

Received
Planning Division
06/26/2023

9TH & HALL QUADPLEX

12455 SW 9TH Ave. & 5293 SW Hall Blvd.

**Land Division Application and Design Review Application
Written Statement**

March 28, 2023

Revision for Completeness Review
9th and Hall Quadplexes (DRM2023-0011/LD2023-0004)
Submitted June 26, 2023

CONVERGENCE
ARCHITECTURE

WCL ENGINEERING

Project No. 2111

7302 N Richmond Ave | Portland, OR 97203 | Tel: 503-308-1028 | info@convergencearch.com

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LAND DIVISION APPLICATION

Application Form



CITY OF BEAVERTON
 Community Development
 Department
 Planning Division
 12725 SW Millikan Way
 PO Box 4755
 Beaverton, OR. 97076
 Tel: (503) 526-2420
 Fax: (503) 526-2550
BeavertonOregon.gov

OFFICE USE ONLY	
FILE #:	_____
FILE NAME::	_____
TYPE:	RECEIVED BY: _____
FEE PAID:	CHECK/CASH: _____
SUBMITTED::	LWI DESIG: _____
LAND USE DESIG:	NAC: _____

LAND DIVISION APPLICATION

PLEASE SELECT THE SPECIFIC TYPE OF CONDITIONAL USE FROM THE FOLLOWING LIST:

<input type="checkbox"/> TYPE 1 FINAL LAND DIVISION	<input type="checkbox"/> TYPE 2 PRELIMINARY FEE OWNERSHIP PARTITION
<input checked="" type="checkbox"/> TYPE 2 PRELIMINARY PARTITION	<input type="checkbox"/> TYPE 2 PRELIMINARY FEE OWNERSHIP SUBDIVISION
<input type="checkbox"/> TYPE 2 PRELIMINARY SUBDIVISION	
<input type="checkbox"/> REPLAT TYPE 2	

APPLICANT: Use mailing address for meeting notification. Check box if Primary Contact

COMPANY: Convergence Architecture
 ADDRESS: 7302 N Richmond Ave
 (CITY, STATE, ZIP) Portland, OR 97203
 PHONE: 503.308.1028 ext. 103 FAX: 503.308.6272 E-MAIL: gelder@convarc.com
 SIGNATURE: CONTACT: Eli Elder
 (Original Signature Required)

APPLICANT'S REPRESENTATIVE: Check box if Primary Contact

COMPANY: _____
 ADDRESS: _____
 (CITY, STATE, ZIP) _____
 PHONE: _____ FAX: _____ E-MAIL: _____
 SIGNATURE: _____ CONTACT: _____
 (Original Signature Required)

PROPERTY OWNER(S): Attach separate sheet if needed. Check box if Primary Contact

COMPANY: Farzad Moradian and Soheila Sagdegh
 ADDRESS: 10960 SW Mourning Dove Place
 (CITY, STATE, ZIP) Beaverton, OR 97007-8199
 PHONE: 503.803.111 FAX: _____ E-MAIL: techmotorz@yahoo.com
 SIGNATURE: CONTACT: Farzad Moradian

Note: A land use application must be signed by the property owner(s) or by someone authorized by the property owner(s) to act as an agent on their behalf. If someone is signing as the agent of the property owner(s), that person must submit a written statement signed by the property owner(s), authorizing the person to sign the application.

PROPERTY INFORMATION (REQUIRED)

SITE ADDRESS: <u>5395 SW Hall Blvd. & 12455 SW 9th</u>			AREA TO BE DEVELOPED (s.f.): <u>14,632 SF</u>
ASSESSOR'S MAP & TAX LOT #	LOT SIZE	ZONING DISTRICT	EXISTING USE OF SITE: <u>undeveloped lot</u>
<u>1S115CB08300</u>	<u>0.18 acres</u>	<u>RMA</u>	PROPOSED DEVELOPMENT ACTION: _____
<u>1S115CB08400</u>	<u>0.15 acres</u>	<u>RMA</u>	PRE-APPLICATION DATE: _____

Land Division Submittal - Written Statement

All Land Use Reviews Requested:

- Residential Quadplexes within RMA Zoning
- Type II Preliminary Partition Land Division
- Single-Detached and Middle Housing Design Review One

Project Summary:

This project is a new housing development in Beaverton, Oregon consisting of three quadplex buildings. Each building will have (2) 3br apartments and (2) double-story 2br apartments with a rooftop balcony. The site will consist of off-street parking, shared outdoor space, trash enclosure, and pedestrian paths.

Section 20.05. Residential Land Use Districts

Section 20.05.10. 2. The project is within the RMA - Residential Mixed A

Section 20.05.15 Residential Site Development Standards

RMA Standard Requirements:

Minimum Land Area:	2,000 SF/unit
Minimum Lot Area:	3,000 SF
Maximum Residential Density:	N/A
Minimum Residential Density	17 units/acre
Minimum Lot Width:	14
Minimum Yard Setbacks:	
Front:	10 FT
Side:	0, 3 or 5
Rear:	15 FT
Garage:	N/A TO PROJECT
Garage Door to Rear:	N/A TO PROJECT
Minimum between Buildings:	N/A TO PROJECT
Maximum Building Height:	40 FT
Maximum FAR Quadplex:	1.60

Proposed Lot 1:

Southern portion of (E) LOT 1S115CB08300

Minimum Land Area:	N/A for Middle Housing
Lot Area:	3,476 SF ≥ Required Minimum SF
Maximum Residential Density:	N/A
Minimum Residential Density:	4 Units ≥ 2 Required Units
Minimum Lot Width:	57.22 FT ≥ Min. Width
Lot Setbacks:	
Front:	10 FT
Side:	3 FT at Internal Setback 8 FT at Public Utility Easement (PUE)
Rear:	15 FT at Shared Access Drive
Building Height:	40 FT
Maximum FAR (Quadplex):	1.00 = Required FAR

Proposed Lot 2:

Northern portion of (E) Lot 1S115CB08300

Minimum Land Area:	N/A for Middle Housing
Lot Area:	3,529 SF ≥ Required Minimum SF
Maximum Residential Density:	N/A
Minimum Residential Density:	4 Units ≥ 2 Required Units
Minimum Lot Width:	43.29 FT ≥ Min. Width
Lot Setbacks:	
Front:	10 FT
Side:	3 FT at Internal Setback 5 FT at Side Setback
Rear:	15 FT at Shared Access Drive
Building Height:	40 FT
Maximum FAR (Quadplex):	1.00 = Required FAR

Proposed Lot 3 (NOT PART OF LAND DIVISION)

(E) Lot 1S115CB08400

Minimum Land Area:	N/A for Middle Housing
Lot Area:	6,350 SF ≥ Required Minimum SF
Maximum Residential Density:	N/A
Minimum Residential Density:	4 Units ≥ 3 Required Minimum Units
Minimum Lot Width:	59.96 FT ≥ Min. Width
Lot Setbacks:	
Front:	10 FT
Side:	5 FT at Side Setback 15 FT at Shared Access Drive
Rear:	15 FT
Building Height:	40 FT
Maximum FAR (Quadplex):	0.55 < Required FAR

Section 20.05.20 Land Use

Residential Quadplexes are Permitted in Zone RMA per Table 20.05.20.A 2. D.

Section 60.15. Land Division Standards

Section 60.15.10 Grading Standards

All grading work required within proposed work is related to right of way improvements, either new planting and sidewalk dedication or shared access driveway, or temporary foundation work for new buildings. Existing site grading is less than 2 ft across both properties.

4. Significant Trees and Groves. There are no existing trees within the two parent properties. A cedar tree over 75 ft is within 25 feet of the boundary to the north. The slope within the drip line is minimal and the root zone area will be protected during construction with fencing and erosion control measures.

