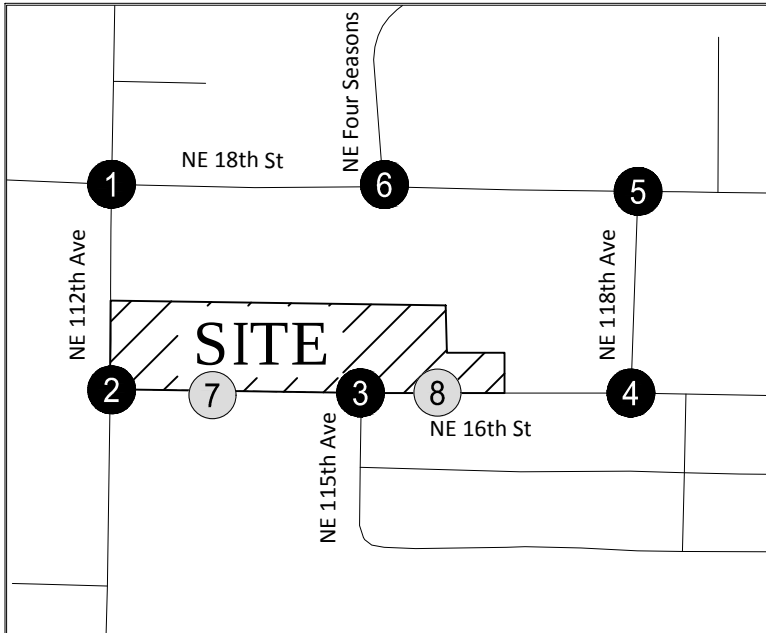
Warrant #2 - Four-Hour 100% Warrant Factor



Warrant #3 - Peak Hour 100% Warrant Factor



Appendix J 2020 With Site Operations
Worksheets – North Access
Scenario



LEGEND

- #** - Study Intersections
- #** - Site Access Intersections

**North Access Scenerio - Redistributed Trips
Weekday AM and PM Peak Hour
Vancouver, Washington**

**Figure
J-1**

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	217	261	26	129	606	302	13	231	66	328	530	584
v/c Ratio	0.50	0.29	0.04	0.37	0.71	0.34	0.05	0.44	0.11	0.59	0.49	0.59
Control Delay	36.1	22.9	0.1	37.5	30.9	3.8	39.3	31.2	2.6	34.2	23.2	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	22.9	0.1	37.5	30.9	3.8	39.3	31.2	2.6	34.2	23.2	7.5
Queue Length 50th (ft)	43	43	0	25	118	8	2	46	0	64	104	52
Queue Length 95th (ft)	107	104	0	71	250	57	14	100	14	148	185	162
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	1021	1773	968	974	1842	1234	791	1790	868	1461	2323	1193
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.15	0.03	0.13	0.33	0.24	0.02	0.13	0.08	0.22	0.23	0.49

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	232	23	115	539	269	12	206	59	292	472	520
Future Volume (vph)	193	232	23	115	539	269	12	206	59	292	472	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	217	261	26	129	606	302	13	231	66	328	530	584
RTOR Reduction (vph)	0	0	18	0	0	156	0	0	47	0	0	213
Lane Group Flow (vph)	217	261	8	129	606	146	13	231	19	328	530	371
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.1	18.9	22.1	7.5	17.3	29.4	3.2	13.6	21.1	12.1	22.5	31.6
Effective Green, g (s)	9.1	18.9	22.1	7.5	17.3	29.4	3.2	13.6	21.1	12.1	22.5	31.6
Actuated g/C Ratio	0.13	0.26	0.31	0.10	0.24	0.41	0.04	0.19	0.29	0.17	0.31	0.44
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	429	884	546	337	841	727	116	642	562	544	1072	788
v/s Ratio Prot	0.06	0.08	0.00	0.04	c0.17	0.03	0.00	0.07	0.00	c0.10	0.15	c0.06
v/s Ratio Perm			0.00			0.06			0.01			0.18
v/c Ratio	0.51	0.30	0.01	0.38	0.72	0.20	0.11	0.36	0.03	0.60	0.49	0.47
Uniform Delay, d1	29.4	21.3	17.4	30.1	25.2	13.8	33.1	25.5	18.2	27.8	20.2	14.3
Progression 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
Incremental Delay, d2	0.3	0.1	0.0	0.3	2.6	0.0	0.2	0.1	0.0	1.3	0.1	0.2
Delay (s)	29.7	21.3	17.4	30.4	27.8	13.8	33.2	25.6	18.2	29.1	20.3	14.5
Level of Service	C	C	B	C	C	B	C	C	B	C	C	B
Approach Delay (s)	24.8					24.0		24.3		19.9		
Approach LOS	C					C		C		B		
Intersection Summary												
HCM 2000 Control Delay			22.4		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			72.1		Sum of lost time (s)				20.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service				C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 North Access Total Traffic AM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	17	255	1	7	617
Future Volume (Veh/h)	2	17	255	1	7	617
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	19	287	1	8	693
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.89					
vC, conflicting volume	650	144			288	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	364	144			288	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	544	884			1286	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	21	191	97	239	462	
Volume Left	2	0	0	8	0	
Volume Right	19	0	1	0	0	
cSH	834	1700	1700	1286	1700	
Volume to Capacity	0.03	0.11	0.06	0.01	0.27	
Queue Length 95th (ft)	2	0	0	0	0	
Control Delay (s)	9.4	0.0	0.0	0.3	0.0	
Lane LOS	A			A		
Approach Delay (s)	9.4	0.0		0.1		
Approach LOS	A					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			32.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1	2	1	4	4	2	2	1	0	3	7
Future Volume (Veh/h)	3	1	2	1	4	4	2	2	1	0	3	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	1	3	1	5	5	3	3	1	0	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	10			4			31	22	2	22	22	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	10			4			31	22	2	22	22	8
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	99
cM capacity (veh/h)	1623			1525			968	872	1087	989	873	1081
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	11	7	13								
Volume Left	4	1	3	0								
Volume Right	3	5	1	9								
cSH	1623	1525	939	1007								
Volume to Capacity	0.00	0.00	0.01	0.01								
Queue Length 95th (ft)	0	0	1	1								
Control Delay (s)	3.6	0.7	8.9	8.6								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.6	0.7	8.9	8.6								
Approach LOS			A	A								
Intersection Summary												
Average Delay				5.4								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	4	0	1	24	5	4
Future Volume (vph)	4	0	1	24	5	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	0	1	30	6	5
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	5	31	11			
Volume Left (vph)	5	0	6			
Volume Right (vph)	0	30	5			
Hadj (s)	0.20	-0.51	0.11			
Departure Headway (s)	4.1	3.4	4.1			
Degree Utilization, x	0.01	0.03	0.01			
Capacity (veh/h)	858	1045	862			
Control Delay (s)	7.2	6.5	7.1			
Approach Delay (s)	7.2	6.5	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.7			
Level of Service			A			
Intersection Capacity Utilization			13.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

	→	↖	←	↗	
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	648	12	930	22	11
v/c Ratio	0.24	0.02	0.32	0.08	0.05
Control Delay	4.2	2.1	2.7	16.9	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	2.1	2.7	16.9	10.9
Queue Length 50th (ft)	0	0	0	4	0
Queue Length 95th (ft)	94	4	76	21	11
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3373	913	3438	1718	1386
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.01	0.27	0.01	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2020 North Access Total Traffic AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	589	1	11	846	20	10
Future Volume (vph)	589	1	11	846	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3372		1805	3438	1805	1455
Flt Permitted	1.00		0.41	1.00	0.95	1.00
Satd. Flow (perm)	3372		771	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	647	1	12	930	22	11
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	648	0	12	930	22	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	28.1		33.9	33.9	2.3	2.3
Effective Green, g (s)	28.1		33.9	33.9	2.3	2.3
Actuated g/C Ratio	0.61		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2050		583	2522	89	72
v/s Ratio Prot	0.19		0.00	c0.27	c0.01	0.00
v/s Ratio Perm			0.01			
v/c Ratio	0.32		0.02	0.37	0.25	0.01
Uniform Delay, d1	4.4		1.7	2.2	21.1	20.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	1.5	0.0
Delay (s)	4.4		1.7	2.3	22.6	20.9
Level of Service	A		A	A	C	C
Approach Delay (s)	4.4			2.3	22.0	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.5		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.42			
Actuated Cycle Length (s)			46.2		Sum of lost time (s)	15.0
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	62	579	1	952	15	4	77	91
v/c Ratio	0.16	0.27	0.00	0.52	0.06	0.01	0.30	0.16
Control Delay	7.0	8.0	7.0	13.9	18.1	0.0	21.0	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	8.0	7.0	13.9	18.1	0.0	21.0	0.6
Queue Length 50th (ft)	5	27	0	100	3	0	17	0
Queue Length 95th (ft)	33	151	3	293	18	0	60	0
Internal Link Dist (ft)		696		835		313		373
Turn Bay Length (ft)	200		175		125		125	
Base Capacity (vph)	824	3163	734	3051	968	1284	960	1207
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.18	0.00	0.31	0.02	0.00	0.08	0.08
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	516	11	1	827	39	14	0	4	70	0	83
Future Volume (vph)	56	516	11	1	827	39	14	0	4	70	0	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3399		1805	3424		1805	1615		1656	1538	
Flt Permitted	0.22	1.00		0.43	1.00		0.70	1.00		0.76	1.00	
Satd. Flow (perm)	371	3399		824	3424		1326	1615		1316	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	62	567	12	1	909	43	15	0	4	77	0	91
RTOR Reduction (vph)	0	1	0	0	3	0	0	3	0	0	77	0
Lane Group Flow (vph)	62	578	0	1	949	0	15	1	0	77	14	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.4	29.1		27.0	26.4		8.2	8.2		8.2	8.2	
Effective Green, g (s)	32.4	29.1		27.0	26.4		8.2	8.2		8.2	8.2	
Actuated g/C Ratio	0.61	0.55		0.51	0.50		0.16	0.16		0.16	0.16	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	304	1869		431	1708		205	250		203	238	
v/s Ratio Prot	c0.01	c0.17		0.00	c0.28			0.00			0.01	
v/s Ratio Perm	0.11			0.00			0.01			c0.06		
v/c Ratio	0.20	0.31		0.00	0.56		0.07	0.00		0.38	0.06	
Uniform Delay, d1	4.8	6.5		6.3	9.2		19.1	18.9		20.1	19.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.0	0.2		0.1	0.0		0.4	0.0	
Delay (s)	4.9	6.5		6.3	9.4		19.2	18.9		20.5	19.1	
Level of Service	A	A		A	A		B	B		C	B	
Approach Delay (s)		6.3			9.4			19.1			19.7	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay			9.4			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			52.9			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			51.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2020 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	6	13	0	0	6
Future Volume (Veh/h)	2	6	13	0	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	3	8	16	0	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	16				30	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16				30	16
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1615				988	1069
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	11	16	8			
Volume Left	3	0	0			
Volume Right	0	0	8			
cSH	1615	1700	1069			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	2.0	0.0	8.4			
Lane LOS	A		A			
Approach Delay (s)	2.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2020 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	3	1	1	1
Future Volume (Veh/h)	0	2	3	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	3	4	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	5				8	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5				8	4
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1630				1019	1085
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	3	5	2			
Volume Left	0	0	1			
Volume Right	0	1	1			
cSH	1630	1700	1051			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	477	718	20	98	366	314	37	486	199	427	419	344
v/c Ratio	0.64	0.71	0.03	0.37	0.65	0.48	0.19	0.73	0.34	0.72	0.33	0.31
Control Delay	37.4	32.5	0.1	45.9	40.9	18.5	45.8	40.3	14.1	41.9	22.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	32.5	0.1	45.9	40.9	18.5	45.8	40.3	14.1	41.9	22.0	1.8
Queue Length 50th (ft)	118	175	0	26	97	99	9	129	40	111	92	0
Queue Length 95th (ft)	225	305	0	61	170	194	30	220	109	196	150	35
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	814	1414	908	776	1469	908	630	1428	818	1165	1853	1152
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.51	0.02	0.13	0.25	0.35	0.06	0.34	0.24	0.37	0.23	0.30

Intersection Summary

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	467	704	20	96	359	308	36	476	195	418	411	337
Future Volume (vph)	467	704	20	96	359	308	36	476	195	418	411	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	477	718	20	98	366	314	37	486	199	427	419	344
RTOR Reduction (vph)	0	0	13	0	0	37	0	0	66	0	0	146
Lane Group Flow (vph)	477	718	7	98	366	277	37	486	133	427	419	198
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	18.9	25.7	29.1	7.0	13.8	29.6	3.4	19.3	26.3	15.8	31.7	50.6
Effective Green, g (s)	18.9	25.7	29.1	7.0	13.8	29.6	3.4	19.3	26.3	15.8	31.7	50.6
Actuated g/C Ratio	0.22	0.29	0.33	0.08	0.16	0.34	0.04	0.22	0.30	0.18	0.36	0.58
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	731	987	565	258	550	600	101	748	553	583	1241	983
v/s Ratio Prot	c0.14	c0.21	0.00	0.03	0.10	0.08	0.01	c0.14	0.02	c0.13	0.12	0.04
v/s Ratio Perm			0.00			0.10			0.07			0.08
v/c Ratio	0.65	0.73	0.01	0.38	0.67	0.46	0.37	0.65	0.24	0.73	0.34	0.20
Uniform Delay, d1	31.5	27.9	19.7	38.3	34.8	22.8	41.1	31.2	23.2	34.0	20.4	8.9
Progression 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
Incremental Delay, d2	1.6	2.3	0.0	0.3	2.4	0.2	0.8	1.5	0.1	4.1	0.1	0.0
Delay (s)	33.1	30.2	19.7	38.7	37.2	23.0	42.0	32.6	23.3	38.1	20.5	9.0
Level of Service	C	C	B	D	D	C	D	C	C	D	C	A
Approach Delay (s)		31.1			31.7			30.5			23.5	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			28.8									
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			87.8									
Intersection Capacity Utilization			66.2%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2020 North Access Total Traffic PM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	12	702	1	12	513
Future Volume (Veh/h)	2	12	702	1	12	513
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	12	716	1	12	523
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						680
pX, platoon unblocked	0.93					
vC, conflicting volume	1002	358			717	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	850	358			717	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	278	644			893	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	477	240	186	349	
Volume Left	2	0	0	12	0	
Volume Right	12	0	1	0	0	
cSH	542	1700	1700	893	1700	
Volume to Capacity	0.03	0.28	0.14	0.01	0.21	
Queue Length 95th (ft)	2	0	0	1	0	
Control Delay (s)	11.8	0.0	0.0	0.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	11.8	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			32.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	5	1	1	6	6	1	2	1	4	2	4
Future Volume (Veh/h)	4	5	1	1	6	6	1	2	1	4	2	4
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	6	1	1	8	8	1	3	1	5	3	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	16			7			37	34	6	33	31	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			7			37	34	6	33	31	12
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1615			1521			964	859	1082	973	863	1074
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	12	17	5	13								
Volume Left	5	1	1	5								
Volume Right	1	8	1	5								
cSH	1615	1521	917	980								
Volume to Capacity	0.00	0.00	0.01	0.01								
Queue Length 95th (ft)	0	0	0	1								
Control Delay (s)	3.0	0.4	8.9	8.7								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.0	0.4	8.9	8.7								
Approach LOS			A	A								
Intersection Summary												
Average Delay				4.3								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2020 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	4	0	0	22	35	5
Future Volume (vph)	4	0	0	22	35	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	0	0	28	44	6
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	5	28	50			
Volume Left (vph)	5	0	44			
Volume Right (vph)	0	28	6			
Hadj (s)	0.20	-0.53	0.43			
Departure Headway (s)	4.2	3.5	4.4			
Degree Utilization, x	0.01	0.03	0.06			
Capacity (veh/h)	832	1011	803			
Control Delay (s)	7.3	6.6	7.7			
Approach Delay (s)	7.3	6.6	7.7			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.3			
Level of Service			A			
Intersection Capacity Utilization			13.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1310	25	803	8	20
v/c Ratio	0.48	0.06	0.26	0.03	0.09
Control Delay	6.2	2.8	1.9	22.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	2.8	1.9	22.1	12.9
Queue Length 50th (ft)	0	1	0	1	0
Queue Length 95th (ft)	234	6	61	13	16
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3216	625	3438	1570	1268
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.41	0.04	0.23	0.01	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1197	21	23	747	7	19
Future Volume (vph)	1197	21	23	747	7	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3352		1805	3438	1805	1455
Flt Permitted	1.00		0.17	1.00	0.95	1.00
Satd. Flow (perm)	3352		330	3438	1805	1455
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1287	23	25	803	8	20
RTOR Reduction (vph)	1	0	0	0	0	19
Lane Group Flow (vph)	1309	0	25	803	8	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	32.7		39.2	39.2	2.1	2.1
Effective Green, g (s)	32.7		39.2	39.2	2.1	2.1
Actuated g/C Ratio	0.64		0.76	0.76	0.04	0.04
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2136		295	2627	73	59
v/s Ratio Prot	c0.39		0.00	c0.23	c0.00	0.00
v/s Ratio Perm			0.06			
v/c Ratio	0.61		0.08	0.31	0.11	0.01
Uniform Delay, d1	5.5		3.6	1.9	23.7	23.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4		0.0	0.0	0.7	0.1
Delay (s)	5.9		3.7	1.9	24.4	23.7
Level of Service	A		A	A	C	C
Approach Delay (s)	5.9			1.9	23.9	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			51.3		Sum of lost time (s)	15.0
Intersection Capacity Utilization			46.3%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	167	1234	3	799	11	3	77	76
v/c Ratio	0.35	0.54	0.01	0.48	0.05	0.01	0.32	0.13
Control Delay	7.6	9.6	6.7	15.0	20.8	0.0	24.6	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.6	6.7	15.0	20.8	0.0	24.6	0.5
Queue Length 50th (ft)	14	74	0	88	3	0	18	0
Queue Length 95th (ft)	74	387	4	247	18	0	70	0
Internal Link Dist (ft)		696		835		313		373
Turn Bay Length (ft)	200		175		125		125	
Base Capacity (vph)	806	3117	553	2950	888	1140	870	1135
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.40	0.01	0.27	0.01	0.00	0.09	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2020 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	1144	16	3	682	69	10	0	3	72	0	71
Future Volume (vph)	157	1144	16	3	682	69	10	0	3	72	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1611	3401		1805	3375		1805	1615		1656	1538	
Flt Permitted	0.25	1.00		0.21	1.00		0.71	1.00		0.76	1.00	
Satd. Flow (perm)	428	3401		399	3375		1344	1615		1318	1538	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	167	1217	17	3	726	73	11	0	3	77	0	76
RTOR Reduction (vph)	0	1	0	0	6	0	0	3	0	0	66	0
Lane Group Flow (vph)	167	1233	0	3	793	0	11	0	0	77	10	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	39.2	33.6		28.0	27.4		7.8	7.8		7.8	7.8	
Effective Green, g (s)	39.2	33.6		28.0	27.4		7.8	7.8		7.8	7.8	
Actuated g/C Ratio	0.69	0.59		0.49	0.48		0.14	0.14		0.14	0.14	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	435	2004		210	1622		183	221		180	210	
v/s Ratio Prot	c0.05	c0.36		0.00	0.23			0.00			0.01	
v/s Ratio Perm	0.22			0.01			0.01			c0.06		
v/c Ratio	0.38	0.62		0.01	0.49		0.06	0.00		0.43	0.05	
Uniform Delay, d1	4.1	7.5		7.4	10.0		21.4	21.2		22.6	21.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.4		0.0	0.1		0.1	0.0		0.6	0.0	
Delay (s)	4.3	7.9		7.4	10.1		21.5	21.2		23.2	21.4	
Level of Service	A	A		A	B		C	C		C	C	
Approach Delay (s)		7.5			10.1			21.4			22.3	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			9.4			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			57.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			59.5%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2020 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	10	11	0	0	3
Future Volume (Veh/h)	3	10	11	0	0	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	13	14	0	0	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	14				35	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				35	14
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1617				981	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	17	14	4			
Volume Left	4	0	0			
Volume Right	0	0	4			
cSH	1617	1700	1072			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.7	0.0	8.4			
Lane LOS	A		A			
Approach Delay (s)	1.7	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2020 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	3	1	1	0
Future Volume (Veh/h)	0	2	3	1	1	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	3	4	1	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	5				8	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5				8	4
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1630				1019	1085
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	3	5	1			
Volume Left	0	0	1			
Volume Right	0	1	0			
cSH	1630	1700	1019			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	8.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix K 2025 With Site Operations
Worksheets – North Access
Scenario

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	233	280	27	139	651	325	15	248	71	354	571	628
v/c Ratio	0.53	0.30	0.04	0.41	0.73	0.37	0.07	0.47	0.12	0.62	0.51	0.63
Control Delay	38.3	23.5	0.1	39.9	32.3	5.1	41.9	33.7	3.3	35.9	24.5	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.3	23.5	0.1	39.9	32.3	5.1	41.9	33.7	3.3	35.9	24.5	9.2
Queue Length 50th (ft)	50	49	0	29	136	19	3	53	0	74	120	76
Queue Length 95th (ft)	119	113	0	79	278	83	15	113	18	165	211	218
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	966	1678	958	921	1744	1205	748	1694	837	1382	2199	1172
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.17	0.03	0.15	0.37	0.27	0.02	0.15	0.08	0.26	0.26	0.54
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	249	24	124	579	289	13	221	63	315	508	559
Future Volume (vph)	207	249	24	124	579	289	13	221	63	315	508	559
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	233	280	27	139	651	325	15	248	71	354	571	628
RTOR Reduction (vph)	0	0	18	0	0	137	0	0	50	0	0	204
Lane Group Flow (vph)	233	280	9	139	651	188	15	248	21	354	571	424
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	9.7	20.9	24.1	7.9	19.1	32.3	3.2	14.2	22.1	13.2	24.2	33.9
Effective Green, g (s)	9.7	20.9	24.1	7.9	19.1	32.3	3.2	14.2	22.1	13.2	24.2	33.9
Actuated g/C Ratio	0.13	0.27	0.32	0.10	0.25	0.42	0.04	0.19	0.29	0.17	0.32	0.44
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	432	925	555	336	878	746	110	634	552	561	1091	792
v/s Ratio Prot	0.07	0.08	0.00	0.04	c0.19	0.04	0.01	0.07	0.00	c0.11	0.17	c0.07
v/s Ratio Perm			0.01			0.08			0.01			0.20
v/c Ratio	0.54	0.30	0.02	0.41	0.74	0.25	0.14	0.39	0.04	0.63	0.52	0.53
Uniform Delay, d1	31.2	21.9	17.9	32.0	26.3	14.2	35.2	27.2	19.4	29.2	21.3	15.4
Progression 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
Incremental Delay, d2	0.7	0.1	0.0	0.3	3.0	0.1	0.2	0.1	0.0	1.7	0.2	0.3
Delay (s)	31.8	22.0	17.9	32.3	29.3	14.2	35.4	27.4	19.4	30.9	21.5	15.8
Level of Service	C	C	B	C	C	B	D	C	B	C	C	B
Approach Delay (s)	26.0		25.3			26.0			21.3			
Approach LOS	C		C			C			C			
Intersection Summary												
HCM 2000 Control Delay			23.7	HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			76.2	Sum of lost time (s)					20.0			
Intersection Capacity Utilization			68.1%	ICU Level of Service					C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 North Access Total Traffic AM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	17	275	1	7	663
Future Volume (Veh/h)	2	17	275	1	7	663
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	19	309	1	8	745
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.88					
vC, conflicting volume	698	155			310	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	377	155			310	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			99	
cM capacity (veh/h)	526	869			1262	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	21	206	104	256	497	
Volume Left	2	0	0	8	0	
Volume Right	19	0	1	0	0	
cSH	818	1700	1700	1262	1700	
Volume to Capacity	0.03	0.12	0.06	0.01	0.29	
Queue Length 95th (ft)	2	0	0	0	0	
Control Delay (s)	9.5	0.0	0.0	0.3	0.0	
Lane LOS	A			A		
Approach Delay (s)	9.5	0.0		0.1		
Approach LOS	A					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			33.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1	2	1	4	4	2	2	1	0	3	7
Future Volume (Veh/h)	3	1	2	1	4	4	2	2	1	0	3	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	1	3	1	5	5	3	3	1	0	4	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	10			4			31	22	2	22	22	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	10			4			31	22	2	22	22	8
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	99
cM capacity (veh/h)	1623			1525			968	872	1087	989	873	1081
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	11	7	13								
Volume Left	4	1	3	0								
Volume Right	3	5	1	9								
cSH	1623	1525	939	1007								
Volume to Capacity	0.00	0.00	0.01	0.01								
Queue Length 95th (ft)	0	0	1	1								
Control Delay (s)	3.6	0.7	8.9	8.6								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.6	0.7	8.9	8.6								
Approach LOS			A	A								
Intersection Summary												
Average Delay				5.4								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis 4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2025 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	4	0	1	24	5	4
Future Volume (vph)	4	0	1	24	5	4
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	0	1	30	6	5
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	5	31	11			
Volume Left (vph)	5	0	6			
Volume Right (vph)	0	30	5			
Hadj (s)	0.20	-0.51	0.11			
Departure Headway (s)	4.1	3.4	4.1			
Degree Utilization, x	0.01	0.03	0.01			
Capacity (veh/h)	858	1045	862			
Control Delay (s)	7.2	6.5	7.1			
Approach Delay (s)	7.2	6.5	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			6.7			
Level of Service			A			
Intersection Capacity Utilization			13.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	696	12	1000	22	11
v/c Ratio	0.26	0.02	0.34	0.08	0.05
Control Delay	4.3	2.1	2.8	16.9	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	2.1	2.8	16.9	10.9
Queue Length 50th (ft)	0	0	0	4	0
Queue Length 95th (ft)	103	4	84	21	11
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3373	892	3438	1717	1385
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.21	0.01	0.29	0.01	0.01
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision
Year 2025 North Access Total Traffic AM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Volume (vph)	632	1	11	910	20	10
Future Volume (vph)	632	1	11	910	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3372		1805	3438	1805	1455
Flt Permitted	1.00		0.39	1.00	0.95	1.00
Satd. Flow (perm)	3372		735	3438	1805	1455
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	695	1	12	1000	22	11
RTOR Reduction (vph)	0	0	0	0	0	10
Lane Group Flow (vph)	696	0	12	1000	22	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	28.1		33.9	33.9	2.4	2.4
Effective Green, g (s)	28.1		33.9	33.9	2.4	2.4
Actuated g/C Ratio	0.61		0.73	0.73	0.05	0.05
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2046		556	2517	93	75
v/s Ratio Prot	0.21		0.00	c0.29	c0.01	0.00
v/s Ratio Perm			0.02			
v/c Ratio	0.34		0.02	0.40	0.24	0.01
Uniform Delay, d1	4.5		1.7	2.3	21.1	20.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0		0.0	0.0	1.3	0.0
Delay (s)	4.5		1.7	2.4	22.4	20.9
Level of Service	A		A	A	C	C
Approach Delay (s)	4.5			2.4	21.9	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			3.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.45			
Actuated Cycle Length (s)			46.3		Sum of lost time (s)	15.0
Intersection Capacity Utilization			37.7%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	623	1	1025	15	4	81	97
v/c Ratio	0.17	0.29	0.00	0.55	0.06	0.01	0.31	0.18
Control Delay	6.9	7.9	7.0	14.1	19.6	0.0	22.7	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.9	7.9	7.0	14.1	19.6	0.0	22.7	0.7
Queue Length 50th (ft)	5	31	0	114	3	0	19	0
Queue Length 95th (ft)	34	163	2	324	20	0	67	0
Internal Link Dist (ft)		696		835		313		373
Turn Bay Length (ft)	200		175		125		125	
Base Capacity (vph)	800	3139	718	2994	935	1251	933	1179
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.20	0.00	0.34	0.02	0.00	0.09	0.08
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic AM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	556	11	1	891	42	14	0	4	74	0	88
Future Volume (vph)	59	556	11	1	891	42	14	0	4	74	0	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3400		1805	3424		1805	1615		1656	1538	
Flt Permitted	0.19	1.00		0.42	1.00		0.69	1.00		0.76	1.00	
Satd. Flow (perm)	329	3400		790	3424		1319	1615		1316	1538	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	65	611	12	1	979	46	15	0	4	81	0	97
RTOR Reduction (vph)	0	1	0	0	2	0	0	3	0	0	82	0
Lane Group Flow (vph)	65	622	0	1	1023	0	15	1	0	81	15	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	34.3	30.8		28.5	27.9		8.5	8.5		8.5	8.5	
Effective Green, g (s)	34.3	30.8		28.5	27.9		8.5	8.5		8.5	8.5	
Actuated g/C Ratio	0.62	0.56		0.52	0.51		0.15	0.15		0.15	0.15	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	287	1907		421	1740		204	250		203	238	
v/s Ratio Prot	c0.01	c0.18		0.00	c0.30			0.00			0.01	
v/s Ratio Perm	0.13			0.00			0.01			c0.06		
v/c Ratio	0.23	0.33		0.00	0.59		0.07	0.00		0.40	0.06	
Uniform Delay, d1	5.0	6.5		6.4	9.5		19.8	19.6		20.9	19.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.0		0.0	0.3		0.1	0.0		0.5	0.0	
Delay (s)	5.1	6.5		6.4	9.8		19.9	19.6		21.4	19.8	
Level of Service	A	A		A	A		B	B		C	B	
Approach Delay (s)		6.4			9.8			19.8			20.5	
Approach LOS		A			A			B			C	
Intersection Summary												
HCM 2000 Control Delay			9.7			HCM 2000 Level of Service			A			
HCM 2000 Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			54.9			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			53.4%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2025 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	6	13	0	0	6
Future Volume (Veh/h)	2	6	13	0	0	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	3	8	16	0	0	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	16				30	16
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16				30	16
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1615				988	1069
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	11	16	8			
Volume Left	3	0	0			
Volume Right	0	0	8			
cSH	1615	1700	1069			
Volume to Capacity	0.00	0.01	0.01			
Queue Length 95th (ft)	0	0	1			
Control Delay (s)	2.0	0.0	8.4			
Lane LOS	A		A			
Approach Delay (s)	2.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2025 North Access Total Traffic AM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	3	1	1	1
Future Volume (Veh/h)	0	2	3	1	1	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	3	4	1	1	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	5				8	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5				8	4
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1630				1019	1085
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	3	5	2			
Volume Left	0	0	1			
Volume Right	0	1	1			
cSH	1630	1700	1051			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	8.4			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	512	772	22	105	394	339	39	521	213	459	451	369
v/c Ratio	0.67	0.75	0.03	0.41	0.69	0.52	0.21	0.76	0.36	0.75	0.37	0.33
Control Delay	40.1	35.3	0.1	48.5	44.2	20.1	48.3	43.1	15.2	44.4	23.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	35.3	0.1	48.5	44.2	20.1	48.3	43.1	15.2	44.4	23.9	1.8
Queue Length 50th (ft)	137	204	0	29	112	117	10	147	48	127	103	0
Queue Length 95th (ft)	#273	350	0	66	190	219	32	241	121	213	162	36
Internal Link Dist (ft)		626			696			600			768	
Turn Bay Length (ft)	250		200	350		175	350		180	380		150
Base Capacity (vph)	761	1322	892	726	1374	868	589	1335	796	1089	1732	1115
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.58	0.02	0.14	0.29	0.39	0.07	0.39	0.27	0.42	0.26	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: NE 112th Ave & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	502	757	22	103	386	332	38	511	209	450	442	362
Future Volume (vph)	502	757	22	103	386	332	38	511	209	450	442	362
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3400	3374	1455	3242	3505	1524	2633	3406	1553	3242	3438	1553
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	512	772	22	105	394	339	39	521	213	459	451	369
RTOR Reduction (vph)	0	0	14	0	0	36	0	0	67	0	0	158
Lane Group Flow (vph)	512	772	8	105	394	303	39	521	146	459	451	211
Heavy Vehicles (%)	3%	7%	11%	8%	3%	6%	33%	6%	4%	8%	5%	4%
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	20.5	28.1	32.9	7.2	14.8	32.0	4.8	19.6	26.8	17.2	32.0	52.5
Effective Green, g (s)	20.5	28.1	32.9	7.2	14.8	32.0	4.8	19.6	26.8	17.2	32.0	52.5
Actuated g/C Ratio	0.22	0.31	0.36	0.08	0.16	0.35	0.05	0.21	0.29	0.19	0.35	0.57
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lane Grp Cap (vph)	756	1029	598	253	563	612	137	724	536	605	1194	969
v/s Ratio Prot	c0.15	c0.23	0.00	0.03	0.11	0.09	0.01	c0.15	0.02	c0.14	0.13	0.05
v/s Ratio Perm			0.00			0.11			0.07			0.09
v/c Ratio	0.68	0.75	0.01	0.42	0.70	0.50	0.28	0.72	0.27	0.76	0.38	0.22
Uniform Delay, d1	32.8	28.8	19.1	40.4	36.5	23.7	42.0	33.7	25.1	35.5	22.6	9.7
Progression 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
Incremental Delay, d2	1.9	2.8	0.0	0.4	3.1	0.2	0.4	2.9	0.1	4.8	0.1	0.0
Delay (s)	34.7	31.6	19.1	40.8	39.6	23.9	42.4	36.6	25.2	40.3	22.6	9.8
Level of Service	C	C	B	D	D	C	D	D	C	D	C	A
Approach Delay (s)		32.6			33.4			33.7			25.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.7									
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			92.1									
Intersection Capacity Utilization			69.6%									
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: NE 112th Ave & NE 16th St

Four Seasons South Subdivision
Year 2025 North Access Total Traffic PM Peak Hour Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	12	754	1	12	551
Future Volume (Veh/h)	2	12	754	1	12	551
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	2	12	769	1	12	562
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						680
pX, platoon unblocked	0.92					
vC, conflicting volume	1074	385			770	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	899	385			770	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	98			99	
cM capacity (veh/h)	255	619			854	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	14	513	257	199	375	
Volume Left	2	0	0	12	0	
Volume Right	12	0	1	0	0	
cSH	514	1700	1700	854	1700	
Volume to Capacity	0.03	0.30	0.15	0.01	0.22	
Queue Length 95th (ft)	2	0	0	1	0	
Control Delay (s)	12.2	0.0	0.0	0.7	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.2	0.0		0.2		
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			33.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: NE 115th Ave & NE 16th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	5	1	1	6	6	1	2	1	4	2	4
Future Volume (Veh/h)	4	5	1	1	6	6	1	2	1	4	2	4
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	6	1	1	8	8	1	3	1	5	3	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	16			7			37	34	6	33	31	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			7			37	34	6	33	31	12
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1615			1521			964	859	1082	973	863	1074
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	12	17	5	13								
Volume Left	5	1	1	5								
Volume Right	1	8	1	5								
cSH	1615	1521	917	980								
Volume to Capacity	0.00	0.00	0.01	0.01								
Queue Length 95th (ft)	0	0	0	1								
Control Delay (s)	3.0	0.4	8.9	8.7								
Lane LOS	A	A	A	A								
Approach Delay (s)	3.0	0.4	8.9	8.7								
Approach LOS			A	A								
Intersection Summary												
Average Delay				4.3								
Intersection Capacity Utilization				13.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: NE 16th St & NE 118th Ave

Four Seasons South Subdivision
Year 2025 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Yield	Yield		Yield	
Traffic Volume (vph)	4	0	0	22	35	5
Future Volume (vph)	4	0	0	22	35	5
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	5	0	0	28	44	6
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	5	28	50			
Volume Left (vph)	5	0	44			
Volume Right (vph)	0	28	6			
Hadj (s)	0.20	-0.53	0.43			
Departure Headway (s)	4.2	3.5	4.4			
Degree Utilization, x	0.01	0.03	0.06			
Capacity (veh/h)	832	1011	803			
Control Delay (s)	7.3	6.6	7.7			
Approach Delay (s)	7.3	6.6	7.7			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.3			
Level of Service			A			
Intersection Capacity Utilization			13.7%	ICU Level of Service	A	
Analysis Period (min)			15			

Queues

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

	→	↖	←	↗	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1408	25	862	8	20
v/c Ratio	0.51	0.06	0.28	0.03	0.09
Control Delay	6.2	2.7	1.9	24.3	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	2.7	1.9	24.3	13.7
Queue Length 50th (ft)	0	1	0	2	0
Queue Length 95th (ft)	261	6	65	14	17
Internal Link Dist (ft)	835		335	583	
Turn Bay Length (ft)		175		175	
Base Capacity (vph)	3132	588	3438	1511	1221
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.45	0.04	0.25	0.01	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

5: NE 118th St & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↗
Traffic Volume (vph)	1288	21	23	802	7	19
Future Volume (vph)	1288	21	23	802	7	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0	5.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3353		1805	3438	1805	1455
Flt Permitted	1.00		0.15	1.00	0.95	1.00
Satd. Flow (perm)	3353		290	3438	1805	1455
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1385	23	25	862	8	20
RTOR Reduction (vph)	1	0	0	0	0	19
Lane Group Flow (vph)	1407	0	25	862	8	1
Confl. Peds. (#/hr)		1	1		1	
Confl. Bikes (#/hr)		1				
Heavy Vehicles (%)	7%	29%	0%	5%	0%	11%
Turn Type	NA		pm+pt	NA	Prot	Prot
Protected Phases	2		1	6	4	4
Permitted Phases			6			
Actuated Green, G (s)	35.4		41.9	41.9	2.0	2.0
Effective Green, g (s)	35.4		41.9	41.9	2.0	2.0
Actuated g/C Ratio	0.66		0.78	0.78	0.04	0.04
Clearance Time (s)	5.0		5.0	5.0	5.0	5.0
Vehicle Extension (s)	1.0		1.0	1.0	3.0	3.0
Lane Grp Cap (vph)	2202		267	2672	66	53
v/s Ratio Prot	c0.42		0.00	c0.25	c0.00	0.00
v/s Ratio Perm			0.07			
v/c Ratio	0.64		0.09	0.32	0.12	0.01
Uniform Delay, d1	5.5		4.0	1.8	25.1	25.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5		0.1	0.0	0.8	0.1
Delay (s)	5.9		4.0	1.8	25.9	25.1
Level of Service	A		A	A	C	C
Approach Delay (s)	5.9			1.9	25.3	
Approach LOS	A			A	C	
Intersection Summary						
HCM 2000 Control Delay			4.6		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.62			
Actuated Cycle Length (s)			53.9		Sum of lost time (s)	15.0
Intersection Capacity Utilization			48.8%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	179	1329	3	861	11	3	81	80
v/c Ratio	0.39	0.57	0.01	0.63	0.05	0.01	0.34	0.14
Control Delay	7.9	9.8	6.7	17.0	22.7	0.0	26.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	9.8	6.7	17.0	22.7	0.0	26.8	0.5
Queue Length 50th (ft)	15	87	0	102	3	0	20	0
Queue Length 95th (ft)	77	430	4	270	19	0	79	0
Internal Link Dist (ft)		696		835		313		373
Turn Bay Length (ft)	200		175		125		125	
Base Capacity (vph)	776	3092	532	2866	852	1102	838	1100
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.43	0.01	0.30	0.01	0.00	0.10	0.07
Intersection Summary								