Section 60.15.15. Final Plat Standards

1. Easements and Right of Way. A public utility easement (PUE) is required along all property lines adjacent to public right of ways. An eight feet PUE setback has been applied along the property lines abutting SW 9th and SW Hall Street per Engineering Design Manual (EDM) Section 130.
2. Building Lines. All buildings are within the required setbacks as stated in Section 20.05.15.
3. Dedications. All infrastructure within the public right of way and the property is at the expense of the developer and maintenance achieved by City.
4. Homeowners' Associations and declarations. No HOA for property.
5. Monuments and benchmarks. There are no existing or proposed monuments or benchmarks within the right of way dedication or property.
6. Street trees. Fee based on street frontages address below for each street and will be planted in accordance with Beaverton's Tree Planting & Maintenance by a City Arborist.

Lot 1

SW Hall Street Frontage: 51.40 FT

Trees required: two trees.

SW 9th Street Frontage: 57.22 FT

Trees required: two trees.

Total trees proposed: 4 trees.

Fee: \$800 [based on Resolution 3403]

Lot 2

SW Hall Street Frontage: 56.05 FT

Trees required: two trees.

Fee: \$400 [based on Resolution 3403]

Lot 3

SW 9th Street Frontage: 60.00 FT

Trees required: two trees.

Total trees provided: one tree see location standards below.

Fee: \$200 [based on Resolution 3403]

Per Tree Planting & Maintenance Policy VI. Location Standards, one tree is proposed within Lot 3 3 given the sidewalk, driveway, and water meter locations.

B.1. The minimum distance between a tree and driveway is 10 feet for a column tree.

B.2. 1.5 feet from sidewalk and 5 feet from a water service box.

Section 40.45.15.4 Preliminary Partition

- A. Threshold. The proposed development creates two (2) new parcels from one (1) existing record (parent parcel). The existing lot 1S115CB08400 would remain unchanged, outside of required right of way dedications.
- B. Procedure Type. The proposed development will follow the procedure laid out in Section 50.40 Type 2.
- C. Approval Criteria.
 1. The parent parcel (Lot 1S115CB08300) is not subject to Legal Lot Determination.
 - See additional submission of Site Survey from Paris and Associates, Inc. taken on March 3 2022.
 2. Application fee submitted along with application, required drawings and this written statement.

3. Requirements within Chapter 20 are addressed above in Section 20.05 Residential Land Use District. Requirements within Chapter 60 are addressed in Section 60.15 Land Division Standards and in the section below Design Review Application.
 4. The parent parcel (Lot 1S115CB08300) does not conflict with any known existing City Approval. Any applications and/or further documents required for city approval will be addressed as needed.
 5. The two proposed lots meet the minimum size of 3,000 SF but are not oversized (double the minimum).
 6. The existing lot and two proposed lots are all RMA zoning.
 7. Any applications and/or further documents required for city approval will be addressed as needed.
- D. Submission Requirements. Application for Preliminary Partition will be submitted with require form by Convergence Architecture, the owner's authorized agent. Requirements within Section 50.25 are addressed below for Application Completeness.
 - E. Conditions of Approval. Any applications and/or further documents required for city approval will be addressed as needed.
 - F. Appeal of a Decision. An appeal of a decision in Section 50.65 will be addressed if necessary.
 - G. Expiration of a Decision. The expiration of a decision in Section 50.90 will be addressed if necessary.
 - H. Extension of a Decision. An extension of a decision in Section 50.93 will be addressed if necessary.

Section 40.03. Facilities Review Committee

- A. All critical facilities and services will be adequately sized by engineers for building permit.
- B. Essential facilities and services will be adequately sized to serve the development prior to its occupancy.
- C. Requirements within Chapter 20 are addressed above in Section 20.05 Residential Land Use District.
- D. Requirements within Chapter 60 are addressed in Section 60.15 Land Division Standards and in the section below Design Review Application.
- E. Maintenance for on-site facilities, landscaping, fill and excavation areas, screening and fencing, ground cover, garbage and recycling storage areas, and other facilities not subject to maintenance by the City or other public agency will be completed by property management.
- F. Safe and efficient vehicular and pedestrian circulation patterns will be maintained within the boundaries of the development.
- G. The development's on-site vehicular and pedestrian circulation systems connect to the surrounding circulation systems will be maintained in a safe, efficient, and direct manner.
- H. Structures and public facilities serving the development site are designed in accordance with adopted City codes and standards and provide adequate fire protection, including, but not limited to, fire flow.
- I. Structures and public facilities serving the development site are designed in accordance with adopted City codes and standards and provide adequate protection from crime and accident, as well as protection from hazardous conditions due to inadequate, substandard, or ill-designed development.
- J. Grading and contouring of the development site is designed to accommodate the proposed use and to mitigate adverse effect(s) on neighboring properties, public right-of-way, surface drainage, water storage facilities, and the public storm drainage system.

- K. Access and facilities for physically handicapped people are incorporated into the development site and building design, with particular attention to providing continuous, uninterrupted access routes with clearly marked areas and accessible units on the first floor of the building.
- L. See requirements within Section 50.25.1 are addressed below in the Application Completeness.

Section 50.25.1. Application Completeness.

- A. A completed Land Use Application and Design Review Application was submitted and is copied within this document.
- B. This document identifies the relevant and required criteria for this new development. Requirements within Section 40.03 are addressed above for Facilities Review Committee.
- C. Any applications and/or further documents required for city approval will be addressed as needed.
- D. Type Two Procedures do not require Neighborhood Meeting prior to application submission. Any applications and/or further documents required by the Neighborhood or Neighborhood Association will be addressed as needed.
- E. Reference Pre-Application Hold-Harmless Form above waving the need for a pre-application meeting.
- F. Documentation from service providers, as determined by the Director, stating that essential and critical facilities are available or can be made available or will not be adversely affected by the proposal.
- G. All identified City Application fees have been paid.

Pre-Application – Hold Harmless Agreement Form



Community Development Department
 Planning Division
 12725 SW Millikan Way / PO Box 4755
 Beaverton, OR 97076
 General Information: (503) 526-2222 V/TDD
 www.BeavertonOregon.gov

PRE-APPLICATION - HOLD HARMLESS AGREEMENT FORM

Applicable only to Type 2 Applications

Pursuant to Section 50.20.1 of the Beaverton Development Code, a Pre-Application Conference is required for all proposals which require Type 2, Type 3 or Type 4 applications. A Pre-Application Conference is optional for Type 1 applications. The purpose of the pre-application conference is to acquaint the City and outside agencies and service providers with a potential application, and to acquaint the applicant with the requirements of the Development Code, the Comprehensive Plan, and other relevant criteria and procedures for submitting a complete land use application.

By signing this form, the applicant has elected to not hold a Pre-Application Conference with City staff. By making such choice, the applicant understands that the City staff will not provide a detailed list of application submittal requirements before the applicant files a land use application with the City. The applicant accepts responsibility for submitting a complete application and holds the City harmless from identifying additional application submittal requirements during the completeness review of the submitted land use application.

Please note: There is an option to forgo the Pre-Application Conference only if the proposal is subject to a Type 2 application. If your proposal requires Type 3 or has the potential for Type 3 application, the Pre-Application Conference is required and this option is not available. The only exception for a Type 3 application, subject to the approval of the Director, is in the instance where a Type 3 application is identified as a required application after completeness.