HCM Signalized Intersection Capacity Analysis

6: NE 4 Seasons Ln & NE 18th St

Four Seasons South Subdivision

Year 2025 North Access Total Traffic PM Peak Hour Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	1233	16	3	736	73	10	0	3	76	0	75
Future Volume (vph)	168	1233	16	3	736	73	10	0	3	76	0	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1612	3402		1805	3376		1805	1615		1656	1538	
Flt Permitted	0.22	1.00		0.20	1.00		0.70	1.00		0.76	1.00	
Satd. Flow (perm)	371	3402		374	3376		1339	1615		1318	1538	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	179	1312	17	3	783	78	11	0	3	81	0	80
RTOR Reduction (vph)	0	1	0	0	6	0	0	3	0	0	69	0
Lane Group Flow (vph)	179	1328	0	3	855	0	11	0	0	81	11	0
Confl. Peds. (#/hr)	1					1						
Heavy Vehicles (%)	12%	6%	0%	0%	4%	18%	0%	0%	0%	9%	0%	5%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	41.5	36.0		27.8	27.3		8.0	8.0		8.0	8.0	
Effective Green, g (s)	41.5	36.0		27.8	27.3		8.0	8.0		8.0	8.0	
Actuated g/C Ratio	0.70	0.61		0.47	0.46		0.13	0.13		0.13	0.13	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lane Grp Cap (vph)	450	2058		186	1548		180	217		177	206	
v/s Ratio Prot	c0.06	c0.39		0.00	0.25			0.00			0.01	
v/s Ratio Perm	0.22			0.01			0.01			c0.06		
v/c Ratio	0.40	0.65		0.02	0.55		0.06	0.00		0.46	0.05	
Uniform Delay, d1	4.5	7.6		8.5	11.7		22.5	22.3		23.7	22.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.5		0.0	0.2		0.1	0.0		0.7	0.0	
Delay (s)	4.7	8.1		8.5	11.9		22.5	22.3		24.4	22.5	
Level of Service	A	A		A	B		C	C		C	C	
Approach Delay (s)		7.7			11.9			22.5			23.5	
Approach LOS		A			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			10.2			HCM 2000 Level of Service			B			
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			59.5			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			62.1%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

7: NE 16th St & Site Access West

Four Seasons South Subdivision
Year 2025 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	10	11	0	0	3
Future Volume (Veh/h)	3	10	11	0	0	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	4	13	14	0	0	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	14				35	14
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14				35	14
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1617				981	1072
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	17	14	4			
Volume Left	4	0	0			
Volume Right	0	0	4			
cSH	1617	1700	1072			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	1.7	0.0	8.4			
Lane LOS	A		A			
Approach Delay (s)	1.7	0.0	8.4			
Approach LOS			A			
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

8: NE 16th St & Site Access East

Four Seasons South Subdivision
Year 2025 North Access Total Traffic PM Peak Hour Conditions

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	3	1	1	0
Future Volume (Veh/h)	0	2	3	1	1	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	3	4	1	1	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	5				8	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	5				8	4
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1630				1019	1085
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	3	5	1			
Volume Left	0	0	1			
Volume Right	0	1	0			
cSH	1630	1700	1019			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	8.5			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

**BEFORE THE HEARING EXAMINER
FOR CITY OF VANCOUVER**

In the Matter of the Application of	)	NO. PRJ-156552/LUP-70974
	)	
	)	
Four Seasons Subdivision LLC	)	Four Seasons South PUD
	)	
	)	
	)	
for Approval of a Boundary Line	)	FINDINGS, CONCLUSIONS,
Adjustment, Preliminary Plat, and Planned	)	AND RECOMMENDATION
<u>Development</u>	)	

SUMMARY OF RECOMMENDATION

The Vancouver Hearing Examiner recommends to the City Council that the requested boundary line adjustment, preliminary plat, and planned development to allow the subdivision 8.47 acres into 70 single-family residential lots be **APPROVED** subject to conditions.

SUMMARY OF RECORD

Request:

Four Seasons Subdivision LLC (Applicant) requested approval of a boundary line adjustment (BLA), preliminary plat and planned development to allow the subdivision of 8.47 acres into 70 single-family residential lots. The BLA is requested because the subject property currently consists of four tax parcels totaling 9.47 acres. After the BLA one of the parcels, which contains an existing single-family residence, would be one acre in area and would be excluded from the proposed development. The subject property is located on the east side of NE 112th Avenue and the north side of NE 16th Street in Vancouver, Washington.

Hearing Date:

The Vancouver Hearing Examiner held an open record hearing on the application on February 19, 2019.

Testimony:

At the open record hearing the following individuals presented testimony under oath:

Phil Wuest, representing the Applicant
Scott Taylor, SGA Engineering, representing the Applicant
Kristian Corbin, Associate Planner, City of Vancouver
Eric Hahn, P.E., City of Vancouver

Exhibits:

At the open record hearing the following exhibits were admitted in the record:

1. Staff Report
2. Application
3. Applicant Narrative
4. Applicant's Supplemental Narrative
5. Preliminary Plat Reduced Copy
6. Affidavit of mailing/posting dated Nov. 30, 2018
7. Notice of Application, Public Hearing and Optional SEPA DNS Nov. 30, 2018
8. SEPA Checklist dated Sept. 28, 2018
9. Geotech Report prepared by Columbia West dated Dec. 4, 2017
10. Letter from Department of Ecology dated Jan. 2, 2019
11. Letter from Clark County Public Health dated Aug. 21, 2017
12. City of Vancouver Traffic Impact Calculation Worksheet dated Jan. 22, 2019
13. Slope Easement - 4783753 EAS
14. Washington State Department of Health comments, dated January 8, 2019
15. Final Determination of Nonsignificance dated Jan. 3, 2019
16. 112th Avenue Subarea guidelines
17. Traffic Study
18. City of Vancouver Standard Plan Number T10-15A, Local Access Option A
19. Applicant PowerPoint Presentation
20. City PowerPoint Presentation

Upon consideration of the testimony and exhibits admitted in the record, the Hearing Examiner enters the following findings and conclusions:

FINDINGS

1. The Applicant requested approval of a boundary line adjustment (BLA), preliminary plat, and planned development to allow the subdivision of 8.47 acres into 70 single-family residential lots. The BLA is requested because the subject property currently consists of four tax parcels, one of which contains an existing residence, totaling 9.47 acres.¹ After

¹ The legal description of the subject property is a portion of the NW Quarter of Section 27, Township 2 North, Range 2 East of the WM; also known as Assessor Parcel Nos. 110235-000, 110250-000, 110251-000, and 110252-000. *Exhibit 1.*

the BLA, the existing residence would be retained on a one . acre parcel excluded from the proposed development. The subject property is located on the east side of NE 112th Avenue and the north side of NE 16th Street in Vancouver, Washington. *Exhibits 1, 2, 3, and 5.*

2. The application was received by the City on September 28, 2018 and determined fully complete on November 16, 2018. *Exhibit 1.* While the application as originally submitted was to create a senior (age 55+) community, the Applicant now proposes to remove the age restriction to allow sale to all potential buyers. However, the Applicant still proposes to make the development attractive to seniors or first time home buyers and requests adjustments to zoning standards as allowed through the planned development process to provide for these demographics, including allowance for increased lot coverage to allow for single-story floorplans and reducing the minimum lot area in the portion of the site that is zoned R-9. *Exhibits 1, 2, 3, and 4; Phil Wuest Testimony.*
3. The proposal is not a re-plat of a prior subdivision. *Exhibit 1.*
4. Other than a slope located on the western edge of the subject property along NE 112th Avenue, which is within a slope easement, the subject property is relatively flat and does not contain any environmentally sensitive areas. The slope and easement would be contained in one of the proposed open space tracts and would not be developed. *Exhibits 1, 13, and 19; Phil Wuest Testimony.*
5. Surrounding development includes single-family residential development to the east and southeast, agricultural land to the north, and City-owned vacant land to the southwest containing a municipal water tower on the south side of NE 16th Street, west of NE 115th Avenue. *Exhibits 1, 19 (Slides 2 and 3) and 20 (Slide 3).*
6. The proposed BLA would adjust the boundary between parcels 110252-000 and 110235-000 but would not create an additional parcel. Although the BLA would result in parcels that do not meet the minimum density standard and exceed the maximum lot area standard of the zoning districts in which the parcels are located, pursuant to VMC 20.310.050, the parcels are exempt from the requirement to comply with these standards because they were created prior to 2004. Thus, the creation of a one-acre parcel to be excluded from the development is permissible under the BLA criteria. The other parcel would be incorporated into the planned development and subdivided at a density that satisfies ordinance standards. The proposed post-BLA parcels would have legal street access via connections to NE 16th Street. *Exhibits 1, 3, and 5.*
7. With approval of the BLA, the subject property would consist of 3.79 acres that are zoned Low-Density Residential (R-9) and 4.68 acres that are zoned Higher Density Residential (R-22). *Exhibits 1 and 19.* The purpose of the R-9 zone is “to accommodate detached single dwellings with or without accessory residential units at a minimum lot size of 5,000 square feet and a density of 5.9 to 8.7 units/net acre.” VMC 20.410.020. The purpose of the R-22 zone is “to accommodate rowhouses, garden-type apartments, and

lower-density multi-dwelling structures at a minimum lot size of 1,500 square feet per unit.” *VMC 20.420.020*. Planned developments are a land use development tool intended to provide a means for creating planned environments in any base zoning district through the application of flexible standards, including zero-lot lines, narrower streets, and other innovative planning practices that result in well-designed, efficient and functional urban environments. *VMC 20.260.010*. Planned developments are allowed in both the R-9 and R-22 zoning districts. *VMC 20.260.020*.

8. The development would include a mixture of attached single-family residences (18 of the proposed 70 units) and detached single-family residences (52 of the proposed 70 units). Both housing styles are allowed outright within planned developments in the R-9 and R-18 zones. *Exhibits 1, 4 and 5; VMC 20.260.020*.
9. When a planned development contains multiple zoning designations, the minimum and maximum densities are proportionate to the amount of land in each zoning designation. *VMC 20.260.020*. The minimum required net density (i.e., area excluding public and private streets, stormwater facilities and unbuildable critical areas) in the R-9 zone is 5.9 dwelling units per acre, and the maximum is 8.7 dwelling units per acre. The subject property’s net area within the R-9 zone is 2.3 acres, requiring a minimum of 14 units and a maximum of 20 units. For the R-22 zone, the minimum required net density is 18.1 dwelling units per acre, and the maximum is 22 dwelling units per acre. The subject property’s net area within the R-22 zone is 3.09 acres, requiring a minimum of 56 dwelling units and a maximum of 67 dwelling units. The resulting required range for the subject property is a minimum of 70 and a maximum of 87 dwelling units. The Applicant proposes 70 dwelling units. *Exhibit 1; VMC 20.420.050*.
10. The minimum lot area required in the R-9 and R-22 zones are 5,000 square feet and 1,500 square feet, respectively. The maximum lot coverage in both zones is 50%, or 55% in the R-9 zone and 65% in the R-22 zone when more than 50% of the units are served by alleys pursuant to the City’s narrow lot development standards. *VMC 20.927.050*. Adjustments to these development standards are authorized by *VMC 20.260.050.B* if: 1) the adjustment is warranted given site conditions and/or characteristics of the design; 2) the benefits outweigh any potential adverse impacts; and 3) any impacts are mitigated to the extent practical. *VMC 20.260.050.B*. The Applicant proposes to modify both the lot area and lot coverage standards in order to satisfy the City’s minimum density standard while creating a housing product and community design that are attractive to people age 55 and over, with features including small yards, predominately single-story floor plans with two-car garages, and front porches. The proposed lot sizes would range from 2,450 to 3,800 square feet, and the lot coverage would be as high as 75% for single-story residences. For the not more than 20% of the residences proposed to be two story, proposed lot coverage would be 68%. The Applicant asserted, and Planning Staff concurred, that this would create a more cohesive community design than a design in which the western R-22 portion of the site were developed at a higher density and the eastern R-9 portion were developed at a lower density. To off-set the reduced yards created by the smaller lots and increased lot coverage, the Applicant proposes to set aside

approximately 13% of the site area as open space (exceeding the 10% minimum required, and to develop a trail through the site to the approximately 300-foot wide BPA right-of-way on the north side of the subject property. The BPA right-of-way is currently farmed by the owner of one of the subject parcels (who operates Joe's Place Farms), and this use would continue. Only one row of proposed houses in the southeast corner of the subject property (proposed Lots 32 through 44) would face a row of existing residences on larger lots across NE 16th Street and one larger residential lot to the east. In most areas, the proposed development would abut vacant properties or City land. Lots 32 through 44 would take access from a rear alley rather than from NE 16th Street. *Exhibits 1, 4, and 5; Phil Wuest and Joe Beaudoin Testimony.*

11. Although the minimum lot width requirements of the underlying zoning districts do not apply in planned developments, the Applicant has elected to be subject to the City's narrow lot development standards (VMC 20.927) in order to take advantage of incentives for providing alleys, including higher maximum lot coverage,² decreased rear yard setback (to four feet) for garages accessed from alleys, and six-foot encroachment of front porches into the front yard setback (where the standard required in the underlying zoning is 10 feet, or 18 feet for garages/carports). *Exhibits 1 and 3.* Narrow lots are those that are less than 40 feet wide. *VMC 20.927.020.* In order to qualify for these incentives, the Applicant proposes alley access for more than 50% of the lots (48 of 70). Consistent with the narrow lot development standards, the Applicant has demonstrated that utilities, driveways, street trees and other elements have been designed to minimize conflicts with each other, that adequate common guest parking would be provided (see Finding 19), that alleys would exceed the minimum width of 20 feet, and that the front driveways serving Lots 5 through 26 would not exceed 10 feet in width. With respect to solid waste and recycling access, Planning Staff identified Lots 1 through 8 as potentially not being accessible to collection vehicles due to their location on a looped alley, and recommended as a condition of approval that the Applicant submit an access and collection plan demonstrating that collection is feasible, or providing an alternate location for residents of those lots to place their carts. *Exhibits 1 and 5.*
12. The subdivision ordinance requires a minimum street frontage of 20 feet per lot. Each of the proposed lots would satisfy this requirement. *Exhibit 1; VMC 20.320.040.*
13. To off-site the proposed higher residential densities, smaller lots, and relaxed development standards, VMC 20.260.060.C requires developers of planned developments to provide common open space for active and passive recreational activities in an amount that is at least 10% of the gross site area. The project includes three open space tracts as follows: Tract A is a landscaped open space tract abutting the eastern perimeter of the site; Tract B comprises 7,145 square feet of open space in the western portion of the site, also proposed to be landscaped; and Tract C, 11,567 square feet encompassing the steep

² The increased maximum lot coverage allowed by VMC 20.957.050 (55% for lower density districts, and 65% for higher density districts) is not sufficient for the lot coverage proposed; the Applicant is seeking a deviation from the lot coverage standard through the planned development ordinance. *Exhibit 4.*

slope easement that exists abutting the western site perimeter. The project also includes a trail tract through the approximate center of the site that connects to the BPA right-of-way on the north side of the development site. Planning Staff submitted that the proposed open space amounts to 50,506 square feet of common open space, or 13.6% of the gross site area. Planning Staff submitted that, conditioned to require a plat note stating that the homeowners' association is responsible for maintenance of all open space tracts, the proposed open space satisfies ordinance standards. *Exhibit 1*. However, the site plan does not provide a tract table and the square footage of Tract A and of the trail tract are not legible on the site plan in the record. *Exhibit 5*. Also, the Applicant indicated that the project proposes 10% of the gross site as common open space. *Exhibit 3*. Further complicating verification of Staff's math is VMC 20.260.060.C.1.c, pursuant to which only 50% of Tract C may be counted towards the planned development common open space requirement, making verification of compliance with the planned development common open space standards problematic on the record provided. This could also be addressed by a condition of approval.

14. Pursuant to VMC Chapter 20.925, a minimum of 10% of the net lot area of each lot must be landscaped. Compliance with this requirement would be determined at the time of building permit review. In addition to landscaping on individual lots, street trees are required at a maximum spacing of 30 feet. The Applicant has submitted a tree plan demonstrating compliance with the street tree requirement. *Exhibits 1 and 5*.
15. The proposal is subject to the requirements of the City's tree conservation ordinance, which requires tree preservation and planting to achieve a minimum of 30 tree units per net acre. For tree conservation ordinance purposes, net site area excludes right-of-way, shared driveways, and stormwater facilities. The net site area 5.5 acres requires a minimum of 165 tree units. The Applicant proposes to retain 90.5 units of trees within the open space tracts, and to plant sufficient additional trees to reach a total 171.5 tree units. *Exhibits 1 and 5*.
16. The subject property is within the 112th Avenue Corridor Plan District and therefore is required to be consistent with the intent of the 112th Avenue Corridor Design Guidelines, including the connecting streets, trails, and open spaces illustrated on the Conceptual Site Plan within the 112th Avenue Corridor Design Guidelines. *Exhibit 1*. The 112th Corridor Design Guidelines describe the plan concept as follows:

The 112th Avenue Corridor is envisioned as a walkable (connected, safe, and comfortable) community. The primary street, 112th Avenue, as well as its adjacent developments, will provide for safe pedestrian, bicycle, and vehicle travel, allowing connectivity to services, jobs, housing, and amenities along the corridor. To achieve walkability, future development will incorporate interconnected streets and trails, diverse housing choices, mix of uses, gathering spaces, and enhanced pedestrian amenities.

Exhibit 16, page 5. The Design Guidelines encourage development that is oriented to the

street and interconnected open spaces and pathways. *Exhibit 16.* The NE 112th Avenue and NE 16th Street frontages, along with the internal public streets, would be improved with detached sidewalks, planter strips and street trees. A majority of the residences would be loaded from rear alleys, providing for unbroken sidewalks along the fronting streets. The residences would be further oriented to the street by use of front porches in the architectural design in lieu of larger front yards. The proposed open spaces would be accessible from the internal street/sidewalk system, and a trail corridor would provide an additional connection between NE 16th Street and the right-of-way to the north of the subject property. City Planning Staff reviewed the proposal against the Design Guidelines and determined that it is consistent with the intent of the guidelines as well as the provisions for connecting streets, trails, and open spaces. *Exhibits 1, 3, and 5.*

17. Access to the subdivision would be from a northward extension of NE 115th Avenue through the subject property (and the adjacent BPA right-of-way) to NE 18th Street at the NE Four Seasons Lane intersection; and from NE 16th Street, which connects to NE 18th Street east of the subject property via NE 118th Avenue. Although NE 16th Street provides a potential access to NE 112th Avenue to the west (the western segment of NE 16th Street is currently gravel and is closed to public use; it is used for agricultural and water tower access), the NE 112th Avenue/NE 16th Street intersection would not be used for subdivision traffic. The proposed use of NE 115th Avenue and NE 118th Avenue for subdivision traffic would improve safety by ensuring that all traffic enters the external street system via a signalized intersection, and improve operation of the NE 112th Avenue/NE 18th Street intersection (a short distance north of the NE 112th Avenue/NE 16th Street intersection), which provides freeway access. The Applicant would improve NE 16th Street from the westernmost subdivision access to the eastern property boundary to local access street standards. With respect to the extension of NE 115th Avenue, the City would work with BPA on resolving right-of-way issues, and the Applicant would be responsible for a portion of the design and construction costs, with potential for credit against traffic impact fees (traffic impact fees are assessed pursuant to VMC 20.915). Northeast 115th Avenue would be improved to local access standards. *Exhibits 1 and 5; Testimony of Phil Wuest and Joe Beaudoin.*
18. Access to individual lots within the subdivision would be from an internal network of streets and alleys with connections to NE 16th Street and the extended NE 115th Avenue. No lot would take direct access from NE 16th Street or NE 115th Avenue. Consistent with the requirements of the subdivision ordinance, none of the blocks would exceed 1,300 feet in length, and there would be no blocks sufficiently long as to require a pedestrian/bicycle way through the center of the block. The side lot lines would approach streets at essentially right angles. *Exhibits 1 and 5.*
19. Guest parking would be provided at a rate exceeding the requirement of the narrow lot development standards, which require one stall per every three narrow lots). A five-stall parking area would be provided on each of the north and south sides of the open space located in the western portion of the subdivision, and eight parallel parking spaces would be provided along the south side of the open space located in the eastern portion of the

subdivision. Street parking (which qualifies towards the guest parking requirement) would be available along NE 16th Street and proposed NE 17th Street. A total of 46 guest parking spaces would be available, exceeding the 23 required by the narrow lot development standards. Because only 18 spaces are explicitly demarcated on the project plans (the Applicant did not demarcate the public street parking), to meet the letter of the law the City requested a condition of approval requiring the Applicant to show five additional demarcated spaces on the site plan to demonstrate compliance with the ordinance. *Exhibits 1, 3 and 18; Testimony of Phil Wuest and Kristian Corbin.*

20. The Applicant submitted a professionally prepared transportation impact report dated October 23, 2018. The project's trip generation was estimated using the rate contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition* for Land Use Code 251 – Senior Adult Housing, Detached. Using this rate, the trip generation of the development would be 258 average daily trips, including 42 AM peak hour trips and 34 PM peak hour trips. With respect to trip assignment, it was assumed that the intersection of NE 16th Street and NE 112th Avenue would be open, but there was also analysis of the northward extension of NE 115th Avenue. The conclusion of the analysis was that all affected intersections would operate acceptably under the City's level of service standards, and the only mitigation recommended was installation of stop signs. *Exhibit 17.*
21. Although the Applicant's proposed removal of the 55+ age restriction from the project takes it into a different ITE trip generation land use category (and higher trip generation rate), City Transportation Staff submitted at hearing that the City is satisfied that project traffic impacts would be adequately mitigated with the extension of NE 115th Avenue and use of the signalized intersection at NE 18th Street. Because a revised traffic report would not affect the design of the subdivision street improvements, Staff felt that it would be unnecessary to ask the Applicant to prepare one. *Eric Hahn Testimony.*
22. The Fire Department has reviewed the proposed project and determined that it can meet the requirements of VMC Title 16 and the International Fire Code. The Department's recommended conditions of approval address fire hydrants and signage. *Exhibit 1.*
23. Public water and sewer utilities are available to the site and would be extended through the development to serve the proposed lots. *Exhibit 1.* Existing sewage disposal systems and wells on site would be decommissioned in accordance with Clark County requirements. *Exhibit 11.*
24. The subject property is located within the Evergreen School District, and students residing within the subdivision would attend Fircrest Elementary School, Cascade Middle School, and Evergreen High School. The District would provide bus service. Current school bus stop locations are on NE 16th Street and NE 18th Street. There would be sidewalks between the subdivision and these existing bus stop locations. School impacts would be mitigated through payment of impact fees as required by VMC 20.915. The current fee is \$6,100 per single-family dwelling unit. *Exhibit 1; Corbin Testimony.*

25. The subject property is within Park District C. Although no parkland dedication is required, the Applicant would be required to pay park impact fees pursuant to VMC 20.915. The current fee amount is \$2,142 per single-family dwelling unit. Park Impact Fees are \$2,007 per single-family and \$1,467 per multi-family unit. *Exhibit 1.*
26. An archaeological predetermination was conducted on site; no evidence of archaeological materials was found. Planning Staff recommended a condition of approval requiring work to stop if archaeological deposits are found during construction. *Exhibit 1.*
27. A geotechnical study was conducted on site. The study concluded that the proposed design is compatible with the underlying soils, provided the construction recommendations contained in the report are followed. *Exhibit 9.*
28. Stormwater runoff from pollution-generating surfaces would be treated in several proposed bioretention cells and infiltrated on site through infiltration trenches. City Staff reviewed the proposed stormwater design and concluded that it would be feasible and would satisfy the City's water quality treatment and quantity control requirements. *Exhibit 1.*
29. Pursuant to the State Environmental Policy Act (SEPA), the City of Vancouver assumed the role of lead agency for review of environmental impacts caused by the proposal. After review of the Applicant's environmental checklist and application materials, the SEPA Responsible Official issued a notice of application, public hearing, and optional determination of non-significance (DNS) on November 30, 2018. The City issued a final DNS on January 3, 2019, with an appeal period ending January 17, 2019. No appeals were filed, but a comment was received from the Washington Department of Health requesting that the project be reviewed against wellhead protection requirements. The City conducted the review and did not identify any needed mitigation. *Exhibits 1, 6, 7, 14 and 15.*
30. Public comment was submitted at hearing by Mr. Joe Beaudoin, who expressed concern regarding continued agricultural access to the land her farms north of the project site after NE 115th Avenue is extended north and paved. *Joe Beaudoin Testimony.* City and Applicant representatives agreed that agricultural access would be allowed to continue via the proposed extension of NE 115th Avenue. *Testimony of Phil Wuest and Eric Hahn.*

CONCLUSIONS

Jurisdiction:

Per Vancouver Municipal Code 20.210.020 Table 20.210-1, boundary line adjustments are Type I development applications, which are decided by the Planning Official, and preliminary subdivisions are Type III development applications, which are decided by the Hearing Examiner. Per Vancouver Municipal Code 20.260.030, the Hearing Examiner is authorized to hear and issue

findings, conclusions, and recommendations on planned developments pursuant to the Type IV review process. Pursuant to VMC 20.210.020.D, when more than one permit is required for a given proposal, all applications are consolidated into a single review subject to the highest type of procedure that applies to any of the applications. For the subject application, this would be a Type IV review process with a recommendation by the Hearing Examiner to City Council.

Boundary Line Adjustment Criteria for Review:

Pursuant to VMC 20.310.050, a Boundary Line Adjustment shall be approved or approved with conditions if the following criteria are satisfied:

1. No additional parcel(s) shall be created by the boundary adjustment.
2. The lot and location of any structure(s) on the lots shall comply with the minimum density, dimensional and area requirements of the zoning district, unless a variance is sought in conjunction with the request per the requirements of Chapter 20.290 Per VMC 20.410.040(C)(1)(a), lots developed or approved before March 11, 2004, are exempt from the requirement for minimum density/maximum lot size. However, if a site is completely redeveloped, the new development must comply with the minimum density requirements contained in Table 20.410.010-1.
3. Legal access shall be provided to each of the lots.

Planned Development Criteria for Review:

Pursuant to VMC 20.260.050.B, to receive approval for a planned development, the Applicant must demonstrate compliance with all of the following criteria:

1. Content. The concept plan contains all of the components required in Section 20.260.070. Compliance with all applicable standards. The proposed development and uses comply with all applicable standards of the Title, except where adjustments are being approved as part of the concept plan application, pursuant to Section 20.260.030(D)(2).
2. Architectural and site design. The proposed development demonstrates the use of innovative, aesthetic, energy-efficient and environmentally-friendly architectural and site design.
3. Transportation system capacity. There is either sufficient capacity in the transportation system to safely support the development proposed in all future phases or there will be adequate capacity by the time each phase of development is completed.
4. Availability of public services. There is either sufficient capacity within public services such as water supply, police and fire services, and sanitary waste and storm water disposal, to adequately serve the development proposed in all future phases, or there will be adequate capacity available by the time each phase is completed.

5. Protection of designated resources. City-designated resources such as historic landmarks, significant trees and sensitive natural resources are protected in compliance with the standards in this and other Titles of the VMC.
6. Compatibility with adjacent uses. The concept plan contains design, landscaping, parking/traffic management and multi-modal transportation elements that limit conflicts between the planned development and adjacent uses. If zoning districts are shifted per section 20.260.020(C) VMC, there shall be a demonstration that the reconfiguration of uses is compatible with surrounding uses by means of appropriate setbacks, design features or other techniques.
7. Mitigation of off-site impacts. All potential off-site impacts including litter, noise, shading, glare and traffic, will be identified and mitigated to the extent practicable.

Subdivision Criteria for Review:

Pursuant to VMC 20.320.040, to obtain approval of a preliminary subdivision, the Applicant must demonstrate compliance with all of the following criteria:

- A. Public facilities provision. Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for transportation, water, storm drainage, erosion control and sanitary sewage disposal methods that are consistent with the City's current ordinances, standards and plans;
- B. Proposed improvements. Appropriate provisions have been made for proposed streets, alleys and public ways, utilities and other improvements that are consistent with the City's current ordinances, standards and plans, and Department of Health and/or Washington State Department of Transportation standards and plans, where applicable;
- C. Open space and dedications. Appropriate provisions to the extent necessary to mitigate an impact of the development have been made for open space, parks, schools, dedications, easements and reservations;
- D. Physical characteristics. The design of the proposed short subdivision or subdivision site has taken into consideration the physical features of the site, including but not limited, to: topography, soil conditions, susceptibility to flooding, inundation or swamp conditions, steep slopes or unique natural features such as wildlife habitat or wetlands;
- E. Re-platting of existing subdivisions. When re-platting an existing subdivision, the short subdivision or subdivision shall comply with all of the terms and conditions of the existing subdivision's conditions of approval;

- F. Compliance with all requirements of this title. The proposed short subdivision or subdivision complies with all applicable requirements of this title unless modified through the approval; and
- G. Compliance with State requirements. That the proposed short subdivision or subdivision complies with the requirements of RCW 58.17.110.
- H. Narrow Lot Additional Criteria. Land divisions which contain one or more residential lots having a width of less than 40 feet shall meet additional criteria of VMC 20.927.030 A, B and C.

Conclusions Based on Findings:

1. The proposal demonstrates compliance with the criteria for a BLA. No new parcel would be created. The resulting parcel sizes would be acceptable due to exemption from minimum density/maximum lot area standard based on the date of parent parcel creation. The reconfigured parcels would all have access to public roads. *Findings 1, 6, and 7.*
2. With conditions, the proposal demonstrates compliance with the criteria for a planned development.
 - a. The Applicant submitted a concept development plan as required by the planned development ordinances. The proposed residential uses are allowed within planned developments and within the underlying zoning designations. The proposed development would be consistent with the standards of Title 20, with the exception of authorized adjustments and incentives. The requested adjustments to the minimum lot area and maximum lot coverage standards are consistent with the approval criteria in that they are needed for the single-story/front porch design concept, would provide for a cohesive neighborhood, and would not result in unmitigated impacts. The conditions recommended by Planning Staff that would ensure the plans more clearly demarcate all required guest parking and demonstrate compliance with the waste disposal requirements of the narrow lot development standards have been incorporated into this recommendation. *Findings 1, 2, 7, 8, 9, 10, 11, 12, 13, and 19.*
 - b. The proposal provides for an architectural and site design that is consistent with the 112th Avenue Corridor Plan District. With the proposed alley-loaded lots and front porches, the residences would have a strong street orientation. The proposed streetscapes and trail would promote walking. Trees would be retained and planted in a quantity exceeding minimum ordinance requirements. *Findings 15, 16, and 17.*
 - c. With the proposed street improvements, including the off-site extension of NE 115th Avenue, there would be sufficient transportation system capacity for the development. *Exhibits 16, 17, and 18.*

- d. Utilities are available to serve the development, and stormwater would be infiltrated on-site. No phasing is proposed. The recommended conditions of approval address Fire Department requirements. *Findings 22, 23, and 28.*
 - e. There are no sensitive natural resources on site that would require protection under the critical areas ordinance. The steep slope in the western end of the site would be retained in the existing easement and untouched by the project. Trees would be retained within the open space tracts. No archaeological resources have been identified on-site; however, a recommended condition of approval includes stop work and notification requirements if archaeological resources are discovered during construction. *Findings 4, 13, 15, and 26.*
 - f. The proposed development would be compatible with adjacent uses. Adjacent lands are developed with single-family residences, used for agriculture, or are undeveloped. Only a small portion of the development would directly face an existing neighborhood with larger lots. However, those lots facing existing larger lots would be served by an interior alley, reducing potential conflict. Interior guest parking would be provided, and the improvements to NE 16th Street would allow for guest parking. Landscaping and street trees would be provided. *Findings 5, 10, 14, and 19.*
 - g. With payment of mitigation fees and construction of street improvements, off-site impacts would be adequately mitigated. *Findings 17, 118, 20, and 21.*
3. With conditions, the proposal satisfies the criteria for a preliminary subdivision.
- a. Appropriate provision would be made for public facilities, including water, sewer, stormwater control, and transportation. *Findings 16, 17, 18, 19, 20, 21, 22, 23, 27, and 28.*
 - b. Appropriate provision would be made for proposed improvements, including streets, alleys, and utilities. The street improvements would be designed consistent with City standards. Existing sewage disposal systems and wells would be decommissioned in accordance with County health department requirements. *Findings 16, 17, 18, 19, 20, 21, 22, 23, 27, and 28.*
 - c. Appropriate provision would be made for parks and open spaces. *Findings 13, 14, and 25.*
 - d. The design of the subdivision would take into account the physical characteristics of the site, including the slope along the NE 112th Avenue right-of-way and the soil types. *Findings 4, 8, 27, and 28.*
 - e. The proposal is not a re-plat of a prior subdivision. *Finding 3.*

- f. The proposal would comply with all applicable requirements of Title 20, except as modified through the planned development process and through use of incentives. *Findings 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 24, 25, and 26.*
- g. Compliance with the above criteria demonstrates compliance with most of the criteria contained in RCW 58.17. In addition to what has already been stated, the proposal makes appropriate provision for schools and for safe walking conditions for students. Also relevant is that the City reviewed the proposal under the State Environmental Policy Act and issued a determination of non-significance. *Findings 24 and 29.*
- h. With a condition ensuring adequate access for waste collection for Lots 1 through 8 (or designation of alternate space within the development for placement of carts), the Applicant has demonstrated compliance with the narrow lot additional criteria. *Findings 11 and 12.*

RECOMMENDATION

Based on the foregoing findings and conclusions, the requested boundary line adjustment, preliminary plat, and planned development to allow the subdivision 8.47 acres into 70 single-family residential lots **SHOULD BE APPROVED** subject to the following conditions to be satisfied by the Applicant or successors in interest:

Prior to Civil Plan Approval, the Applicant shall:

1. Submit for civil plan review with ten (10) new sets of check prints showing all the revisions requested, two (2) sets of all necessary reports (geotechnical, hydrology, traffic analysis, road modification, etc.), and any redlines documents that were returned during the preliminary review process. Submit these to the Community and Economic Development Department Permit Center; request engineering staff for counter assistance. For questions on these requirements please contact 360-487-7804.
2. Grading plan review fees will be due upon submittal of civil plans for review. Contact Permit Center staff at 360-487-7802 to obtain a fee quote.
3. Prior to the issuance of civil plan approval, the Applicant shall pay concurrency modeling fees totaling \$1,500.00.
4. Prior to the issuance of civil plan approval, the Applicant shall enter into an agreement with the City of Vancouver to assist in the design and construction of NE 115th Avenue from the proposed subdivision, across BPA property, to connect to the existing signalized intersection at NE 18th Street and NE Four Seasons Lane.
5. New and existing fire hydrant locations shall be shown on the revised site plan.

6. The revised site plan shall include an open space tract table, shall clearly identify the square footage of Tracts A, B, C, and the trail tract, and shall include a calculation identifying the exact amount and locations of common open space provided to address the planned development standards at VMC 20.260.060.C.

Prior to Commencing Public Improvement Construction

7. The Applicant shall obtain all required permits to complete the sewer construction.
8. Fire hydrants for emergency use shall be established and maintained.
9. Street identification signs shall be installed for emergency response.

During Public Improvement Construction

10. Temporary address signage shall be visible and legible from the street fronting the property for emergency response during construction.

Prior to Final Plat Approval

11. The Applicant shall submit a final plat application along with five (5) full size copies and 1 reduced 8 ½ x 11 copy of the proposed plat and tree/landscape plan. Applications can be found under Building, Planning and Environments on the City of Vancouver website, www.cityofvancouver.us.
12. The following note shall be placed on the final plat: “If any archaeological deposits are found during construction, work shall stop and the City of Vancouver’s Community & Economic Development and the Washington State Department of Archaeology and Historic Preservation shall be notified.”
13. The following note shall be placed on the final plat: “Development within this subdivision is subject to an approved tree plan. Tree removal is subject to approval by the City of Vancouver. Street trees must be planted prior to occupancy per the approved plan.”
14. The Applicant shall indicate the following as a note on the final plat: minimum lot size 2,400 square feet, maximum lot coverage for single story structures 75%, maximum lot coverage for two-story structures 68%, and the corresponding lot numbers dedicated as two-story structures.
15. The following note shall be placed on the final plat: Homeowners Association is responsible for maintenance of all open space tracts listed on this plat.
16. A note shall be recorded on the plat requiring maintenance of the common parking areas as the responsibility of a homeowner’s association.

17. The Applicant shall submit an access and collection plan that demonstrates recycling truck maneuvering is feasible at the narrow looped alley as proposed, or provide an alternate location for Lots 1 through 8 to stage their carts for collection.
18. Prior to the issuance of final subdivision approval, the Applicant shall install City of Vancouver standard frontage improvements along NE 112th Avenue including right of way dedication as needed to meet the minimum required half-width, detached sidewalks, street lighting, ADA ramps, planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance. The sidewalk shall be placed at the back of the right of way at the appropriate elevation so that when NE 112th Avenue is reconstructed to the standard the sidewalk will not need to be replaced. The design shall include transition to existing sidewalks on adjacent properties.
19. Prior to the issuance of Final Subdivision Approval, the Applicant shall install the following City of Vancouver standard frontage improvements along NE 16th Street:
 - From NE 113th Avenue to the western property line of Water Station #7, the Applicant shall install standard frontage improvements per T10-03 – Local Access and Loop Road Half Street Construction; including right of way dedication as needed to meet the minimum standard, detached sidewalks, street lighting, ADA ramps, planting strip, and traffic control devices as warranted. The pavement width shall be 25 feet.
 - Across the entire street frontage of Water Station #7, the Applicant will be required to meet the full-width street requirements of city standard T10-15A. Such improvements include full-width pavement. Also included will be curb-and-gutter, detached sidewalks, planting strips, and street lighting on both sides of the street. A driveway approach for the water station must be constructed and the sidewalk on the south side of the street must connect with the existing dead-end sidewalk near the east property line of Water Station #7.
 - From the eastern property line of Water Station #7 to the east end of the subdivision, the applicant shall dedicate right-of-way as necessary to meet the standard, and install City of Vancouver standard frontage improvements including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.
20. Prior to the issuance of final subdivision approval, within the boundaries of the subdivision property, the Applicant shall install City of Vancouver standard frontage improvements along NE 115th Avenue including curb, gutter, detached sidewalks, planting strip, street lighting, ADA ramps, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.
21. Prior to the issuance of final subdivision approval, the Applicant shall install City of Vancouver standard frontage improvements along NE 113th Avenue and NE 17th Street including right of way dedication, detached sidewalks, street lighting, ADA ramps,

planting strip, traffic control devices as warranted, and storm drainage as required by the city stormwater ordinance.