Please respond to the following:

1. Below, please check the appropriate application(s) filed or to be filed with the City:

- | | |
|---|--|
| <input type="checkbox"/> Adjustment (Minor – Type 2) | <input type="checkbox"/> Home Occupation (Type 2) |
| <input type="checkbox"/> Conditional Use (<u>Admin</u> or <u>Minor</u> Modification) | <input checked="" type="checkbox"/> Land Division (Partition or Subdivision) |
| <input type="checkbox"/> Design Review (Type 2) | <input type="checkbox"/> Loading Determination |
| <input type="checkbox"/> Director’s Interpretation | <input type="checkbox"/> Parking Determination |
| <input type="checkbox"/> Flexible Setback (Type 2) | <input type="checkbox"/> Tree Plan (Type 2) |
| <input type="checkbox"/> Other Application Type _____ | |

2. Below, please sign and date in response to the following statement:

I, Convergence Architecture - Eli Elder, as the applicant or legal representative of the applicant applying for:
(P R I N T N A M E)

THREE QUADPLEX BUILDINGS - (2) 3BR APARTMENTS AND (2) DOUBLE-STORY 2BR APARTMENTS WITH ROOFTOP BALCONY WITH OFF-STREET PARKING, SHARED OUTDOOR SPACE, TRASH ENCLOSURE AND PEDESTRIAN PATHS.

(A P P L I C A T I O N D E S C R I P T I O N)
 hereby announce my intention to forgo the Pre-Application requirement identified by the City of Beaverton Development Code. By signing this form, I voluntarily assume all risks, liabilities and damages and shall further hold harmless the City of Beaverton against any and all risks, liabilities and/or damages that may arise from the final action(s) issued by the City in response to the application(s) identified above.

Signed by:  Date: 3/28/23

Land Division Agreement

Not required until final plat submission.

Preliminary Partition Approval Criteria

Per email correspondence with Lina Smith, Associate Planner for City of Beaverton on Jan 18, 2023, 12:24 pm -- the application form references an outdated code version. Please reference Section 40.45.15.4 for the response to the preliminary partition approval criteria.

DESIGN REVIEW APPLICATION

Application Form



CITY OF BEAVERTON

Community Development
 Department
 Planning Division
 12725 SW Millikan Way
 PO Box 4755
 Beaverton, OR. 97076
 Tel: (503) 526-2420
 Fax: (503) 526-2550
BeavertonOregon.gov

OFFICE USE ONLY

FILE #:
 FILE NAME: _____
 TYPE: _____ RECEIVED BY: _____
 FEE PAID: _____ CHECK/CASH: _____
 SUBMITTED: _____ LWI DESIG: _____
 LAND USE DESIG: _____ NAC: _____

SINGLE-DETACHED AND MIDDLE HOUSING DESIGN REVIEW APPLICATION

PLEASE SELECT THE SPECIFIC TYPE OF DESIGN REVIEW FROM THE FOLLOWING LIST:

- SINGLE-DETACHED AND MIDDLE HOUSING DESIGN REVIEW ONE
- SINGLE DETACHED AND MIDDLE HOUSING DESIGN REVIEW TWO
- SINGLE DETACHED AND MIDDLE HOUSING DESIGN REVIEW THREE

APPLICANT: Use mailing address for meeting notification. Check box if Primary Contact

COMPANY: Convergence Architecture

ADDRESS: 7302 N Richmond Avenue

(CITY, STATE, ZIP) Portland, OR 97203

PHONE: 503.308.1028 FAX: 503.308.6272 E-MAIL: eelder@convarc.com

SIGNATURE: CONTACT: Eli Elder

(Original Signature Required)

APPLICANT'S REPRESENTATIVE: Check box if Primary Contact

COMPANY: _____

ADDRESS: _____

(CITY, STATE, ZIP) _____

PHONE: _____ FAX: _____ E-MAIL: _____

SIGNATURE: _____ CONTACT: _____

(Original Signature Required)

PROPERTY OWNER(S): Attach separate sheet if needed. Check box if Primary Contact

COMPANY: Farzad Moradian and Soheila Sagdegh

ADDRESS: 10960 SW Mourning Dove Place

(CITY, STATE, ZIP) Beaverton OR 97007-8199

PHONE: 503.803.1111 FAX: _____ E-MAIL: techmotorz@yahoo.com

SIGNATURE: CONTACT: Farzad Moradian

Note: A land use application must be signed by the property owner(s) or by someone authorized by the property owner(s) to act as an agent on their behalf. If someone is signing as the agent of the property owner(s), that person must submit a written statement signed by the property owner(s), authorizing the person to sign the application.

Design Review Submittal – Written Statement

This project is a new housing development in Beaverton, Oregon consisting of three quadplex buildings. Each building will have (2) 3-bedroom apartments and (2) double-story 2-bedroom apartments with a rooftop balcony. The site will consist of off-street parking, shared outdoor space, trash enclosure, and pedestrian paths.

Chapter 20 – Land Uses

Section 20.05.15 Residential Site Development Standards

See Section 20.05 for provisions for Residential Site Development Standards that are applicable to the proposed development.

Section 20.25.05 Minimum Residential Density

All three lots achieve minimum residential density. See Section 20.05.15 for more information. Exceptions provided within this section are not necessary.

Section 20.25.10 Floor Area Ratio

All three lots are equal to or less than the Maximum FAR requirements. See Section 20.05.15 for more information.

Section 20.30.10 Additional Height Limitations

All three lots are within RMA zoning. This section only applies to RMB and RMC zoning.

Chapter 40 – Applications

Section 40.20.10.3.A. Design Review Applicability

The proposed development is middle housing which is subject to Single-Detached and Middle Housing Design Review per Section 40.21.10.

Section 40.21.10.3.B. Applicability

The proposed development within the three lots is Middle Housing (Quadplexes) in RMA zoning.

Section 40.21.10.4. Exceptions

The proposed development does not comply with any of the stated exemptions listed within this section. The Single-Detached and Middle Housing Design Review approval is required.

Section 40.21.10.4. Existing Developments and Proposed Additions

All buildings within this design are new development. This section does not apply.

Section 40.21.15.1. Single-Detached and Middle Housing Design Review One.

- A. Threshold. Thresholds 1-4 and 6 do not apply to this development.
 - 5. New construction of single-detached dwellings or middle housing in the RMA, RMB, or RMC zoning district does apply to this development.
- B. Procedure Type. The proposed development will follow the procedure laid out in Section 50.35 Type 1.
- C. Approval Criteria.
 - 1. The proposed development satisfies the threshold address above in Section A.
 - 2. All identified City Application fees have been paid.

3. See requirements within Section 50.25.1 are addressed above in the Application Completeness.
 4. The proposed development meets all applicable Residential Site Development Requirements of the Development Code. See Section 20.05.15 for more information.
 5. The proposed development is consistent with all applicable Design Standards and Guidelines for Single-Detached Dwellings and Middle Housing. See Section 60.05.60 for more information.
 6. The proposed development does not include additions to existing buildings. This section does not apply.
 7. The proposed development addresses applicable provisions in Chapter 60 – Special Requirements below.
 8. The proposed development complies with the required grading standards. See Section 60.15.10 for more information.
 9. Any applications and/or further documents required for city approval will be addressed as needed.
- B. Submission Requirements. Application for Single-Detached and Middle Housing Design Review One will be submitted with required form by Convergence Architecture, the owner's authorized agent. Requirements within Section 50.25 are addressed below for Application Completeness.
- C. Conditions of Approval. The decision making authority may impose conditions on the approval of a Single-Detached and Middle Housing Design Review One application to ensure compliance with the approval criteria.
- D. Appeal of a Decision. An appeal of a decision in Section 50.60 will be addressed if necessary.
- E. Expiration of a Decision. The expiration of a decision in Section 50.90 will be addressed if necessary.
- F. Extension of a Decision. An extension of a decision in Section 50.93 will be addressed if necessary.

Chapter 60 – Special Regulations

Section 60.05. Design Review Principals

Table 60.05.11. Applicability of Residential Design Standards and Guidelines.

Quadplexes Housing Type within RMA District refers to Section 60.05.60

Section 60.05.15 Building Design and Orientation Standards

The standard within this section does not apply to the proposed development as it is middle housing.

Section 60.05.20 Circulation and Parking Design Standards

The standard within this section does not apply to the proposed development as it is middle housing.

Section 60.05.25 Landscape, Open Space Building Design and Orientation Standards

The standard within this section does not apply to the proposed development as it is middle housing.

Section 60.05.30 Lighting Design Standards

The standard within this section does not apply to the proposed development as it is middle housing.

Section 60.05.40. Circulation and Parking Design Guidelines

1. Connections to public street system. On-site pedestrian project is being provided for Pedestrian Project #10646 Hall Blvd. from Cedar Hills Blvd. to Allen Blvd. The SW Hall Street frontage is being upgraded with the required planter strip for all Arterials.
2. Loading area, solid waste facilities, and similar improvements. All on-site storage areas and waste enclosures are not visible from a public street. They are enclosed by solid CMU walls and placed back within the development screening by street frontage landscaping. There are no loading areas required within the proposed development.
3. Pedestrian circulation.
 - A. Pedestrian sidewalks are placed between on-site buildings, the parking areas, and building entries. Open spaces are adjacent to sidewalks and level ground is maintained accessibility to all areas.
 - B. Pedestrian sidewalks connect on-site facilities to abutting pedestrian facilities and streets.
 - C. Pedestrian sidewalks link building entrances to nearby streets and other pedestrian destinations.
 - D. Pedestrian sidewalks are provided through parking areas with no more than four parking spaces before a connection.
 - E. The standards within this section do not apply to the proposed development as it is within a Residential zone and does not include manufacturing processes.
 - F. Pedestrian sidewalks are minimum five feet wide and constructed of scored concrete.
 - | The patio open spaces are mulched soft scaping.
5. Street frontages and parking areas. All on-site parking is placed within the development and landscape is used to screen view from SW Hall and SW 9th.
6. All contiguous parking spaces are under four parking spaces. Larger trees are placed surrounding the parking area to minimize visual impact.
7. The standards within this section do not apply to the proposed development as it is within a Residential zone.
8. The standards within this section do not apply to the proposed development as it is within a Residential zone.
9. The standards within this section do not apply to the proposed development as it is within a Residential zone.
10. The standards within this section do not apply to the proposed development as it is within a Residential zone and does not include a parking structure.

Section 60.05.45 Landscape, Open Space and Natural Areas Design Guidelines

1. Common open space for residential uses in Residential zones.
 - A. Common open spaces are proposed within 100 feet of all buildings and in three areas on the property which are easily within walking distance from anywhere on the property. Open spaces are offered for small groups or larger groups with moveable benches so that groups of various sizes can be accommodated. They are integrated into the landscape plan with trees for shade and plantings for division of space and to create attractive desirable areas.
 - B. The garden terrace has a central open space that can be used to kick or throw a ball around with moveable benches on the edges for watching, reading alone, or socializing in small groups. The fire pit area provides an option for day and evening gatherings. The round plaza offers space for eating, drinking, reading, and visiting. Various age groups can use these common open spaces.
 - C. There are no structural encroachments near the common open spaces.

- D. Common open spaces are located to provide easy access, a variety of opportunities for recreation, and to utilize available space. As an infill development the location of the open spaces is limited.
- 2. Minimum landscaping in Residential zones.
 - A. Proposed landscape treatments utilize plants and hard-surface materials and are provided in the setbacks, around the buildings, trash enclosures, parking area, and open spaces. Plants are located to enhance architectural elements by offering tall accents at building corners and placing shrubs and grasses at appropriate height to accent windows and walkways. Plants are also placed to screen the development from north properties, create privacy on site, and provide a nice planting with seasonal variety along the streets. Plantings are intentionally not densely planted so that people cannot hide in the shrubs.
 - B. The proposed landscaping is selected and located to soften the edges of the buildings and parking areas and to provide aesthetic interest and generally increase the attractiveness of the development and its surrounds. This is accomplished with the proposed variety of plant species and types (tree, shrubs, grasses, ferns) as well as the plant species seasonal variations.
- 3. Minimum landscaping for Conditional Uses in Residential zones and for developments in Commercial, Industrial and Multiple Use zones. The standards within this section do not apply to the proposed development.
- 4. Common Greens. The standards within this section do not apply to the proposed development.
- 5. Shared Courts. The standards within this section do not apply to the proposed development.
- 6. Retaining walls. The standards within this section do not apply to the proposed development.
- 7. Fences and Walls.
 - a. Fences and walls with durable and attractive materials
 - b. No fences or walls will be within the front setback.
- 8. Changes to existing on-site surface contours at residential property lines. No grading is required for the proposed development.
- 9. Integrate water quality, quantity, or both facilities. No above-ground stormwater detention and treatment facilities are within the proposed development.
- 10. Natural areas. Current existing conditions are not indigenous to this area. It is currently vacant with weeds.
- 11. Landscape buffering and screening. The standard within this section does not apply to the proposed development as it is all zoned RMA, and it is not a Condition Use.

Section 60.05.50 Lighting Design Guidelines

The standard within this section does not apply to the proposed development as it is a middle housing within RMA zoning district.

Table 60.05.60.2 Design Guidelines and Standards for Single-Detached Dwellings, Duplexes, Triplexes, and Quadplexes

S1a-b Entries. At least one entry for Building A, B and C is on the longest street-facing wall and each main entry door faces the main public street.

S2. Windows. The area of the windows and entrance doors along SW Hall for Building A and B and SW 9th for Building C are above the minimum required of 15 percent. The opening areas are callout out on the Elevations within the plan set. See Sheet A3.0 to A3.4.

Building A

SW Hall Facade Area: 1544 SF

Area of Windows & Entrance Doors Area: 350 SF

Opening Percentage: 23%

SW 9th Facade Area: 975 SF
Area of Windows & Entrance Doors Area: 146 SF
Opening Percentage: 15%

Building B
SW Hall Facade Area: 1544 SF
Area of Windows & Entrance Doors: 350 SF
Opening Percentage: 23%

Building C
SW 9th Facade Area: 975 SF
Area of Windows & Entrance Doors: 150 SF
Opening Percentage: 15%

S3. Outdoor Open Area Standards

a. Minimum Required Outdoor Open Areas.

The areas for all proposed lots are equal to or greater than 3,000 square feet and less than 7,000 square feet. Within the proposed development we have provided more than the minimum of 300 square feet of open area is required per lot.

Lot 1:
Outdoor Open Area Proposed: 1,200 SF
See Landscaping sheet L1

Lot 2:
Outdoor Open Area Proposed: 1,500 SF
See Landscaping sheet L1

Lot 3
Outdoor Open Area Proposed: 6,000 SF
See Landscaping sheet L1

b. Design Requirements

1. Within each lot, one required 12 ft by 12 ft outdoor open area is called out on the Site Plan (see Sheet A1.2) and the Landscape Plan (sheet L1).
2. All required outdoor open is located outside of the front setback with some of the areas within the side or rear setback as accepted.
3. All unpaved areas are mulch, making the entire area impervious. Landscaping buffers along the exterior property lines and primary streets create semi-private spaces for sitting and more active areas in the larger terrace areas at the northwest corner of the property. The existing relatively flat site makes these proposed areas mostly accessible. The outdoor area with a table and chairs within Lot 1 is adjacent to a sidewalk making it the most accessible area of the three programed space.

S4. Tree Planting and Tree Preservation

a. Tree Planting Requirements. Tree planting area site minus building footprints to be 30% of the site: $13,323 \text{ SF} \text{ after row dedication less } 2,962.5 \text{ (3 building footprints)} = 10,360.5 \times 0.30 = 3,108 \text{ SF}$ of tree planting area required.