22. Prior to the issuance of final subdivision approval, the Applicant shall install City of Vancouver standard full-width improvements along the alleys including flat curbs, center valley gutter, street lighting, and storm drainage as required by the city stormwater ordinance.
23. Prior to the issuance of final subdivision approval, the Applicant shall coordinate with the city's traffic engineer to provide stop signs at the locations specified in the applicant's traffic impact analysis. Information pertaining to the placement of the new stop signs shall be included in the signing and striping plan section of the approved civil plans. Signing and striping plans are required even if not proposing any new striping in the public right of way. If no new striping is proposed then the plan should indicate what exists.
24. The Applicant shall satisfy all of the submittal and other related requirements itemized in the projects upcoming Notification of Civil Plan Approval (plan approval letter).
25. If attached dwellings require fire sprinkler protection, a note shall be included on the plat stating that all buildings require fire sprinkler protection.
26. The Applicant shall dedicate an easement to the City of Vancouver for access and inspection of the stormwater facilities on the final plat.
27. The Applicant shall depict the five additional guest parking spaces required on the final site development plan.
28. The Applicant shall place a note on the plat regarding maintenance of private alleys as the responsibility of a homeowner's association.

Prior to Issuance of any Building/Development Permits

29. Public sewer (possibly) built by this project, service laterals and connections to public sewer shall meet City of Vancouver construction inspection requirements.
30. Address signage shall be visible and legible from the street fronting the property for emergency response. If applicable, individual suite numbers shall be posted at the suite doors.
31. Any fire protection features identified as being required during the construction permit review shall be installed and approved prior to occupancy.
32. Fire lane signs shall be posted throughout the site in accordance with the approved sign and striping plans.

Issued March 5, 2019.

By:



Sharon A. Rice
City of Vancouver Hearing Examiner

Note: The hearing examiner's decision may be appealed to the Vancouver City Council within fourteen (14) calendar days after the date the hearing examiner's decision is mailed. Appeals must be made in writing and be received within this time period. The letter of appeal shall state the case number designated by the city and the name of the applicant, name and signature of each petitioner, a statement showing that each petitioner is entitled to file the appeal under VMC Chapter 20.210.130.B, the specific aspect(s) of the decision and/or SEPA issue being appealed, the reasons each aspect is in error as a matter of fact or law, and the evidence relied upon to prove the error (VMC 20.210.130.A). A fee of \$1,826.00 must accompany the appeal. However, if the aggrieved party is a recognized neighborhood association, the fee assessed is \$138.00. The association must demonstrate at the time of appeal submittal that the decision to appeal was made pursuant to association bylaws. Submit the appeal request and fee to Community & Economic Development Department, Permit Center, 415 W 6th Street, or mail to PO Box 1995, Vancouver, WA 98668-1995. Permit center hours are 8 a.m.–12:30 p.m. and 1:30 p.m.–4 p.m., except Wednesday, when permit center hours begin at 9 a.m.

Mayor Anne McEnery-Ogle convened a retreat of the Vancouver City Council at the 8:34 a.m. on Friday, March 1, 2019, at the Firstenburg Community Center, 700 NE 136th Ave, Vancouver, Washington.

Council present:

- Mayor McEnery-Ogle,
- Councilmember Bart Hansen
- Councilmember Bill Turlay
- Councilmember Ty Stober
- Councilmember Linda Glover,
- Councilmember Laurie Lebowsky
- Councilmember Erik Paulsen

Staff & preesnters present:

- Eric Holmes, City Manager
- Lenda Crawford, Deputy City Manager
- Natasha Ramras, Chief Financial Officer
- Brian Carlson, Public Works Director
- Chad Eiken, Community & Economic Development Director
- Jeanette (Jan) Bader, Program & Policy Development Manager
- Carol Bua, Communications Director
- Amanda Delapena, Assistant to the City Council
- Jill Brown, Assistant to the Mayor and City Manager
- Lauren Fencil, intern
- Scott Bailey, Regional Economist, Washington State Employment Security Department

8:30-8:45 a.m. Welcome/Objectives for the Day

Mayor McEnery-Ogle welcomed Council, staff and members of the public present.

City Manager Eric Holmes oriented Council to the agenda, materials provided to them in advance, and the objectives for the day.

Objectives for the Day

- Establish shared understanding of **economic outlook**
- Establish shared understanding of the overall environment and identify initial direction(s) on **current and near-term initiatives and options**, including:

- Key Subarea strategies
- Key Program strategies
- Major policy initiatives
- Governance options
- Review preliminaries for Denver City to City exchange
- Introduce **Stronger Vancouver** recommendation and preview:
 - Recommended adoption timing & approach
 - Timing

9:45-10:00 a.m. Setting the Stage: Economic Update Briefing

[Presentation](#) by Scott Bailey, Regional Economist

Scott Bailey presented to Council a snapshot of trends and data for the Clark County and Vancouver economy and an outlook for 2019.

Key Discussion Points

- Clark County labor market and unemployment rates, including a comparison with state, regional, and national data. Discussion about employment and job growth composition and trends since the beginning of the recession. Wage trends and the occupational outlook for the next several years.
- Poverty rates holding mostly steady, even with an increase in median household income due to a widening income distribution between the lowest income earners and highest income earners. The percentage of cost-burdened renters, those renters paying 30 percent or more of their income on housing, is increasing in Clark County.
- Construction activity as a whole, with focus on housing permits and inventory over time for Clark County. Construction activity continues to recover strongly, especially with construction of multi-family developments. Discussion regarding the forecast for the housing market and the impact of Portland housing construction the Vancouver market.
- Taxable sales in Clark County broken down by industry over time.
- Discussion regarding available revenue tools that could be a part of A Stronger Vancouver package are limited, and Washington is one of the most regressive states in regards to taxing options that place a higher burden on lower income households.
- Mr. Bailey provided his observations about the local economy, which he indicated remains in good shape. He speculated about a potential economic slowdown toward the end of the third quarter 2019. He noted that the City's Waterfront development, Vigor Industrial is moving some of its Seattle and Oregon operations to

Vancouver, as well as the Ilani casino in Clark County, will help with continued job growth in the region. He noted that affordable housing remains a big challenge for Vancouver and the surrounding region.

10:15 a.m.-12:05 p.m.

Key Subarea Strategies

[Presentation](#) by City Manager Eric Holmes

The City Manager oriented Council to a conceptual project ecosystem of the City's key subareas that require Council direction, ongoing or in the near future, on key strategic questions. Three key subareas will be the focus of projects and initiatives in 2019 that will shape the community. Mr. Holmes provided context for a number of issues pertaining to each area and presented key questions for the Council's consideration. He noted that Council need not necessarily come to a consensus or decision on each question at this retreat.

DOWNTOWN

- **Parking**

A key ingredient in every project and the overall health and functioning of downtown is parking and transportation. Vancouver has been cultivating a healthier parking ecosystem with refinements to the on- and off-street system. A more comprehensive strategy to meet near and long term parking and transportation demands needs to be fully developed, finalized and integrated into the VCCV implementation approach.

Key Question: *Given the costs associated with building and maintaining off-street parking garages, as well as the occupancy trends and the current authorized permit rates, **should the City build additional off-street parking?***

Key Discussion Points

- Pressure from developers and businesses and a sense that the City is holding up economic development because of parking challenges downtown.
- Competing schools of thought in the community – the City should stay out of the parking business altogether and let the market adjust with the challenge, or the City needs to build more structures in order to give the market a boost, which will lead to solutions.
- Discussion about the City's ability to satiate the parking need if it builds more parking. Eventually the pressures will build again with continued growth, and the City will be asked to come in and build more later down the road. The City's roles should rather be in finding mobility solutions and alternative ways to get people downtown and circulated them around downtown once they are there, and at the same time, be more aspirational with the limited property available downtown rather than simply building parking structures.
- Recognition that there should be some balance between having parking available for visitors and increasing mobility options to relieve parking pressure.
- Discussion about the future of downtown and what will be attracting businesses and younger residents and where the City's investment should be made given such considerations.

- The City’s current parking rates make the market unfeasible for private development to take on structured parking and also disincentivize people from taking transit and a general sense that the City should not be in the parking business in the future.

- **Waterfront Gateway Master Redevelopment Plan**

The City owns or indirectly controls one of the largest remaining undeveloped contiguous properties in downtown, located south of 6th Street and west of Columbia surrounding City Hall and the Hilton Hotel and Convention Center.

Key Question: *Given the strategic location of this undeveloped property and the impact any development could have downtown, **should the City engage the City Center Redevelopment Authority (CCRA) in a “master developer” role for the Waterfront Gateway project?***

The City Manager outlined the [CCRA](#)’s authorities, as provided for in municipal code, noting that they are a group of individuals that have exceptional expertise in urban land development, real estate transactions and financing, but the way in which the City currently engages the CCRA and utilizes this experience is not taking full advantage of this resource.

Key Discussion Points

- Council generally interested in engaging the CCRA in this way and further utilizing the board more fully, but recognition that the City needs to work closely with the CCRA in educating them on the City’s future intentions for them and gauge the current board members’ interest and comfort level with that plan before making a final decision.
- Concerns expressed about the public’s lack of awareness of what the CCRA is, what it does, and its relationship with the City. There is a need to better educate the community on the development authority before engaging the CCRA to take on such a role. Recognition that more fully utilizing a development authority is a part of Vancouver’s evolution moving from a suburban community to a more urban community, and communicating to the public the complexities of developing an urban environment and the need for the CCRA’s full engagement is part of that process.

- **Block 10**

In 2016, the City selected Gramor Development as a preferred developer for [Block 10](#) based upon a proposal that included a full scale grocer and up to 250 apartment housing units on the site. In the intervening time, negotiations with Gramor have not yet produced an acceptable agreement, and essential terms and commitments – such as the grocery component – have softened. In the meantime, new environmental factors have arisen, including the establishment of federal opportunity zone legislation, the advent of the Waterfront development, expected completion of the 4th tower at Vancouvercenter, and the evolution of the retail grocery sector. The City has also been approached by other developers in the meantime who have the ability and

interest in completing a large project at the site, likely without a grocery store, and who have investors eager to take advantage of the opportunity zone.

Key Question: *Given the environmental changes since the last Request for Proposals, should the City consider other options for Block 10?*

Key Discussion Points

- Discussion about whether it's the City's place to dictate when and where a grocery store is built downtown or whether that should be left to the market. General recognition that the City's role should be more of an influencer and take policy-level actions, such as setting up an investment fund to subsidize grocery providers in the downtown area, rather than trying to force a grocery store in a specific location.
- Concerns about giving up on grocery at Block 10, given that the community asked the Council specifically for that amenity and discussion about what the City can offer or steps the Council can take to both bring in a viable community asset to that location while also incentivizing grocery services to locate downtown.

- **Library Square**

A pilot project for the Local Infrastructure Financing Tool (LIFT) tax increment financing legislation in the mid-2000s, the Library Square project was [envisioned to be an urban mixed use project](#) including residential, office, retail and institutional (library) supported by structured parking funded substantially by the LIFT. To maximize the state tax credits, construction would need to begin in 2019. Since the Great Recession, the City has attempted to work with multiple developers and the property owner on plans to bring this project out of the ground. To date, none have been successful.

Key Question: *Should the City shift away from efforts to bring the Library Square project out of the ground as in some form generally consistent with the original vision in favor of "temporary" surface parking?*

Key Discussion Points

- Acknowledgment that it is time to move forward with a more viable project for this site, while also somehow preserving the ability to enter into a development agreement for the site sometime in the future.
- Discussion about the negative impact of the uncertainty surrounding the I-5 bridge on developers' ability to invest at this location.

- **"Jefferson District" / Surplused Fire Station #1**

The City has declared surplus old fire Station #1 on west Evergreen Boulevard near its terminus with Jefferson. A majority of the land around this intersection (and adjacent to Station #1) is under single ownership, which is

interested in working with the City on a master plan for conversion of the historic buildings in a mix of uses that preserves the industrial character of the area while introducing new employment based uses.

The options for disposition of this site include a direct negotiated sale, placing the property on the open market, or issuing a Request for Proposals/Qualifications for a potential developer.

Key Question: Would the Council consider a negotiated sale with abutting property owners that secures a broader master plan for the adjacent holdings, including employment uses, affordable housing, parking, urban character, etc?

Key Discussion Points

- Discussion regarding how the potential Clark County Jail redevelopment project could impact the character of this area.
- Discussion about the potential risks involved with placing the property on the open market and the potential for losing any development cohesiveness and the possibility of completing a master plan, and discussion about the benefits of a master plan.
- Discussion about the potential and the ability for preserving integration of affordable housing in
- Discussion about the potential vision and the opportunity for preserving the industrial character of the area and the proximity to and tie-in with the rest of downtown.

• Clark County Jail

The County Council convened the [Correction Facility Advisory Commission](#) (CFAC) in 2018. The CFAC is a large group that includes a wide range of interests relevant to the correction system, including representatives from the City. The CFAC is charged with advising on the size, design, location and type of jail project.

Key Question: Given the potential impact a redeveloped jail campus could have on downtown Vancouver and also the City's desire to engage the County on a number of projects and initiatives in the future, what extent is the City Council's interest in influencing the size, scope and location of the jail?

Key Discussion Points

- Concerns about whether an expanded jail at the current location fits with the future vision of the city and about the overall CFAC process.
- Concerns about the current master plan presented by the Sheriff's office prior to the convening of the CFAC and the potential such a project could have on negatively impacting investments and development of the surrounding neighborhood.

- Discussion regarding the viability of alternative locations or the potential for the current site to be developed with a greater focus on community and social services physically broken up into a number of buildings rather as more of a campus-like setting.

No Council consensus about this issue. Council will continue to consider its role in influencing this project as more information is provided out of the CFAC deliberations.

Council Consensus – Key Subarea Strategies:

- ✓ **Confirmed:** Develop a parking strategy moving forward that “future proofs” the City’s investment in parking capacity through the use of technology, demand management approaches, transit and transportation options, and public/private partnerships to expand on- and off-street parking supply.
- ✓ **Confirmed:** Begin the process of engaging the CCRA board of directors in a master developer role for the Waterfront Gateway area.
- ✓ **Confirmed:** The City should consider other options for the development of Block 10, including potential development that would not include a grocery store, but continue to look for ways the City can incentivize grocery services downtown.
- ✓ **Confirmed:** The City should move forward with other, more viable options for developing the Library Square site.
- ✓ **Confirmed:** The City should work towards a negotiated sale of the surplus Fire Station #1 site with the owner of the surrounding land in order to secure a broader master plan of the area to ensure development proceeds in a manner consistent with the City’s vision for the future of that site.

12:20-12:45 p.m. City to City Exchange: Denver

[Presentation](#) by Jill Brown, Assistant to the Mayor and City Manager

The City is sponsoring a City-to-City Leadership visit to Denver, Colorado from May 20-24, 2019. The participants invited to travel include the City Council and key City staff members, along with local leaders from the City’s advisory boards and commissions, Clark County, Port of Vancouver, CREDC, Greater Portland Inc., C-TRAN, WSDOT, ODOT, Metro, Vancouver Housing Authority, Council for the Homeless, the SW Washington Regional Transportation Council, Greater Vancouver Chamber of Commerce, Vancouver’s Downtown Association, the Community Foundation, Washington State University-Vancouver, and Clark College.

Through a series of peer-to-peer sessions, presentations and tours with Denver city staff, business and economic development organizations, the goal is to engage leadership across sectors in experiencing firsthand another regional from which they can learn about key issues facing our city and region; to inform participants about how

leaders and organizations in another metro area have achieved success on opportunities similar to those that exist for Vancouver; and to inspire cross-sector leadership to embrace the opportunity to realize a shared ambition to make Vancouver and even more exceptional city.

The strong civic agenda will focus on what Vancouver's leaders can learn about Denver and Vancouver to help the City fully realize strategic goals for the community.

Staff provided Council with the list of invited participants, travel information and a draft itinerary.

12:45-1:20 p.m. Key Subarea Strategies *(continued)*

Presented by City Manager Eric Holmes

THE HEIGHTS DISTRICT

With the emergence of a preferred alternative for the [The Heights district and master redevelopment plan](#), this project will soon be shifting from a planning mode to an implementation mode. A key focus of 2019 will be to craft a successful implementation strategy and make initial investments in support of that.

Key Questions:

What range of options should the City consider as part of an implementation strategy for The Heights?

- *A new public development authority like the CCRA?*
- *Issue a Request for Qualifications for a private master developer?*
- *Complete the work in-house?*

What is the relative level of the City's commitment to major infrastructure (streets, parks, parking, etc.) investment (likely \$10s of millions) in support of the master plan?

Key Discussion Points

- Discussion about the differences between engaging a public development authority versus hiring a master developer. Recommendation that if a single developer is engaged to develop the entire site, the City should hire a master developer to manage implementation; if multiple developers are involved, it would make more sense to set up a development authority to coordinate all of the moving pieces.
- Concerns that the City does not have the capacity to do the work in-house.
- Discussion about how to ensure the space does not sit empty before it is built up, noting this will be a key implementation strategy for staff and the Council to continue to work through. Recognition that build out will take years to happen, but fringe / lower-density areas of the district will be easier to develop.
- Discussion about how to make the site visually attractive while sections remain vacant, including signage that outlines the future vision of the area to help residents continue to be engaged over time, and also the

potential for temporary uses like community gardens or a farmers market to activate the space while it is under development.

FOURTH PLAIN

The city's ongoing efforts in support of realizing the vision for the Fourth Plain Corridor has resulted in establishing the Fourth Plain Forward initiative, supporting the opening of the BRT line, completing construction of Fire Station #2 and expanding multi-family tax abatements along the corridor. The combination of these efforts has increased the number of successful businesses in the Fourth Plain Corridor, expansion of cultural events and a significant increase in private development activity, with multiple projects under construction.

- **Fourth Plain Commons / Navigation Center**

The city has identified a potential partnership with the Vancouver Housing Authority (VHA) to develop a mixed-use project (referred to as "Fourth Plain Commons") to serve as a center of community activity for Fourth Plain as well as an incubator for food entrepreneurs at the corner of Norris Road and Fourth plain.

The day center occupies a fraction of the Navigation Center building. When it was acquired, the City anticipated the site to ultimately include a range of uses that support and benefit individuals experiencing homelessness as well as residents of the surrounding neighborhoods. There has been discussion whether a permanent shelter should also be contemplated as a use at the site, especially given the fact that a couple of funding opportunities through the VHA have come to light to develop new shelter capacity.

Key Question (Fourth Plain Commons): Is there alignment with the Council, or concerns, regarding the general scope and location of the Fourth Plain Commons project at the Fourth Plain and Norris Road site?

Key Question (Navigation Center): Would Council consider establishing a permanent emergency overnight shelter at the Navigation Center site as part of the master use plan for the whole site?

Key Discussion Points

- Suggestion that the Navigation Center could be an ideal location to house the Fourth Plain Commons project as having a commercial kitchen at the site could change the community's interaction with the Navigation Center and make it more of a community asset, as was intended for the remainder of the building.
- Acknowledgment that future use planning of the Navigation Center will need to be much more inclusive of the surrounding neighborhoods and other stakeholders than the urgency surrounding the development of the day center had allowed.
- Discussion about the need for a permanent overnight shelter, especially for women and children, but also the need for severe weather emergency sheltering and recognition that the Navigation Center should play a role

in providing these options and should be incorporated into planning process for the Winter Hospitality Overflow program each year.

- Suggestion that future uses of the Navigation Center should also consider a health clinic that could be used by the community.
- Concerns expressed about adding uses to the Navigation Center too quickly, as there is a need to demonstrate success at the site with the day center in order to meet the City's commitment to the neighbors and build more trust before the City will be able to bring more assets into the neighborhood, but an acknowledgement that community assets must be a part of the Navigation Center in order to honor that commitment to the community.
- Concerns expressed about stable and reliable staffing for the Navigation Center, and acknowledgement that engaging VHA as a partner in providing additional services at the center could improve overall the onsite staffing resources.