1. Combination of Large, Medium, and Small trees planted:
 - i. Ten October Glory Red Maples are proposed. They are large trees on the city's tree list and count as 1,200 SF each for a total of 12,000 SF

- ii. Seven Kindred Spirit oaks (*Quercus robur* 'Nadler') are proposed as medium trees. They are not on the City's trees list but are similar to *Quercus robur* 'Pyramich' with a smaller canopy so that the branches will not bang against the building and cause damage. Medium trees count at 600 SF, so $600 \text{ SF} \times 7 \text{ trees} = 4,200 \text{ SF}$. Additionally, 2 Limber pine trees are proposed for variety and winter presence. They best compare to the City's medium trees, are proposed to be planted in a 10' x 10' area and are 50' tall by 15' wide. Two medium trees times 600 SF = 1,200 SF. Four columnar spruce trees are proposed for color, screening, wildlife habitat, and seasonal presence. They best fit in the medium tree category given their 10' x 10' footprint. Therefore $2 \times 600 \text{ SF} = 1,200 \text{ SF}$ of proposed tree area.
 - iii. Sixty-three emerald, green arborvitae are proposed with a height of 15' and a width of 2-4'. These best compare to the City's small trees and as such would count for 63 arborvitae times 300 SF for 18,900 SF. They will provide a nice solid screen from the northern property and along the trash containers.
Proposed tree planting area: $12,000 + 4,200 + 1,200 + 1,200 + 18,900 = 37,500 \text{ SF}$ exceeding the required
2. The proposed landscape plan shows the large trees planted in areas 10 feet by 10 feet; medium trees planted in areas 6 feet by 6 feet; and small trees planted in areas of 3 square feet minimum.
- b. Planting Standards for Required Trees.
1. Review of the proposed landscape plan will show that no trees are proposed to be planted 3 feet from a property line, other than the arborvitae which at maturity are expected to be 2-4 feet in width. The arborvitae will not grow into neighboring properties. No trees are proposed to be planted 6 feet or less from a structure other than the arborvitae which again are very narrow and will not grow into structures.
 2. No landscaping buffer required within this proposed development.
 3. Deciduous trees are selected from the City's list with these exceptions: the *quercus robar Nadler* will better fit the site than the City's *quercus robar 'Pyramich'* which would grow into the buildings causing future maintenance problems.
 4. Deciduous trees shall have a minimum caliper of 1.5 inches and shall be balled and burlapped which is indicated on the plans.
 5. Evergreen trees will be a minimum of 8 feet in height at the time of planting as required on the plans.
 6. Clean Water Services requirements are addressed on civil sheets and areas/facilities are not present on the property.
 7. Contractors are directed to properly plant trees to meet the City's planting and establishment requirements.
 8. The trees within this section are not part of a previously approved landscaping plan.
- c. Tree Preservation. There are no existing trees within the two parent parcels. A cedar tree within the adjacent property to the north will be preserved and protected as addressed in Section 60.15.10.

S5. South Cooper Mountain Community Plan Open Space and Natural Resources. The proposed development is not within the South Cooper Mountain Community Plan Open Space.

S6. Grading at Residential Property Lines. All proposed grading is under 10 percent of the existing slope and fulfilled requirements within Section 60.15.10. See Section 60.15.10 for more information. The minimal grading required for a shared access drive will not affect the only significant tree, a cedar tree to the north, in the surrounding properties. If additional evidence is required, supporting documentation from a certified arborist will be acquired.

S7. Garages and Off-Street Parking Areas. The shared access driveway is less than 20 percent of the SW 9th street frontage. The adjacent parking spaces near the entry on SW 9th are obscured by landscaping trees and tall ornamental grasses. There are no garages attached or detached within the proposed development.

S8. Driveway Location. The shared access driveway fronts SW 9th Street, which has a local street classification. As required by 210.21 within the Beaverton Engineering Design Manual, the nearside edge of the driveway is more than 25 feet from the face of the curb on SW Hall Blvd.

S9. Driveway Approaches. The width of the shared access driveway is 22 feet at the property line, fulfilling the requirement of less than 32 feet. The proposed parking lot only has frontage to SW 9th.

S10. Driveway Length. The driveway access to parking is less than 150 feet in length. On-site vehicle circulation is easily identified with curbs, sidewalks, marked parking spaces and landscaping.

S11. Lighting Design. The off-street parking lot area exceeds 1,400 square feet and complies with Technical Lighting Standards. See Table 60.05-1 for more information.

S12. Solid Waste Facilities - Minimum Required Storage Area and Location. Each proposed property within the development has an enclosure with trash and recycling containers over the required minimum. The enclosures satisfy the location requirements stated in 6.06.60.2.S12 a-f, Beaverton Code 4.08.530, City of Beaverton Solid Waste & Recycling Administrative Rules section E.3.a, and Metro administrative rule 5.15-2040. A preliminary site plan was reviewed by Elizabeth Cole, Recycling & Waste Reduction Program Coordinator for the City of Beaverton, on Friday January 6th at 11:30am and deemed acceptable.

Lot 1:

Net Acreage: 3,460 SF

(Minus Private Driveway: 16 SF, does not included setbacks as per definition within Ch. 90)

Gross Floor Area for Building A: 4,200 SF

Floor Area Ratio: 4200 SF/ 3460 SF = 1.21

Lot 2:

Net Acreage: 3,529 SF

Gross Floor Area for Building B: 4,200 SF

Floor Area Ratio: 4200 SF/ 3529 SF = 1.19

Lot 3

Net Acreage: 4,086

(Minus Private Driveway: 2264 SF)

Gross Floor Area for Building C: 4,200 SF

Floor Area Ratio: 4200 SF / 4086 SF = 1.03

Solid Waste Facilities Size per Lot

Lot 1 Enclosure: 137 SF

Lot 2 Enclosure: 116 SF

Lot 3 Enclosure: 116 SF

S13. Solid Waste Facilities - Screening. Waste storage and recycling containers are within an enclosure constructed of CMU walls and placed back within the parking facilities away from both SW 9th and SW Hall Street. Landscaping abutting the SW 9th frontage and along the enclosures for Lot 2 and 3 provide screening from public view.

Table 60.05.60.3-4 Design Guidelines and Standards for Townhouses and Cottage Clusters

The standard within this section does not apply to the proposed development as it is middle housing.

Table 60.05-1 Technical Lighting Standards

Exterior lighting is mounted at seven feet and twenty feet above ground level to illuminate the shared access driveway, vehicle maneuvering areas, parking areas and sidewalks between parking spaces and the building entries. Pole mounted lighting is placed in the northwest corner of Lot 3 to illuminate the parking spaces and surrounding landscaped open spaces. The illumination is controlled at adjacent property lines, follows minimum required illumination and maximum permitted height of luminaires for Residential zoning. See Site Lighting Photometric Plan for more information.

The roadways, access drives, parking lots, vehicle maneuvering areas, pathways and sidewalks of all new developments and building entrances shall be lit in conformance to the technical lighting standards.

Table 60.05.2 Minimum Landscape Buffer Requirements between Contrasting Districts.

With the proposed development in RMA, there are no additional landscape buffer requirements with the abutting property in RMA and the RMB zoning across SW Hall Blvd.

Section 60.30 Off-Street Parking

Section 60.30.05 Off-Street Parking Requirements

10. Availability. The required space of parking will be maintained and readily available for tenants and visitors of the quadplexes. Any long-term storage will be removed.
11. Vehicle Parking. Parking will be provided for tenants and visitors.
12. Bicycle Parking. Bicycle parking will be provided for tenants of the proposed quadplexes.

Table 60.30.10.5.A. Parking Ratio Requirements for Motor Vehicles.

Quadplexes in RMA Zone (3,000 SF to 5,000 SF) - 2.0 per lot required, No Maximum

Parking Spaces Required: 6 spaces.