- **Operations Center Replacement**

The current work program for the overall project contemplates design and construction documents this biennium, construction in 2021-22, and a move in 2023. The work program does not contemplate planning on redevelopment efforts until next biennium or later.

Key Question: Given the current location of the Operations Center is in the heart of the Fourth Plain corridor with the potential for catalytic redevelopment, **once a future site for the Operations Center is secured, should the City accelerate master planning for redevelopment of the current site to occur concurrent with the Operations Center replacement project?**

Key Discussion Points

- Because this is in an opportunity zone, the City will likely have developers eager to redevelop this site as soon as possible, and the City will want to have a master plan ready to go as soon as the site is ready for development.
- It would be preferred to demolish the current buildings on the site as soon as possible and put in a temporary use that better activates the site for the surrounding neighborhood until permanent development occurs.

UPDATES ON OTHER EMERGING DISTRICTS

- **Lower Grand Employment Area (LGEA)**

The acceleration of development in this district with the Convene office park reinforces the goals of the LGEA, and the City was recently awarded grants from the Department of Ecology to design and build infrastructure in the industrial area north of Grand Central. In addition, Home Depot is expected to go through the

permitting process to build two additional buildings adjacent to the company's existing office building at this site – one additional office building and one services building that might include restaurants and other services.

- **Section 30**

The Section 30 subarea plan was originally adopted in 2009. Because of the historic complexities in ownership and the state of mining in the section, redevelopment of the area has been thought to be well into the future. However, recent informal interest, fueled in part by the City's priority investment in SE 1st Street, suggests that reclamation and redevelopment of this area, consistent with the original vision as an employment center and similar to the concept of Columbia Tech Center, may occur sooner than anticipated.

Council Consensus – Key Subarea Strategies (continued):

- ✓ **Confirmed:** Once implementation of a master plan begins, carefully stage The Heights district area with temporary uses and visual elements while the site is undergoing development in order to activate any vacant spaces until full build-out is complete.
- ✓ **Confirmed:** The Fourth Plain Commons project can continue to be planned for the Norris Road location at the scope currently contemplated.
- ✓ **Confirmed:** Future use planning for the Navigation Center should include consideration of permanent, overnight sheltering, focusing on services for women and children, and also must include broader community assets and amenities beyond resources for people experiencing homelessness.
- ✓ **Confirmed:** Ensure the Navigation Center is a part of the Winter Hospitality Overflow network, at a minimum in preparation for next winter.
- ✓ **Confirmed:** The planning process for future uses of the Navigation Center should not be rushed and should be an inclusive and deliberate process that incorporates the surrounding neighbors and businesses.
- ✓ **Confirmed:** Begin master planning for redevelopment of the current Operations Center site concurrently with the Operations Center replacement project once a future site is secured.

1:20-2:00 p.m.

Key Programs & Policy Initiatives

Presented by City Manager Eric Holmes

Mr. Holmes provided the context for a number of ongoing or new programs and policy initiatives for 2019 and presented key questions for the Council's consideration.

HOMELESSNESS

Over the last biennium, Vancouver has stepped into a much more significant role in addressing homelessness. In addition, there are multiple philanthropic and faith-based organizations that are looking to invest in additional and expanded homeless services and facilities in Vancouver, some of which are interested in increasing capacity in order to re-establish a camping prohibition in the city. Finally, the Stronger Vancouver recommendation includes ongoing funding for a homeless outreach team, as well as services and facilities.

Key Question: Given the number of organizations interested in increasing facilities and services for people experiencing homelessness, if adequate additional shelter capacity and associated programs were established, **would the Council consider amendments to the existing camping ordinance to again prohibit camping in specific areas or citywide?**

Key Discussion Points

- The intent of the camping ordinance was that if shelter beds are available, overnight camping would be prohibited, and confirmation that case law regarding this issue addresses the matter.
- Concerns about the lack of detail about what is being proposed for a shelter, concerns about the seeming lack of leadership or point person who is clearly in charge of the City's homeless services program and leading the City to a clear vision through best practices about what the City wishes to accomplish in this area.
- Discussion about the need for a defined strategy and proven results for improving the community relationships around the Navigation Center, as well as a more general vision and specific goals for which the City can advocate when it is working within the broader system of homelessness service providers.
- Discussion about a new homelessness coordinator position that the City will soon recruit for and how this person will be positioned within City staff and what their role will be in working internally and with outside agencies.
- Suggestion that shelter capacity is needed beyond everyday needs from a preparedness perspective, as the City needs to be prepared to house citizens who could be made homeless due to a natural disaster.

CULTURE, ARTS AND HERITAGE

For the first time in decades, the City has dedicated resources to support establishing an arts, culture and heritage program. The resources in the current biennium are limited term but the Stronger Vancouver package includes permanent, ongoing dedicated funding.

• Arts and Innovation Campus

In 2018, the Council ratified an [MOU](#) between the City, Vancouver School District and Fort Vancouver Regional Library District for development of a community campus on the former central library site. The campus is intended to include a K-5 school of Arts and Innovation, conversion of the current Library headquarters into a community arts facility, development of a performance venue (such as a performing arts center) and creative entrepreneurial space. The site is located in the Central Park neighborhood at the northern gateway to the

Historic Reserve, is on the future Mill Plain BRT line and presents an opportunity for development of a spectacular community asset.

Key Question: *In regards to prioritization of City resources, **what level of involvement/commitment would the Council consider in support of the Arts and Innovation Campus?***

Key Discussion Points

- Discussion about the need for a feasibility study of the proposed location and building before further Council guidance can be given.

POLICIES

- **Transportation System Plan (TSP)**

The TSP is the key policy strategy that guides the City's investment in our street system – the City's largest asset. It was last updated 15 years ago in May 2004. During this biennium, the City will finish an exhaustive review and update of the TSP that began with data gathering in the last biennium. The nature of transportation has changed in many ways since 2004: new technologies, increased congestion, additional transit and growth in modes alternative to the auto all contribute to changes in the way the city lives, and create opportunity for future investments in the city's assets.

Key Question: *Given the changing nature of transportation options and technology now and into the future, **is the Council aligned with an approach that puts more emphasis on mobility (the ability to move or be moved freely and easily) over transportation (the action of transporting someone or something from one place to another)?***

Key Question: *Should the City allow dockless micro mobility vehicles (i.e. electric scooters) on our streets?*

Key Discussion Points

- Concerns about the hazards to pedestrians and e-scooter users, as demonstrated in other communities, as well as the aesthetic issues involved with scooters being left on sidewalks and streets.
- Discussion about the need to plan for future generations' and tourists' interests in alternative mobility options for getting around the downtown area, as well as the inevitability that this will be a growing area of interest as people want to age in place. Discussion about the potential benefits such options could have.
- Interest in allowing such mobility options only if the City had the infrastructure to safely and adequately accommodate them, separate from existing sidewalks and streets.
- Suggestion that an advisory body is necessary to evaluate this matter further and collect more information on the pros and cons of these alternative transportation options before Council can make an informed decision.

- **Sustainability / Climate Action / Resilience Plan**

Council has expressed a desire to build on the [sustainability plan](#) work completed in the late 2000s (but never formally adopted) and establish a formal policy and plan relative to the impacts of human activity on our environment. In addition, credit rating agencies recently began advising that they will start to take the resilience planning in cities into account when doing ratings in the future.

A number of planning framework options exist to address this:

Sustainability plan: defines goals that foster environmental, community, and financial sustainability. These plans set goals that are particular to the organization in question.

Climate action plan: a comprehensive roadmap that outlines the specific activities that an agency will undertake to reduce greenhouse gas emissions.

Resilience plan: a plan to assure the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.

Key Question: Does the Council have an initial preference on planning framework to address policy objectives around this issue?

Key Discussion Points

- Discussion about the benefits of a larger, more inclusive and pragmatic plan that includes the City's resilience to natural disasters, community emergencies or financial stresses.
- Concerns expressed about adopting City policies related to climate change.

- **Commercial Corridors / Self-Storage Moratorium Update**

The City is undertaking a commercial corridors strategy to address land use, urban design and economic development goals along key commercial corridors throughout the city, such as Mill Plain, Fourth Plain, St Johns and Evergreen Blvd.

- **Housing Options & VISIBLE Design Update**

The City is taking a comprehensive look at the zoning code to expand options for housing development, both to facilitate a more compact urban form as well as contribute to more affordable housing choices; visible design is an issue anticipated to be considered in the context of this effort. A Council workshop on this topic is scheduled for April.

Council Consensus – Key Programs & Policy Initiatives:

- ✓ **Confirmed:** Council desires a high-level organizational discussion about a joint City-County system for addressing homelessness.
- ✓ **Confirmed:** Council expects there be a single point of leadership in the City organization for City homelessness programs but also as a liaison for the broader community system.
- ✓ **Confirmed:** Clarity is needed regarding the City's vision and goals in providing homelessness services
- ✓ **Confirmed:** Emphasis is needed on shifting the current perceptions about how the day center is operating and what the collateral implications are for the surrounding neighborhoods.
- ✓ **Confirmed:** A more complete feasibility analysis of the proposed Arts & Innovation Campus is needed before Council can make further decisions regarding the City's involvement with the project.
- ✓ **Confirmed:** More analysis by an advisory body is needed before deciding if the City should allow dockless micro mobility vehicles, like e-scooters.
- ✓ **Confirmed:** Pursue the development of a City resilience plan.

2:20-3:15 p.m.

Governance Options & Interstate 5

Presented by City Manager Eric Holmes

Mr. Holmes introduced Council to a number of potential governance structures that may be dedicated to the support and success of a range of projects and programs the City has recently or is about to undertake.

GOVERNANCE OPTIONS

- **Cultural Commission**

The City will be re-establishing a commission in 2019 to play a key role in implementation of city arts, culture and heritage programs. The current municipal code establishing a cultural commission (last updated 25 years ago) deserves a critical review, creating an opportunity for the City to explore different roles and structures for this commission, ranging from a narrowly scoped advisory role to the City Council to a public development authority that could own and operate arts and cultural facilities.

Key Question: What are Council's initial thoughts regarding the roles and responsibilities of the cultural commission?

Key Discussion Points

- The success of an arts program will depend on a carefully curated group of people in this leadership role in the beginning. Discussion about recruiting for a panel of people with specific skills and expertise.
- Discussion about whether a commission or an arts authority similar to the CCRA is necessary, and a suggestion that if management of physical infrastructure is a part of this group's purview, an arts authority would be more appropriate.

• **Transportation/Mobility Commission**

As the City's system of transportation and mobility – as well as administration of funding – becomes more complex, the Council has an opportunity to establish a new commission to focus on these issues. In addition, accelerated technology and market dynamics of a shared economy are and will continue to impact how transportation and mobility works in and influences cities.

With dedicated funding in place, key strategic policies adopted and the development of the TSP underway, 2019 would be an opportune year to establish such a commission. Doing so would need to take into account the relationship with the Planning Commission.

Key Question: What is the City Council's appetite for establishing a commission focused on the City's transportation system?

Key Question: Would the Council consider a commission with a broader "mobility" (full range of mobility options & technology) charter over a more traditional Transportation Charter (multi-modal bike, pedestrian, transit, car)?

Key Discussion Points

- Discussion regarding the need to be cautious in how this body handles land use related to transportation and ensuring good coordination and integration with the Planning Commission's responsibilities.
- Discussion about the range of options related to such a body, including the option of designating a body other than the City Council to serve as the City's Transportation Benefit District. Suggestion that a holistic approach be taken with this topic.
- Recognition that the City's transportation and mobility systems and needs are at such a complex point, which will only become more so over time, and the Council needs a dedicated group that can focus on it and give them input and feedback.

• **Housing Commission**

The recommendations from the Affordable Housing Task Force in 2016 included establishment of a Housing Advisory Commission. With the establishment of the Affordable Housing Fund as well as key policy efforts that are underway or in the pipeline, such a commission could be value added to the Council and community.

Key Question: Does the Council want to establish a housing advisory commission?

Key Discussion Points

- Discussion about what the specific purpose and work of this body would look like, including possibly evaluating Affordable Housing Fund and CDBG/HOME applications and multi-family housing tax abatement requests, developing policy tied to the recommendations of the Affordable Housing Task Force, and other possibilities.
- Aside from the practical policy evaluation such a body would bring, it could also foster further visioning efforts, such as bringing in leaders and experts to educate and inform the city in this topic.
- Concerns expressed about how all of these potential new advisory bodies will be staffed and a recognition that added staff capacity will be necessary.

• **Civil Service Commission**

The current Civil Service Commission, charged with overseeing the testing for recruitment and promotion in our public safety ranks is composed of 3 members. There is a potential to increase the Civil Service Commission to 5 members. In addition, some other jurisdictions in Washington call for one or more (but not a majority) of commission members to be union representatives.

Key Question: Would the Council like to see a change to the Civil Service Commission size and composition?

Key Discussion Points:

- Discussion regarding the benefit of expanding the number to avoid quorum issues.
- Discussion about the need for membership to be aware of best practices pertaining to the specific labor aspects of the topics this body oversees.

• **Aviation Advisory Committee Update**

The Aviation Advisory Committee was suspended in 2018 and is undergoing a restructuring in concert with introducing a new management structure of the airport.

Key Discussion Points

- Discussion about the financial stability and status of the airport and confirmation from staff that the airport is operating at a net profit but recognition that there are a number of capital needs.
- Discussion about opportunities for the new airport manager, once hired, to work closely with tenants to work toward improved maintenance and a long-term approach to the aesthetics and quality of the asset.

Council Consensus – Governance Options:

- ✓ **Confirmed:** Establish an Arts Authority, with capacity and authority like the CCRA, appointing a slate of people as the initial members of this body by using a curated selection of those people.
- ✓ **Confirmed:** Establish a comprehensive mobility commission provided that its work is closely coordinated with the Planning Commission and other pertinent advisory bodies.
- ✓ **Confirmed:** Establish a housing commission that will serve a practical and policy development role, as well as being forward thinking and aspirational.
- ✓ **Confirmed:** Expand the Civil Service Commission to 5 members, with at least one member but not a majority of commissioners being a designated union member.

INTERSTATE 5

There are a range of activities on Interstate 5, from the Value Pricing initiative in Oregon to the Mill Plain Interchange project to the prospective re-engagement of the bridge replacement project. The City has a stake in the outcomes of all of these initiatives.

Key Question: To what degree does the Council want the City to play an active/leadership role in these initiatives?

Key Discussion Points

- Recognition that Vancouver has the most at stake when it comes to what happens with the bridge, and the entire I-5 corridor is vital to Vancouver's economy.
- Discussion about the City's ability to influence and limited control over what happens with the interstate but a recognition that the City can and should influence and control, to the extent possible, the messaging and leadership surrounding the issue in order for the City's interests to be represented and with the goal of a better outcome in regards to the bridge replacement.
- General support for a limited City position that would serve as a liaison with the WSDOT project office for the bridge replacement and also monitor and work with partner agencies on issues for the entire corridor.

Council Consensus – Interstate 5:

- ✓ **Confirmed:** The City should exercise leadership and influence to the extent possible to ensure Vancouver's interests are represented and championed in regards to Interstate 5. This includes support for considering a dedicated staff position to monitor such activities.

Presented by City Manager Eric Holmes

After nearly two years and 17 meetings, the Stronger Vancouver Executive Sponsors Council arrived at a consensus recommendation on February 22. While the details of the final recommendation and report are being finalized over the next few weeks, the general recommendation framework is as follows:

- A total service package focused on projects and programs that support a Vision for Vancouver that reflects increased Economic Vitality, improved Public Safety and enhanced Parks & Recreation.
- A revenue package that relies roughly one-third each on property tax, business tax and a collection of other taxes and revenues.

Key Discussion Points

- Discussion about ensuring that the final package addresses equity issues in the city and communicating how that is accomplished to the community.
- Overview of the details of the operating and capital projects and the revenue package, as well as the timeline for Council review and adoption and a recommended phased implementation approach.
- Discussion about whether the recommendations will ensure long-term financial sustainability or whether the City could be facing a deficit again in 10 years; general acknowledgement that there is no assurance of stability given the ever-changing environment within which the City must operate, but passage of the Stronger Vancouver recommendations will decrease the likelihood of a financial crisis.
- Concerns about the importance of a deliberate and strategic communications plan surrounding the final recommendations and eventual implementation and a recognition that communicating this must be done right and done well if the initiative is to succeed. Recommendation that the City hire a communications strategist to advise on this and other ongoing and future initiatives.

Council Consensus – A Stronger Vancouver

- ✓ **Confirmed:** Support for the hiring of a communications strategist to advise the City in how best to strategically communicate about the Stronger Vancouver initiative, and other key City programs and policies, in order to increase the likelihood of success.

ADJOURNMENT: 3:56 p.m.

Submitted by:

Eric Holmes, City Manager

Approved March 25, 2019:

Anne McEnery-Ogle, Mayor

VOUCHER APPROVAL

We, the undersigned council members of the City of Vancouver, Clark County, Washington, do hereby certify that the merchandise or services hereinafter specified have been received and that the vouchers listed below are approved for payment in the amount of:

\$ **8,955,733.25** this 25th day of March 2019.

MAYOR

COUNCILMEMBER



AUDITING OFFICER

COUNCILMEMBER

DATE	INCLUSIVE CHECK NUMBERS	CHECK TOTAL
March 12 - March 18	Accounts Payable Checks (see attached)	\$ 8,954,167.38
March 12 - March 18	Visa Refunds (see attached)	\$ 1,565.87
March 12 - March 18	Payroll Checks (see attached)	\$ -
TOTAL		\$ 8,955,733.25

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
120378	12-Mar-2019	5,158,587.88	FIRST AMERICAN TITLE INS CO	***WIRE*** 16800 NE FOURTH PLAIN BLVD - LAND ACQUISITION - PARKS
120379	12-Mar-2019	12,846.20	BANK OF AMERICA	***WIRE*** 05 2019 PAYROLL HSA
120380	12-Mar-2019	17,055.46	STATE OF OREGON	***WIRE*** 05 2019 OREGON TAXES
120381	13-Mar-2019	108,393.26	CLARK AND SONS EXCAVATING	***WIRE*** - FOURTH PLAIN & NORRIS TRAFFIC SIGNAL IMPROVEMENTS - EST 2 - THRU 02/20/19
*120383	12-Mar-2019	989,809.20	CLARK COUNTY	***WIRE*** EVERGREEN AND VANCOUVER SCHOOL DISTRICT IMPACT FEES - TREASURY
120384	12-Mar-2019	35,124.61	GALLAGHER BASSETT SERVICES INC	***WIRE*** WC TPA GALLAGHER BASSETT SDR FUNDING DUE NOTICE MESSAGE ID 45200674 ***WIRE***
120385	14-Mar-2019	826.40	VSP VISION CARE INC	***WIRE*** JANUARY VSP PREMIUMS ACTIVES
120386	14-Mar-2019	17.10	VSP VISION CARE INC	***WIRE*** JANUARY VSP PREMIUMS COBRA
120387	14-Mar-2019	13.30	VSP VISION CARE INC	***WIRE*** JANUARY VSP PREMIUMS RETIREES
120388	14-Mar-2019	91.20	VSP VISION CARE INC	***WIRE*** JANUARY VSP PREMIUMS VHA
120389	14-Mar-2019	836.00	VSP VISION CARE INC	***WIRE*** FEBRUARY VSP PREMIUMS ACTIVES
120390	14-Mar-2019	15.20	VSP VISION CARE INC	***WIRE*** FEBRUARY VSP PREMIUMS COBRA
120391	14-Mar-2019	13.30	VSP VISION CARE INC	***WIRE*** FEBRUARY VSP PREMIUMS RETIREES
120392	14-Mar-2019	89.30	VSP VISION CARE INC	***WIRE*** FEBRUARY VSP PREMIUMS VHA
120393	14-Mar-2019	49,873.21	SYMETRA LIFE INSURANCE COMPANY	***WIRE*** MARCH STOPLOSS PREMIUMS
120394	14-Mar-2019	238,648.14	NORTHWEST CONSTRUCTION	***WIRE*** EVERGREEN ESTATES SANITARY SEWER IMPROVEMENTS - EST 5 - THRU 03/05/19
120395	14-Mar-2019	234.00	STATE OF WASHINGTON	***WIRE*** 19MAR - WA STATE CPL FEE - 13 APPLICANTS - VPD
120396	15-Mar-2019	712,506.57	STATE OF WASHINGTON	***WIRE*** 05 2019 PERS/LEOFF
120397	18-Mar-2019	183,800.59	BLUE CROSS BLUE SHIELD OF OR	***WIRE*** BLUE CROSS WEEKLY CLAIMS, WEEK 2 OF MARCH
120398	18-Mar-2019	14,852.30	WASHINGTON DENTAL SERVICE	***WIRE*** WDS DENTAL WEEKLY CLAIMS INVOICE, WEEK 2 OF MARCH
*120400	18-Mar-2019	30,293.27	GALLAGHER BASSETT SERVICES INC	***WIRE*** WC TPA GALLAGHER BASSETT SDR FUNDING DUE NOTIFICATION - MESSAGE ID 45291717***WIRE***
600684	14-Mar-2019	36,261.31	ADVANCED TRAFFIC PRODUCTS INC	ORDER 0000021971 - OPERATING SUPPLIES - OPS CENTER TRAFFIC & SIGNS SHOP
600685	14-Mar-2019	6,615.66	ALERT-ALL CORP	CUST VAN9866111 LED PILLAR CANDLES - QTY 1700 - FIRE STA 5
600686	14-Mar-2019	253.25	ALLEGIANCE BENEFIT PLAN MANAGEMENT	SUMMARY: FEB/MAR RETIRED LEOFF POLICE/FIRE CLAIMS
600689	14-Mar-2019	4,328.00	ALTA PLANNING & DESIGN	PROJ 00-2017-425 - SIDEWALK MAINTENANCE PROGRAM DEVELOPMENT - THRU 01/31/19 - CDD - RECEIPT 140496 BY M RYAN PER E-MAIL
600689	14-Mar-2019	5,284.00	ALTA PLANNING & DESIGN	PROJ 00-2018-216 - VEHICULAR WAYFINDING - THRU 01/31/19 - CDD - RECEIPT 140467 BY M RYAN PER E-MAIL

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600689	14-Mar-2019	8,000.00	ALTA PLANNING & DESIGN	PROJ 00-2018-360 - MILL PLAIN & 15TH ST COUPLET BIKE FACILITIES - THRU 01/31/19 - CDD - RECEIPT 140584 BY M RYAN PER E-MAIL
600690	14-Mar-2019	167.31	ARAMARK UNIFORM SERVICES INC	SUMMARY: MAT/TOWEL/COVERALL - THRU 02/11/19 - WREC/OPS
600691	14-Mar-2019	6,341.40	ARBORSCAPE LTD INC	02/13/19 - TREE TRIMMING/MAINTENANCE - COOP PARK - 11TH ST @ 89TH AVE - OP CENTER
600692	14-Mar-2019	56.24	ARLYS BORJESSON	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600693	14-Mar-2019	5,427.31	ARONSON SECURITY GROUP	JOB PDX-16039 - AMAG SSA RENEWAL 02/01/19-02/01/20 - BASE CONTRACT
600694	14-Mar-2019	13,518.30	ARONSON SECURITY GROUP	JOB PDX-16040 - MILESTONE SSA RENEWAL 3/10/19-3/10/20 - BASE CONTRACT
600695	14-Mar-2019	63,684.35	AVAYA INC	ACCT 0101081901 - 2019 TELEPHONE HARDWARE/SOFTWARE SERVICE AGREEMENTS - INFO TECH
600696	14-Mar-2019	101.50	AVENU MUNISERVICES	LTC DISCOVERY SERVICES FOR PERIOD ENDING 1/31/19
600697	14-Mar-2019	1,317.43	BLIND DOG PRODUCTIONS LTD	PROJ: WAYSIDES - REPLACEMENT INTERPRETATIVE PANEL ON THE HISTORIC RESERVE/NPS - 6 EA - QUOTE 34059 - CMO
600698	14-Mar-2019	574.83	BOUND TREE MEDICAL LLC	ACCT 109894 - ORDER 100446144 - MEDICAL SUPPLIES - FIRE
600698	14-Mar-2019	296.31	BOUND TREE MEDICAL LLC	ACCT 109894 - ORDER 100552189 - MEDICAL SUPPLIES - FIRE
600699	14-Mar-2019	250.00	BSK ASSOCIATES	CLIENT VANCO8428 - WO V9B0147 - SAMPLE TESTING SERVICES - PCE & TCE ONLY - 02/12/19 - OP CENTER - RECEIPT 140521 BY P TANDY PER E-MAIL
600700	14-Mar-2019	20.00	CARY/TRASEY HOODENPYLE	REF ALARMS
600701	14-Mar-2019	135.00	Cathey, Joseph Thomas	BOOT REIMBURSEMENT
600702	14-Mar-2019	200.00	CHARLES SUNIGA	02/17/19 - SUNDAY DANCE - MUSICAL ENTERTAINMENT - PARKS
600703	14-Mar-2019	317.38	CHRYSTAL MOSELY	IMPOUND HEARING JUDGEMENT
600704	14-Mar-2019	15,378.85	CITY OF PORTLAND	GRANT ID #EM000049 - 7/1/2018-6/30/19 RDPO LOCAL COST SHARE BILLING
600705	14-Mar-2019	95.51	CLARK COUNTY TITLE CO	PARCEL 110291-032 - REAL PROPERTY VOUCHER - PROJ 071223 MILL PLAIN BLVD - 104TH AVE TO CHKALOV DR - ESCROW CLOSING STATEMENT FINAL BALANCE DUE - CONSTRUCTION
600706	14-Mar-2019	21,048.30	CLARK PUBLIC UTILITIES	SUMMARY: ELECTRICITY - MULTIPLE LOCATIONS
600709				
600710	14-Mar-2019	3,654.76	CODE PUBLISHING CO	PROJ 344886 - MUNICIPAL CODE WEB UPDATE - THRU 02/06/19 - ORDINANCES M-4240, ACM CPI, M-4254, M-4255 - FINANCE
600711	14-Mar-2019	24.85	COMCAST CABLE COMMUNICATIONS	ACCT 8778 10 101 0115714 - 03/04/19-4/03/19 - VPD HQ
600712	14-Mar-2019	3,291.71	COMPASS MINERALS AMERICA INC	CUST 537542 - PROD 2285396 - 25.28 TON - OPS CENTER

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600713	14-Mar-2019	8,421.73	COPIERS NORTHWEST	ACCT 343871-P - MONTHLY COPIER LEASES - MULTIPLE CITY LOCATIONS - 02/15/19-03/14/19 - INFO TECH
600714	14-Mar-2019	20.00	COSTA VIDA	REF ALARMS
600715	14-Mar-2019	121.00	CURRENT REMODELING	REF CIVICGOV
600716	14-Mar-2019	130.00	DANIEL EVAN MROZ	01/16/19 - SIGN LANGUAGE INTERPRETATION - PARKSIDE NEIGHBORHOOD ASSN MEETING - CMO
600717	14-Mar-2019	8,413.13	DATABAR INC	SUMMARY: ENVELOPE ORDERS - UTILITY/HR/FINANCE
600718	14-Mar-2019	20.00	DAVID JACKY	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600719	14-Mar-2019	578.09	DKS ASSOCIATES	PROJ 16117-007 - VANCOUVER MILL PLAIN SIGNAL TIMING - THRU 01/31/19 - TRANSPORTATION - RECEIPT 140577 BY A POWERS PER E-MAIL
600720	14-Mar-2019	220.80	Durshpek, Eugene Alfredovich	ESRI TRAINING - ARCGIS ENTERPRISE: CONFIGURING A BASE DEPLOYMENT
600721	14-Mar-2019	911.03	EPIC LAND SOLUTIONS INC	PROJ 0810 - ON-CALL RIGHT-OF-WAY SERVICES - SE EVERGREEN HWY TRAIL PHASE II - THRU 02/10/19 - TRANSPORTATION
600722	14-Mar-2019	275.00	ERF COMPANY INC	19MAR - WEATHER FORECASTING SERVICES - OP CENTER - RECEIPT 140580 BY P NEWTON PER E-MAIL
600723	14-Mar-2019	7,916.75	ERICKSON STRUCTURAL CONSULTING ENGINEERS PC	19JAN - MULTIPLE PLAN REVIEW SERVICES
600724	14-Mar-2019	424.00	ESIX SPORSTWEAR INC	PUBLIC WORKS UNIFORMS/PROTECTIVE CLOTHING - OP CENTER
600725	14-Mar-2019	1,526.29	EXELTECH CONSULTING INC	PROJ 1808 - VARIOUS PROJECTS - THRU 01/31/19 - CONSTRUCTION - RECEIPT 140528 & 140529 BY L PETERSEN PER E-MAIL
600726	14-Mar-2019	131.65	FERRELL GAS INC	ACCT 54546264 - PROPANE FOR FIRE DEPT - THRU 02/12/19 - FIRE
600727	14-Mar-2019	823.84	FIRE SYSTEMS WEST	WO 329062 - CUST VANC - WEEKLY DIESEL FIRE PUMP INSP/TESTING - 4 EA - 01/04/19-01/25/19 - FIRSTENBURG COMM CTR - OP CENTER - RECEIPT 140578 BY P NEWTON PER E-MAIL
600727	14-Mar-2019	953.92	FIRE SYSTEMS WEST	WO 329494 - CUST VANC - TAMPER TROUBLE ON PT M22-P58 TAMPER SWITCH-REPLACED & TESTED - FCC - OP CENTER - RECEIPT 140793 PER PATSY NEWTON
600728	14-Mar-2019	62.64	Fredrickson, Bryan Douglas	LOCAL MILAGE FOR JANUARY, FEB 2019
600729	14-Mar-2019	88.01	GALLS LLC	ACCT 1001096190 - SO 12388704 - FIRE UNIFORM - FIRE
600730	14-Mar-2019	1,859.84	GENUINE PARTS COMPANY	CUST 7970 - 19FEB - PARTS FOR VEHICLE AND EQUIPMENT REPAIRS - EQUIP SERVICES
600730	14-Mar-2019	(109.81)	GENUINE PARTS COMPANY	CUST 7970 - CR19FEB - PARTS FOR VEHICLE AND EQUIPMENT REPAIRS - EQUIP SERVICES
600731	14-Mar-2019	654.75	GLOBAL TRANSPORTATION ENGINEERING CORP	PROJ P18-058 - LED SPECS FOR PROCUREMENT - 01/15/19 THRU 01/31/19 - MP ENG

*Please contact Procurement Services if you would like to review the justification for EMERGENCY procurement.

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600732	14-Mar-2019	3,139.20	GLOBAL TRANSPORTATION ENGINEERING CORP	PROJ P18-174 - ZHEN FIBER COMMUNICATIONS - 19FEB - INFO TECH
600733	14-Mar-2019	16.79	GREGORY GLASS	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600734	14-Mar-2019	45,215.83	GRIDSMART TECHNOLOGIES INC	GRIDSMART GS2 PROCESSOR/RELATED EQUIPMENT - 1 EA - OP CENTER
600734	14-Mar-2019	29,145.52	GRIDSMART TECHNOLOGIES INC	SMARTMOUNT/RELATED EQUIPMENT - 1 EA - OP CENTER
600735	14-Mar-2019	18,385.71	HALBERT CONSTRUCTION LLC	INV 807-90935-1 - SEWER ENGINEERING REMODEL - EST 1 - THRU 01/29/19
600736	14-Mar-2019	1,871.14	HARPER HOUF PETERSON RIGHELLIS INC	PROJ VAN-62 - MILL PLAIN BLVD (104TH AVE TO CHKLOV DR) - THRU 01/18/19 - TRANSPORTATION
600736	14-Mar-2019	1,950.00	HARPER HOUF PETERSON RIGHELLIS INC	PROJ VAN-71 - MCLOUGHLIN BLVD COMPLETE STREETS PILOT PROJECT - THRU 01/18/19 - CED - RECEIPT 140591 BY M RYAN PER E-MAIL
600737	14-Mar-2019	10,062.34	HD FOWLER CO	ORDER 06195247 - RESETTERS - OPS CENTER
600737	14-Mar-2019	5,912.30	HD FOWLER CO	ORDER 06179572 - OPERATING SUPPLIES - OPS CENTER
600738	14-Mar-2019	7,792.15	HERRERA ENVIRONMENTAL CONSULTANTS	PROJ 14-05818-004 - BURNT BRIDGE CREEK 2018 WATER QUALITY MONITORING - THRU 01/25/19 - MP ENG - RECEIPT 140500 BY L JONES
600739	14-Mar-2019	2,809.50	HOULIHAN LAW PC	GENERAL REAL ESTATE SERVICES - 01/03/19-01/17/19 - LEGAL SERVICES - LAW
600740	14-Mar-2019	1,570.00	INVINTUS MEDIA INC	SYSTEM MAINTENANCE AGREEMENT/PERSISTENT STREAMING/HOSTING OF CVTV WEBSITE - THRU 01/31/19 - MEDIA SERVICES
600741	14-Mar-2019	225.00	Jackson, Matthew J	BOOT REIMBURSEMENT
600742	14-Mar-2019	321.82	JAMES FIELDS	EMP LOSS OF PERSONAL PROPERTY - PAYMENT FOR RECOVERY OF THE SAME - RISK
600743	14-Mar-2019	5.00	JAMES & LAURA MOSSBERGER	REF ALARMS
600744	14-Mar-2019	42.24	Jameson, Kyle R	HARD HAT CHIN STRAPS REIMBURSEMENT
600745	14-Mar-2019	1,750.00	JCI JONES CHEMICALS INC	ORDER 576954 - CHLORINE 150 LB CYLINDERS - 7 EA - OP CENTER
600746	14-Mar-2019	90.00	Jones, Jeremiah M.	WDM-IT 3 EXAM REIMBURSEMENT
600747	14-Mar-2019	28.74	Jones, Linda Elaine	REFRESHMENTS FOR RECYCLING 101 CLASS - RESIDENT EDUCATION
600748	14-Mar-2019	623.66	JOSEPH O ENBODY, ATTORNEY	PAYROLL GARNISHMENT
600749	14-Mar-2019	231.00	JUDITH L BUFFORD	19JAN - WREC HABITAT/WATER MONITORING PROGRAM/CONGRESS - CITY - WREC
600749	14-Mar-2019	2,352.00	JUDITH L BUFFORD	19JAN - WREC HABITAT/WATER MONITORING PROGRAM/CONGRESS - COUNTY - WREC
600750	14-Mar-2019	282.16	Kandoll, Wesley L	L&I 2019 TRAINING TUMWATER - WES KANDOLL
600751	14-Mar-2019	25.00	KAREN O'KASEY	7201900792

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600752	14-Mar-2019	1,588.00	KELLY SERVICES INC	MELVIN, DJ - ORDER A2615 - W/E 03/03/19 - INFO TECH - RECEIPT 140900 BY J SCHOESSLER PER E-MAIL
600753	14-Mar-2019	58.09	KEVIN GRANT	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600754	14-Mar-2019	33.25	KIM JUNGSO	REF PGK PERMIT COV00031
600755	14-Mar-2019	3,697.52	KING COUNTY DIRECTORS ASSN PURCHASING DEPT	CUST 101771 ORDER 1867955 ZEAGER CEDAR - BUELL RECREATION - OPS
600756	14-Mar-2019	1,456.90	KNOX CO	CUS101577 - SO0002000518 - (4) 3200 SURFACE, BLACK, HINGED SUPPLIES - FIRE
600757	14-Mar-2019	20.00	KOSAL TAUCH & SOPHIA DANHI	REF ALARMS
600758	14-Mar-2019	53.85	LANGLEYS TOWING	02/09/19 - TOWING - FORD EDGE - LIC OR - FROM 14010 SE 15TH TO EAST PRECINCT - CASE 19-2289 - VPD
600758	14-Mar-2019	53.85	LANGLEYS TOWING	02/10/19 - TOWING - VW JETTA - LIC OR - FROM 12610 SE 15TH TO EAST PRECINCT - CASE 19-2289 - VPD
600759	14-Mar-2019	16.80	LINDA THOMPSON	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600760	14-Mar-2019	100.00	LINDSAY HANSEN	REF CIVICGOV
600761	14-Mar-2019	44.75	LINGUAVA INC	CUST 19059 - INTERPRETING SERVICES - 01/18/19-01/22/19 - VPD - RECEIPT 140510 BY A CARMAN PER E-MAIL
600762	14-Mar-2019	912.27	LN CURTIS & SONS	CUST C32902 - ORDER 460754 - FIRE
600763	14-Mar-2019	10,222.00	MACKAY & SPOSITO INC	PROJ 17136 - 2019 PAVEMENT MANAGEMENT - THRU 02/02/19 - OP CENTER - RECEIPT 140555 BY P NEWTON PER E-MAIL
600764	14-Mar-2019	50.00	MAIRE ARKOOSH	REF ALARMS
600765	14-Mar-2019	4,200.00	MAUL FOSTER & ALONGI INC	PROJ 0363.17.01 - EPA ASSESSMENT GRANT APPLICATION - THRU 01/31/19 - MP ENG
600766	14-Mar-2019	74.28	McDonald, Michael Christopher (Mike)	PARKING & MILEAGE REIMBURSEMENT
600767	14-Mar-2019	487.80	METRO OVERHEAD DOOR INC	ACCT 34359 A - DOOR REPAIR SERVICES - 01/02/19 - OP CENTER
600767	14-Mar-2019	1,645.51	METRO OVERHEAD DOOR INC	ACCT 38883 A,R - DOOR REPAIR SERVICES - 01/11/19 - FIRE STATION 3 - 1110 N DEVINE RD - OP CENTER
600768	14-Mar-2019	550.00	MFS SERVICE CENTER INC	04 2019 MFS 529 PR 022519
600769	14-Mar-2019	550.00	MFS SERVICE CENTER INC	05 2019 MFS 529 PR 030819
600770	14-Mar-2019	75.00	MILL PLAIN-84 LP-THE PARK AT MILL PLAIN APARTMENTS PHASE 1	REF CIVICGOV
600771	14-Mar-2019	11.81	MISCELLANEOUS	CITY UTILITIES REFUNDS-0072019013-10
600772	14-Mar-2019	50.00	MISCELLANEOUS	REFUND DAMAGE DEPOSIT - MCC
600773	14-Mar-2019	74.00	MISCELLANEOUS	REFUND - WITHDRAW SOCCER #11514
600774	14-Mar-2019	75.21	MISCELLANEOUS	CITY UTILITIES REFUNDS-0118000625-08
600775	14-Mar-2019	90.74	MISCELLANEOUS	CITY UTILITIES REFUNDS-0000004598-02
600776	14-Mar-2019	105.97	MISCELLANEOUS	MILEAGE REIMBURSEMENT
600777	14-Mar-2019	123.74	MISCELLANEOUS	CITY UTILITIES REFUNDS-0044098400-18
600778	14-Mar-2019	123.99	MISCELLANEOUS	CITY UTILITIES REFUNDS-0000001074-02