Provided: 12 space (One per unit)

Table 60.30.10.5.B. Parking Ratio Requirements for Bicycles

Short Term Bike Parking for Middle Housing – 1 space per unit (four per building)

Long Term Bike Parking for Middle Housing – 1 space per unit (four per building)

Bike Parking will follow Section 340 Bicycle Parking Standards in the Engineering Design Manual.

Section 60.30.15 Off-Street Parking Lot Design

Parking Angle provided: 90 degrees.

Stall Width provided: 8' – 6" typical.

Stall Depth: 18' – 6" typical

Drive Aisle Width: 22' per 60.30.15. 8.c. for Middle Housing in RMA.

Backing Area: 5' – 0" typical

Parking Lot Driveway Depth: 20' – 0" from right of way.

Section 60.55.25 Street Bicycle and Pedestrian Connection Requirements

The Comprehensive Plan Transportation Element Figures references sidewalk requirements but no required street bike lane for SW Hall. See [Section 60.05.40](#) for more information.

10.A. Pedestrian Circulation Standards for Middle Housing. Pedestrian corridors connect SW Hall and SW 9th to the building entries and the on-site parking. All corridors are a minimum of five feet wide and constructed of scored concrete.

11. There are no adjacent transit stops to the proposed development. The proposed development is along the 76 TriMet bus route, but the closest stop is more than two hundred feet.

Facilities Review Technical Criteria

See [Section 40.03](#) for requirement for facilities of the proposed development.

END OF DOCUMENT



WCL ENGINEERING

9TH & HALL QUADPLEX

12455 SW 9TH Ave. & 5293 SW Hall Blvd.
Permit DRM2023-0011/LD2023-0004

Community Development Department Incompleteness Response
June 26, 2023

Planning Division

Incompleteness Requirements

A. Written Statement

1. Survey completed March 3, 2022, by Andy Paris and Associates, Inc. has been added to the Land Use submission and similar wording added to Section 40.45.15.4 C.1 within written statement.
2. The below information has been added to the Written Statement Section 60.05.60.2.S3

Lot 1:

Outdoor Open Area Proposed: 1,200 SF
See Paver Patio on Landscaping sheet L1

Lot 2:

Outdoor Open Area Proposed: 1,500 SF
See Paver Patio on Landscaping sheet L1

Lot 3

Outdoor Open Area Proposed: 6,000 SF
See Garden Terrace on Landscaping sheet L1

3. The below information has been added to the Written Statement Section 60.05.60.2.S.12.
The Net acreage includes setback as defined in Chapter 90.

Lot 1:

Net Acreage: 3,460 SF
(Minus Private Driveway: 16 SF)
Gross Floor Area for Building A: 4,166 SF
Floor Area Ratio: 4,166 SF/ 3460 SF = 1.20

Lot 2:

Net Acreage: 3,529 SF
Gross Floor Area for Building B: 4,166 SF
Floor Area Ratio: 4,166 SF/ 3529 SF = 1.18

Lot 3

Net Acreage: 4,086
(Minus Private Driveway: 2264 SF)

Gross Floor Area for Building C: 4,166 SF
Floor Area Ratio: 4,166 SF / 4086 SF = 1.02

4. See [Site Development Section](#) below for responses to Site Development completeness notes.

B. Plans and Staff Comments

1. Building Height was corrected for all site and building elevations included in the set.
2. See [Transportation Section](#) below for responses to Transportation completeness notes.
3. See [Site Development Section](#) below for responses to Site Development completeness notes.

Requirements to be Addressed

1. Survey completed March 3, 2022, by Andy Paris and Associates, Inc. has been added to the Land Use submission and similar wording added to Section 40.45.15.4 C.1 within written statement.
2. Per Civil Drawings C02 – Grading and Drainage Plan Site Plan, each building's finish floor height is:
 - Building A FF (finish floor) at 207.10
 - Building B FF at 206.95
 - Building C FF at 207.90

Building Height for all buildings

- Parapet Flashing @ High Slope: +6"
 - Level 4 FF to Roof FF @ High Slope: +9' 0"
Roof assembly finish to finish included: 9"
 - Level 3 FF to Level 4 FF: +8' 9 3/8"
Floor assembly finish to finish included: 9 3/8"
 - Level 2 FF to Level 3 FF: +10' 4 1/2"
Floor assembly finish to finish included: 1' 4 1/2"
 - Level 1 FF to Level 2 FF: +10' 4 1/2"
Floor assembly finish to finish included: 1' 4 1/2"
 - FF +6" from grade height
- $$6'' + 10' 4 \frac{1}{2}'' + 10' 4 \frac{1}{2}'' + 8' 9 \frac{3}{8}'' + 9' 0'' + 6'' = 39' 5 \frac{3}{8}''$$

Building Height for all Buildings: 39' 5 3/8"

3. Paving for all three proposed open space areas was removed. Mulched pathway to all the open spaces were cleared of plantings and end at hardscaped sideways to provide accessible access. Removing paving at open areas was deemed viable per attached email with Aaron Harris, Senior Planner, City of Beaverton, on June 9th 2023.
4. Short-term bike racks are bolted to concrete slab-on-grade. They are removable if required by city. Notes on plans callout bolted condition.
5. Building A and B are identical layout. Building C has a mirrored floor plan with minor revisions. See below for numerical data on level square footage and unit square footage.

<u>All Buildings Levels</u>	
Level 1:	975 SF
Level 2:	1,064 SF
Level 3:	1,064 SF
Level 4:	1,064 SF
Per Building:	4,166 SF
Total:	12, 498 SF

<u>All Building Units</u>	
Unit 1:	796 SF
Unit 2:	796 SF
Unit 3:	827 SF
Unit 4:	935 SF
Per Building:	3,354 SF
Total:	10,062 SF

- Current configurations were designed with Elizabeth Cole's input. Continued discussions with Elizabeth Cole will occur when on-site waste and recycling collection locations or facilities change as the project develops.
- The driveway is a shared access easement and called out as such on Sheet A1.1 and A1.2.
- All required trees were removed within 6 feet of structures or 3 feet of property lines at the perimeter of the site. See landscaping sheets for additional information.
- Per 20.05.15 F. 2. for RMA zoning, side setbacks are 0,3, or 5 with the reference note 7: *[removed for clarity...]* side setbacks internal to the land division may be reduced to 3 feet with a total of 6 feet between buildings. The 5 ft shared access easement was added to sheet A1.1 with the 3 ft side setback callout for clarity. The total space between the two buildings is 11 ft.

Transportation Division

Incompleteness Requirements

- See attached revised photometric plan with public right-of-way lighting.

Requirements to be Addressed

- See Driveway Easements and Pedestrian Easement added to plan.
- All long-term bike parking will be provided within each unit without providing specific hardware. All wording within plans and written statements have been revised.

Site Development Division

Incompleteness Requirements

- A new stormwater report has been provided that addresses Quantity, Quality and Hydromodification for both on and off-site work.
- The civil plans have been revised to address all three items.
 - Quantity is addressed via the conveyance system provided.
 - Quality is addressed via the new stormwater planters provided. The plant list provided by CWS for the storm water facility did not have an option for a plant species in full shade, therefor the sword fern is proposed from the upland forest community plant list as they do very well in full shade.
 - Hydromodification is addressed via fee-in-lieu.
- A city of Beaverton Water SPL is now included in the project submittal packet.
- Survey completed March 3, 2022 by Andy Paris and Associates, Inc. has been added to the Land Use submission, included in Civil Drawings and similar wording added to Section 40.45.15.4 C.1 within written statement.
- The curb ramps at this corner now reflect city of Beaverton standard for new curb extension. ADA Design will be provided at the permit submittal stage, site is relatively flat an there are no concerns with this site meeting ADA grade requirements.