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600779	14-Mar-2019	130.00	MISCELLANEOUS	CITY UTILITIES REFUNDS-0006013200-13
600780	14-Mar-2019	159.04	MISCELLANEOUS	CITY UTILITIES REFUNDS-0002000111-02
600781	14-Mar-2019	232.25	MISCELLANEOUS	CITY UTILITIES REFUNDS-0066037120-14
600782	14-Mar-2019	232.91	MISCELLANEOUS	CITY UTILITIES REFUNDS-0141004384-02
600783	14-Mar-2019	253.00	MISCELLANEOUS	TRAVEL REIMBURSEMENT FOR INTERVIEW - AIRPARK
600784	14-Mar-2019	300.00	MISCELLANEOUS	REFUND PERMIT CHARGES #3809 - FCC - SECOND CHECK
600785	14-Mar-2019	476.44	MISCELLANEOUS	CITY UTILITIES REFUNDS-0066037120-14
600786	14-Mar-2019	786.29	MISCELLANEOUS	TRAVEL REIMBURSEMENT FOR INTERVIEW - AIRPARK
600787	14-Mar-2019	875.44	MISCELLANEOUS	CITY UTILITIES REFUNDS-0150003190-01
600788	14-Mar-2019	2,368.19	MISCELLANEOUS	CITY UTILITIES REFUNDS-0088080028-02
600789	14-Mar-2019	2,546.40	MISCELLANEOUS	REFUND 80% PERMIT FRI-23537
600790	14-Mar-2019	4,014.48	MISCELLANEOUS	CITY UTILITIES REFUNDS-0017084700-02
600791	14-Mar-2019	101.90	MOBES BUSINESS FORMS INC	1,000 NO. 10 WINDOW ENV
600792	14-Mar-2019	1,259.25	MOTUS RECRUITING & STAFFING INTL	NOTO KELLY - W/E 02/10/19 - PAYROLL WORK DAY PROJ
600792	14-Mar-2019	1,285.13	MOTUS RECRUITING & STAFFING INTL	NOTO KELLY - W/E 02/17/19 - PAYROLL WORK DAY PROJ
600793	14-Mar-2019	25.00	MOUNTAIN STATES CONSTRUCTION	7201900317
600794	14-Mar-2019	1,040.90	MUNICIPAL EMERGENCY SERVICES INC	CUST C38471 - SO1248068 - OPERATING SUPPLIES - FIRE
600795	14-Mar-2019	695.15	MUNNELL AND SHERRILL INC	CUST 3364 - DOC 029534 - OPERATING SUPPLIES - WAREHOUSE
600796	14-Mar-2019	1,051.05	NET TRANSCRIPTS	CUST 20-VANCOUVERPD - TRANSCRIPTION SERVICES - 01/30/19-02/13/19 - VPD - RECEIPT 140649 BY A CARMAN PER E-MAIL
600797	14-Mar-2019	248.00	NORTHWEST CASCADE INC DBA HONEY BUCKET	SUMMARY: PORTA POTTY RENTALS - 02/13/19-03/12/19 - OPS CENTER
600798	14-Mar-2019	3,523.00	NORTHWEST LANDCARE	SCIP CONTRACTOR PMT - THOMPSON
600799	14-Mar-2019	10,939.08	NORTHWEST STAFFING RESOURCES	W/E 2/17/2019 - CITY WIDE TEMPORARY SERVICES
600800	14-Mar-2019	5,920.78	NW NATURAL	SUMMARY: GAS USAGE 2/5/19-3/7/19 - MULTIPLE LOCATIONS
600801	14-Mar-2019	890.89	PACIFIC FURNISHINGS	ORDER 17102 - RECEIVE/DELIVERY/INSTALLATION - HERMAN MILLER WORK CHAIR - MARINE PARK ENG - PROP SVCS
600802	14-Mar-2019	7,290.00	PARKEON	CUST 0030328P - SO P76346 - PARKFOLIO LEVEL 3 FEES - 162 TOTAL - 19JAN - PARKING
600803	14-Mar-2019	10.00	PETTY CASH CUSTODIAN	FOREVER YOUNG HIKERS - PKG AT CHAMPOEG STATE PK
600803	14-Mar-2019	4.00	PETTY CASH CUSTODIAN	FOREVER YOUNG HIKERS - TOLL BRIDGE
600803	14-Mar-2019	4.30	PETTY CASH CUSTODIAN	MCC ADMIN - FRONT DESK SUPPLIES
600803	14-Mar-2019	5.20	PETTY CASH CUSTODIAN	MCC FACILITIES - HARDWARE FOR REPAIR
600803	14-Mar-2019	10.83	PETTY CASH CUSTODIAN	MCC FACILITIES - KITCHEN SUPPLIES
600804	14-Mar-2019	43.35	PETTY CASH CUSTODIAN	BATTERY PACK
600804	14-Mar-2019	4.33	PETTY CASH CUSTODIAN	BOOT LACES
600804	14-Mar-2019	15.50	PETTY CASH CUSTODIAN	PARKING - MTG W/ CCNN VERC SYMPOSIUM

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600804	14-Mar-2019	12.00	PETTY CASH CUSTODIAN	PARKING- DISASTER SANITATION WORKSHOP
600804	14-Mar-2019	1.35	PETTY CASH CUSTODIAN	PARKING- RECORDINGS
600804	14-Mar-2019	9.70	PETTY CASH CUSTODIAN	PHOTO PRINTING - COUNCIL
600804	14-Mar-2019	40.00	PETTY CASH CUSTODIAN	REETA - DEED OF DEDICATION
600804	14-Mar-2019	13.00	PETTY CASH CUSTODIAN	SEVERAL OFFICE
600804	14-Mar-2019	69.55	PETTY CASH CUSTODIAN	SUPPLIES FOR MTG- CDBG NAV CENTER
600805	14-Mar-2019	450.00	PETTY CASH CUSTODIAN	107 DRUG FUND REIMBURSEMENT
600806	14-Mar-2019	521.36	PITNEY BOWES INC	ACCT 0016498801 - SOFTWARE SERVICE AGREEMENT - 02/01/19-01/31/20 - UTILITIES
600806	14-Mar-2019	119.28	PITNEY BOWES INC	ACCT 0016498801 - SOFTWARE SERVICE AGREEMENT - 12/01/18-11/30/19 - UTILITIES
600807	14-Mar-2019	650.00	PORTLAND ADVENTIST MEDICAL CENTER	19JAN - MEDICAL TESTING SERVICES - HR
600808	14-Mar-2019	12,249.20	PORTLAND MECHANICAL CONSTRUCTION INC	REMOVE OLD ROOFTOP PACKAGE UNIT/INSTALL NEW UNIT - ZHEN BUILDING - 5107 E FOURTH PLAIN BLVD - THRU 02/14/19 - OP CENTER - RECEIPT 140565 BY P NEWTON PER E-MAIL
600809	14-Mar-2019	215.00	PROFESSIONAL CREDIT SERVICE	SUMMARY: REF ALARMS
600810	14-Mar-2019	941.45	QWEST CORP DBA CENTURY LINK	ACCOUNT # 83755295 - 1/12/19-2/11/19 - CURRENT CHARGES - IT
600811	14-Mar-2019	488.75	RICHARD HEPPER	19JAN/FEB - SENIOR MESSENGER DELIVERY - MEDIA SERVICES
600812	14-Mar-2019	1,405.00	RICHARD J MIELKE	REF CEMETERY
600813	14-Mar-2019	253,962.63	RIGHT SYSTEMS INC	SUMMARY: ENGR-ENG DOMAIN EXCHANGE ENV MIGRATIONS - IT
600814	14-Mar-2019	100.00	RJG CORP	REF ALARMS
600815	14-Mar-2019	36.25	ROGER ROHWEDDER	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600816	14-Mar-2019	288.00	ROTSCHY INC	CLIENT 59 - VAC TRUCK DUMP - 32 YDS
600817	14-Mar-2019	100.00	ROY & KATHY MOORE	REF ALARMS
600818	14-Mar-2019	54.78	Schubert, Beverly J	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600819	14-Mar-2019	3,420.90	SHARON RICE	HEARINGS EXAMINER SERVICES FOR 3RD ST COMMERCIAL HOTEL AND 192ND DISPOSITION - THRU 02/01/19 - MP ENG - RECEIPT 140819 - OK TO PAY PER G TURNER
600820	14-Mar-2019	4,575.20	SHERWOOD LUMBER CORP	3X10X84" #1 AND BTR DRY S4S FOHC NO WANE 1/4" RADIUS ALL EDGES - 8' - OP CENTER
600821	14-Mar-2019	4.49	SHRED IT USA LLC	CUST 14978866 - DOCUMENT DESTRUCTION - 02/05/19 - UTILITIES
600822	14-Mar-2019	4,176.54	SHRUMS PEST CONTROL	19FEB - MONTHLY PEST CONTROL SERVICES - MULTIPLE CITY LOCATIONS - OP CENTER
600823	14-Mar-2019	67,197.54	SIERRA-CEDAR INC	CUST 109266 - PROJ CITYVNCW_IMP_01 - WORKDAY IMPLEMENTATION SERVICES - THRU 02/15/19 - INFO TECH - RECEIPT 140914 BY S COOLEY PER E-MAIL

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600823	14-Mar-2019	5,927.03	SIERRA-CEDAR INC	CUST 109266 - PROJ CITYVNCW_IMP_01 - WORKDAY IMPLEMENTATION SERVICES/EXPENSE REIMBURSEMENT - THRU 01/31/19 - INFO TECH - RECEIPT 140913 BY S COOLEY PER E-MAIL
600824	14-Mar-2019	3,121.23	SME SOLUTIONS LLC	REF 273026 - REPAIR POS EQUIPMENT - THRU 02/01/19 - EQUIP SERVICES - RECEIPT 140762 BY J MAHAN PER E-MAIL
600825	14-Mar-2019	1,805.99	SOFTWARE HOUSE INTERNATIONAL SHI	SUMMARY: ACRBAT NEW LICENSES BY J SCHOESSLER
600826	14-Mar-2019	8,359.22	SP PLUS CORPORATION	19JAN - PARKING SERVICES
600827	14-Mar-2019	346.00	ST JOSEPHS CATHOLIC CHURCH	01/24/19 - FACILITY RENTAL - VPD AWARDS CEREMONY - VPD
600828	14-Mar-2019	2,115.00	STACY CECCHET PHD	ACCR18 - WELLNESS/RESILIENCY PROGRAM IMPLEMENTATION - 10/10/18-01/17/19 - VPD
600829	14-Mar-2019	11,227.50	STANTEC CONSULTING SERVICES	PROJ 2002005595 - CUST 93668 - WATER STATION 9-CHEM BLDG - THRU 02/08/19 - MP ENG - RECEIPT 140553 BY A POWERS PER E-MAIL
600829	14-Mar-2019	2,555.00	STANTEC CONSULTING SERVICES	PROJ 2002006056 - CUST 93668 - ON-CALL SANITARY SEWER PLANNING/DESIGN - THRU 02/08/19 - MP ENG - RECEIPT 140540 BY A POWERS PER E-MAIL
600830	14-Mar-2019	205.60	STATE OF WASHINGTON	PROJ LA08891R - BRT CORRIDOR FORT VANCOUVER WA - 19FEB - TRANSPORTATION
600831	14-Mar-2019	10,038.80	STATE OF WASHINGTON	AUDIT 45211 - MCAG 0247 - ACCOUNTABILITY/FEDERAL/INVESTIGATION AUDIT SERVICES - 19JAN - FINANCE
600832	14-Mar-2019	0.76	STERICYCLE INC	CUST 6029888 - 19FEB - MEDICAL WASTE REMOVAL - VPD
600832	14-Mar-2019	231.51	STERICYCLE INC	CUST 6029950 - 19FEB - HAZARDOUS MATERIAL DISPOSAL - OP CENTER
600833	14-Mar-2019	19.98	SUSAN ROBINS	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600834	14-Mar-2019	29.00	SUZAN HEGLIN	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600835	14-Mar-2019	2,520.00	TEKSYSTEMS	BENSON ROBERT - W/E 02/23/19 - INFO TECH - RECEIPT 140724 BY J SCHOESSLER PER E-MAIL
600835	14-Mar-2019	1,600.00	TEKSYSTEMS	LAWSON COREY - W/E 02/23/19 - INFO TECH - RECEIPT 140723 BY J SCHOESSLER PER E-MAIL
600836	14-Mar-2019	3,011.77	THE MARINE SALVAGE CONSORTUIM INC	ACCR18 - REMOVE AND DISPOSAL OF 32' DERELICT BOAT AT MARINE PARK - OPS CENTER
600837	14-Mar-2019	215.00	TORI PEACOCK	REF BUS LIC
600838	14-Mar-2019	597.00	TOUMA INC DBA ASAP SYSTEMS	ACCR18 PASSPORT TRAINING ONLINE - VPD
600839	14-Mar-2019	373.98	TOWING & RECOVERY SVCS INC	SUMMARY: TOWING - VPD
600840	14-Mar-2019	663.95	TRIPLE J ENTERPRISES	SUMMARY: TOWING - VPD
600841	14-Mar-2019	40.37	TYREE OIL, INC	ACCR18 - CUST 0048324 - ORDER 0679236 - OPERATING SUPPLIES - EQUIP SERVICES

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
600841	14-Mar-2019	511.54	TYREE OIL, INC	CUST 0048324 - ORDER 0690122 - OPERATING SUPPLIES - EQUIP SERVICES
600842	14-Mar-2019	13.45	UNITED PARCEL SERVICE	19MAR - SHIPPER #856018 - 3/2/2019 - SVC CHG - OPS CENTER
600843	14-Mar-2019	100.00	UNITED STATES POSTAL SERVICE	POSTAGE DUE 95004.000 FOR SR MESSENGER - 18MAR
600844	14-Mar-2019	200.00	UNITED STATES POSTAL SERVICE	POSTAGE DUE 95004.000 FOR UTILITIES - 19MAR
600845	14-Mar-2019	1,168.72	US BANK	ACCT 869366948 - 19FEB UNLEADED FUEL CARD PURCHASES FOR MISC CITY VEHICLES - EQUIP SERVICES
600846	14-Mar-2019	2,070.00	UTILITY MANAGEMENT SERVICES	UTILITY MANAGER PRO SOFTWARE TECH SUPPORT RENEWAL - 04/01/19-03/31/20 - OP CENTER/INFO TECH - RECEIPT 140567 BY P NEWTON PER E-MAIL
600847	14-Mar-2019	27.84	VALERIE DEMING	50+ TRAVEL DRIVER/ PLANNER REIMBURSEMENT FOR MEALS/ ADMISSION/ PARKING
600848	14-Mar-2019	153.00	VANCOUVER AIRE LLC DBA FRESH AIRE AIR FRESHENERS	ROUTE 4-1 2 - DEODORIZING SERVICE - THRU 02/12/19 - TOWN PLAZA - 5411 E MILL PLAIN BLVD - OP CENTER - RECEIPT 140594 BY P NEWTON PER E-MAIL
600849	14-Mar-2019	19,930.00	VANCOUVER HUMANE SOCIETY & SPCA	CUST COV001 - MONTHLY ANIMAL CONTROL SERVICES - 19FEB - BUDGET - RECEIPT 141019 BY C ALLEMANG PER E-MAIL
600849	14-Mar-2019	25,135.00	VANCOUVER HUMANE SOCIETY & SPCA	CUST COV001 - MONTHLY ANIMAL CONTROL SERVICES - 19JAN - BUDGET - RECEIPT 141017 BY C ALLEMANG PER E-MAIL
600850	14-Mar-2019	37,500.00	VANCOUVER WATERSHEDS COUNCIL	VANCOUVER WATERSHEDS ALLIANCE CONTRACT - 2019 QTR 1 - PROJECTED BUDGET - WREC
600851	14-Mar-2019	16,024.37	VERIZON WIRELESS	ACCT 670557900-00007 - CURRENT CHARGES 1/24/19-2/23/19 - IT
600852	14-Mar-2019	330.00	WALNUT GROVE LANDING APARTMENTS	REF ALARMS
600853	14-Mar-2019	9,862.41	WALTER E NELSON CO	SUMMARY: JANITORIAL SUPPLIES - FIRE/OP CENTER
600854	14-Mar-2019	20,134.86	WASHINGTON STATE DEPT OF NATURAL RESOURCES	CUST 1042641 - INMATE LOCAL GOVT LABOR PROJ - WASTEWATER/PARKS - RECEIPT 140997 BY L JONES PER E-MAIL
600855	14-Mar-2019	514.49	WASHINGTON STATE DEPT OF TRANSPORTATION	PROJ/WO JD15840L/JD1584 - ELECTRICAL INSPECTION & TESTING ON VEHICLE DETECTION LOOPS - 19FEB - OPS CENTER
600856	14-Mar-2019	36,842.00	WASTE CONNECTIONS INC	ACCT COMM PILOT BILLING - 1417 CUSTOMERS - 19FEB - SOLID WASTE
600857	14-Mar-2019	830.56	WASTE MANAGEMENT	CUST 20-39654-03005 - 19FEB - MEDICAL WASTE REMOVAL - FIRE
600858	14-Mar-2019	2,057.31	WELDON WMS & LICK INC	CUST 69012 - REPOSITIONABLE RY SEAL STICKERS - PARKING
600859	14-Mar-2019	12,308.90	WILCOX & FLEGEL	FUEL FOR OPS - EQUIP SERVICES
600860	14-Mar-2019	101.18	XPO ENTERPRISE SERVICES INC	WEEKLY POSTAGE SVCS - THRU 02/09/19 - FINANCE/MAILROOM
600860	14-Mar-2019	59.85	XPO ENTERPRISE SERVICES INC	WEEKLY POSTAGE SVCS - THRU 02/16/19 - FINANCE/MAILROOM
600861	14-Mar-2019	11,029.73	ZUMAR INDUSTRIES INC	CUST 000721 - JOB 209951 - OP SUPPLIES - OPS CENTER
20001472	18-Mar-2019	360,008.29	CITY OF VANCOUVER	SUMMARY: INFOR CITY PAYMENTS
	SUBTOTAL	8,954,167.38		

INVOICE PAYMENTS REPORT

<u>Check Number</u>	<u>Check Date</u>	<u>Amount</u>	<u>Vendor Name</u>	<u>Description</u>
VISA	19-Mar-19	615.87	MISCELLANEOUS	PARKS CLASS REFUNDS - FCC 3-12-19 thru 3-18-19
VISA	19-Mar-19	950.00	MISCELLANEOUS	PARKS CLASS REFUNDS - MCC 3-12-19 thru 3-18-19
VISA	19-Mar-19	-	MISCELLANEOUS	PARKS CLASS REFUNDS - SPEC EVENTS 3-12-19 thru 3-18-19
VISA	19-Mar-19	-	MISCELLANEOUS	PARKS CLASS REFUNDS - WREC 3-12-19 thru 3-18-19
VISA	SUBTOTAL	1,565.87		
	TOTAL	8,955,733.25		

EXCEPTIONS: The following wires were missed on the previous report & this report due to backdating.

<u>Check Number</u>	<u>Actual Wire Date</u>	<u>Amount</u>	<u>Date Entered / Vendor Name</u>	<u>Description</u>
120382	11-Mar-19	129,541.46	13-Feb-2019 US BANK TRUST	***WIRE*** TAX REVENUES - TREASURY
120399	4-Mar-19	65,770.20	18-MAR-2019 BANK OF AMERICA	***WIRE*** 19FEB MERCHANT SERVICES FEES - TREASURY

City of Vancouver
Payroll Council Report
March 12, 2019 - March 18, 2019

Check No.	Date	Explanation	Amount
		No payroll this period	

\$