Requirements to be Addressed

1. The building does not have eaves (flat roof w/ parapet walls on three sides) and the foundation in this area will be designed as a property line foundation w/ no projection into the PUE.
2. The water meters and double check valves will be provided during construction permit submittals.

Documentation Submitted

1. Electronic Document Transmittal Form
2. Arch Drawings REV1
3. Civil Drawings REV1
4. Civil SWMR REV1
5. Landscaping Set REV1
6. Photometric Set REV1
7. Survey
8. Water SPL
9. Written Statement REV1
10. Incomplete Letter
11. Incomplete Response
12. [RESUBMISSION] BSD SPL
13. [RESUBMISSION] Clean Water SPL
14. [RESUBMISSION] Land Division Application
15. [RESUBMISSION] Middle Housing Design Review Application
16. [RESUBMISSION] Pre-App Hold Harmless Agreement
17. [RESUBMISSION] TVFR SPL

END OF DOCUMENT

Aaron Harris

From: Eli Elder <eelder@convarc.com>
Sent: Tuesday, August 29, 2023 3:06 PM
To: Aaron Harris
Cc: Amy Peterson
Subject: [EXTERNAL] Re: 9th and Hall Quadplexes follow-up

CAUTION: This email originated from outside the City of Beaverton. Exercise caution when opening attachments or clicking links from unknown senders.

Aaron,

We will have containers of each of these heights:

Table B: Receptacles sizes

Containers (excludes carts) should have a minimum of one foot clearance on all sides.

Volume	Foot Print	Height
35-gallon cart (.20 cubic yard)	21" W x 24" D	39 inches
65-gallon cart (.34 cubic yard)	27" W x 29" D	41 inches
95-gallon cart (.52 cubic yard)	30" W x 34.0" D	46 inches
1 cubic yard	84" W x 24" D	37.5 inches (with casters)

So 46" or 3'-10" would be the highest container.

We would like to go with a 6'-0" high wood fence to screen these.

Thanks,

Eli

Elijah Elder, NCARB
Principal

Convergence Architecture

7302 N Richmond Ave | Portland, OR 97203
tel. 503.308.1028, ext. 103 | cell 503.475.1220
eelder@convarc.com
www.convergencearch.com
[Facebook](#) | [Houzz](#) | [LinkedIn](#)

On Tue, Aug 29, 2023 at 3:00 PM Aaron Harris <aharris@beavertonoregon.gov> wrote:

Hi Eli,

Thanks for calling me back. Could you please respond to this email and provide the proposed height of the waste/recycling containers and the screening walls? I will include a condition of approval with the staff report addressing the CMU wall. You do not need to provide a revised graphic prior to staff report publication. My thanks in advance.

Best,

Aaron Harris, AICP

Senior Planner | Current Planning | Community Development

City of Beaverton | PO Box 4755 | Beaverton, OR 97076-4755

www.beavertonoregon.gov

COVID-19 Update: Please note: I am working remotely/in office at this time. My work hours are: **8-5pm M-F**. The best number to reach me is **503-616-8453**. Response times may be longer than normal as we adapt to remote work.

Coming Soon! – NEW Beaverton Electronic Permitting System (BEPS) will go live within the Planning Division on April 3, 2023. Customers will have 24/7 access to the BEPS with comprehensive project tracking and the ability to pay fees online! For more information, click here [Electronic Permitting System | Beaverton, OR - Official Website \(beavertonoregon.gov\)](#)



April 26, 2023

Convergence Architecture
Attn: Eli Elder
7302 N Richmond Avenue
Portland, OR 97203

RE: 9th and Hall Quadplexes (DRM2023-0011/LD2023-0004)

Dear Applicant,

Staff has finished its completeness review and has deemed the application incomplete. The purpose of this letter is to inform you of the items necessary to make your application complete. This letter does not identify all of the issues regarding the content of the materials that have been submitted.

Review of the content of the submitted material and staff's recommendation on the proposal will occur during the project review phase of the application process after your proposal is deemed complete.

COMPLETENESS ISSUES: *Pursuant to Section 50.25.1 of the Development Code, a complete application is one that contains the information required by the Director to address the relevant criteria, development requirements and procedures of this Code. The following items must be addressed and submitted in order for the application to be deemed complete:*

A. WRITTEN STATEMENT:

1. Staff is unable to locate a recorded plat to demonstrate that the subject site is a legal lot of record. Please revise the application submittal to incorporate all three lots into the Land Division application to avoid the need for a Legal Lot Determination land use application.
2. Please update the project narrative response for BDC Table 60.05.60.2.S3 to identify the square footage of open space proposed for each lot.
3. Staff is unable to determine if the proposal meets the standards at BDC Table 60.05.60.2.S.12. Please expand the narrative to explicitly state the combined floor area for each lot. Please also provide floor area ratio calculations for each lot. The calculations should identify the gross floor area and net acreage of each lot. Please refer to the 'floor area ratio' definition in BDC Chapter 90.
4. Please see the Site Development completeness notes attached to this letter, dated April 21, 2023, for additional incomplete comments. Site Development

comments address the applicant's stormwater report, water service provider letter, and ADA compliance.

B. PLANS AND GRAPHIC REQUIREMENTS:

1. Sheet A3.0 identifies the building height as approximately 40'-3". The maximum building height in the RMA zone is 40 feet. An adjustment application is required for a building proposed to exceed the 40-foot height maximum.
2. Please provide a photometric plan for both streets adjacent to the site. Please see the attached Transportation comments, dated April 11, 2023, for additional information.
5. Please see the Site Development completeness notes attached to this letter, dated April 21, 2023, for additional incomplete comments. Site Development comments address the applicant's civil plans and ADA compliance.

PRELIMINARY STAFF COMMENTS (NOT COMPLETENESS ITEMS):

While not strictly completeness items, the following are matters that will need to be addressed prior to the Facilities Review Committee meeting. Please note that this list may not be exhaustive of all potential issues that may arise during development but are items that came to the attention of staff during completeness review:

1. Planning:

- The applicant is strongly encouraged to have the site surveyed by a registered professional prior to land use approval to ensure that the site's lot dimensions are consistent with those shown on the submitted plan sheets.
- Staff requests that the applicant demonstrate how the building height was calculated and confirm it was calculated from grade plane. Building height is defined in the Beaverton Development Code (BDC) as, "The vertical distance from grade plane to the highest point of a sloped roof structure or in the case of a flat roof, the vertical distance from grade plane to the highest point of the parapet." Grade Plane is defined in the BDC as, "A reference plane representing the average of finished ground level adjoining the building at exterior walls. Where the finished ground level slopes away from the exterior walls, the reference plane shall be established by the lowest points within the area between the building and the lot line or, where the lot line is more than six (6) feet from the building, between the building a point six (6) feet from the building." Grade plane is an average of the grade at each of the four corners of the building.
- Please expand the project narrative, and revise plans if needed, to demonstrate how each of the three proposed open space areas are accessible to pedestrians.
- The proposed short term bike racks are located within setbacks. Staff supports bike racks in these locations if they are removable. Please provide additional

information to demonstrate that all bike racks located in setback areas can be removed if necessary.

- Please revise the narrative to explicitly state whether or not all three proposed quadplexes are identical in layout, building footprint, and square footage. Please include numerical data.
- Staff encourages the applicant to continue discussions with Elizabeth Cole regarding safe and efficient on-site waste and recycling collection.
- The new curb cut entry, as identified on sheet A1 .1, appears to be off-center. Please revise the plan sheet if necessary.
- Please review and revise the landscape plan as necessary to ensure that all required trees are proposed to be planted consistent with the planting standards at BDC Table 60.05.60.2.S4.b.1.
- Narrative page 5 states that Lot 1 has a 3-foot side yard setback. The architectural plan appears to show no setbacks less than five feet in width. Please revise the narrative if necessary.

2. Transportation Comments:

- Please see the supplemental completeness notes attached to this letter, dated April 11, 2023, for additional staff comments.

3. Site Development Comments:

- Please see the supplemental completeness notes attached to this letter, dated April 21, 2023, for additional staff comments.

RESUBMITTAL

Please provide a full electronic resubmittal via the City's website to the planning division. All submittals should follow the City's naming policy. As a general guideline, please separate materials into PDFs which contain the same material that would be provided in a submittal binder tab for ease of review.

If you have any questions regarding this letter or any other aspect of our process, please don't hesitate to call. I am including a list of the primary members of the Facilities Review Committee who were involved in the completeness review.

LAND USE & DESIGN: Aaron Harris (503) 616-8453
TRANSPORTATION: Fabio de Freitas (503) 526-2557
SITE DEVELOPMENT: Hunter Jin (503) 526-2626

We look forward to working with you on this project.

Sincerely,

Aaron Harris
Senior Planner

cc: Project file



TRANSPORTATION COMPLETENESS REVIEW RESPONSE

Community Development Department

Project Name: 9th and Hall Quadplexes

Project #: LD2023-0004 / DRM2023-0011

Date: April 11, 2023

Applicant: Eli Elder. Convergence Architecture

Project Planner: Aaron Harris, Senior Planner

Response prepared by: Fabio de Freitas, Senior Planner

 (503) 526-2557  fdefreitas@beavertonoregon.gov

These comments are based on the information provided in the application submittal package date-stamped as received on March 28, 2023. *At this time, City of Beaverton/Transportation staff recommends that the application(s) should be deemed **incomplete**– please note that there may be additional completeness-related matters identified by other City staff (the applicant is encouraged to review all responses prepared by City staff).*

REQUIRED INFORMATION

The following information must be provided in order for City of Beaverton/Transportation staff to recommend that the application can be deemed complete:

1. The application submittal package does not include the requisite public right-of-way photometric data that was identified at the time of the Pre-application Conference (PA2022-0024) that was held for this project in July of last year.

The following information was called out in the City's written Pre-application Conference response:

- "Provide photometric data demonstrating that illumination for any public transportation facilities meets the minimum lighting levels established in the Engineering Design Manual (EDM) Section 450."
- "Provide on-street lighting consistent with EDM Section 450 and as recommended in a required lighting analysis for the site's public street frontages along SW Hall and SW 9th St."

Although the submitted application package includes a photometric plan, it represents the proposed lighting that will be placed on private property. Neither the submitted architectural plans nor the civil engineering plans include any lighting within the public right-of-way. The applicant will need to submit the necessary lighting analysis and amend the submitted plans to include any lighting identified in compliance with the aforementioned EDM Section 450.

REQUIREMENTS TO BE ADDRESSED

The following information is provided not as additional completeness matters, but rather, as approvability issues that must be addressed – as currently addressed in the submitted application package, these items cannot be approved. Referring to BDC Section 10.60.1, *“except as otherwise provided, the applicant shall bear the burden of proof and persuasion that the proposal is in compliance with the applicable provisions of this Code (Beaverton Development Code).”* Staff acknowledges the effort and thoroughness of the applicant's submitted narrative and plans which address relative approval criteria. However, there are additional missing details that must be provided.

1. Because of the associated land division, there will be communal elements of the project that will straddle the proposed property lines. These include the vehicle driveway/maneuvering area/parking lot and the pedestrian walkway between proposed Lots 1 and 2. Accordingly, there will need to be shared vehicle access and pedestrian access easements, respectively. It is recommended that the applicant show these easements on revised plans for the associated land use requests and the easements will clearly need to be provided on plans that are prepared/submitted in relation to the Final Plat phase of the land division review process. The applicant should expect that these required easements (and others) will also be conditions of approval related to at least the proposed preliminary land division request.
2. The applicant is advised to remove all references to “long-term” bicycle parking on the submitted plans – especially the mechanism/hardware shown for the bicycle parking within each unit. This is advised because there are technical standards for long-term bicycle parking spaces located in the EDM that would otherwise require compliance. Since long-term bicycle parking must be covered pursuant to EDM Section 340.3.A and one of the acceptable methodologies for covered bike parking simply includes “inside a building”, the applicant should provide a general statement that all required long-term bicycle parking will be provided in each unit (if that is the case).



City of Beaverton
Community Development Department
Site Development Division
12725 SW Millikan Way 4th Floor
Beaverton, OR 97076
Tel: (503) 350-4021
Fax: (503) 526-2550
www.BeavertonOregon.gov

COMPLETENESS NOTES

Project Name: 9th and Hall Quadplexes

Application Number: DRM2023-0011 and LD2023-0004

Date: April 21, 2023

Prepared by: Hunter Jin – Site Development Division

Ph: (503) 526-2626 **Fx:** (503) 526-2550 **Email:** hjin@BeavertonOregon.gov

Incomplete based on requirements established in the City Engineering Design Manual and CWS Design and Construction Standards

- **Provide a Stormwater Report with a signed PE stamp**
 - **The Storm Report needs to address all components of stormwater management for both on-site work and off-site frontage work (Quantity, Quality, Hydromodification) and also provide a downstream analysis**
- **Revise the Civil Plans to provide stormwater management for Quantity, Quality, and Hydromodification**
 - **There must be stormwater facilities to address both on-site work and off-site frontage work impervious area**
 - **Fee-in-Lieu is acceptable for Hydromodification if the total new and/or modified impervious area associated with the project is below 12,000 SF. Frontage work impervious area counts towards this total as well**
- **City of Beaverton Water SPL is required for all new water service connections**
- **Provide an existing conditions Civil Plan**
- **A fully ADA compliant crossing, including relocation of the inlet, needs to be constructed at the NW corner of Hall and SW 9th Ave. A retrofit will not be accepted**

☒ While not strictly completeness items, the following are matters that will need to be addressed after land use approval prior to construction:

- **A building is shown directly on the PUE line – Overhangs and Encroachments (including roof eaves and building foundation) are not allowed in the PUE**
- **Show proposed locations of water meters and double check valves**

9th and Hall Quadplexes completeness letter

Aaron Harris <aharris@beavertonoregon.gov>
To: Amy Peterson <apeterson@convarc.com>

Fri, Jun 9, 2023 at 11:25 AM

Hi Amy,

Staff would like to see 5-foot-wide paved walkways connecting to any paved areas located within open areas. In addition, 5 feet of walkway width should be provided where walkways connect to open areas. For example, the walkway in the southeast corner of the site appears to only provide around 4 feet of width where it connects to the open area. Removing paving in the open areas is another viable option to help meet the standard.

Best,

Aaron Harris, AICP

Senior Planner | Current Planning | Community Development

City of Beaverton | PO Box 4755 | Beaverton, OR 97076-4755

www.beavertonoregon.gov

COVID-19 Update: Please note: I am working remotely/in office at this time. My work hours are: **8-5pm M-F**. The best number to reach me is **503-616-8453**. Response times may be longer than normal as we adapt to remote work.

Coming Soon! – NEW Beaverton Electronic Permitting System (BEPS) will go live within the Planning Division on April 3, 2023. Customers will have 24/7 access to the BEPS with comprehensive project tracking and the ability to pay fees online! For more information, click here [Electronic Permitting System | Beaverton, OR - Official Website \(beavertonoregon.gov\)](#)

From: Amy Peterson <apeterson@convarc.com>
Sent: Thursday, June 8, 2023 12:39 PM
To: Aaron Harris <aharris@beavertonoregon.gov>
Cc: Eli Elder <eelder@convarc.com>
Subject: Re: [EXTERNAL] 9th and Hall Quadplexes completeness letter

Aaron,

Our open spaces are combinations of grassy areas with some small areas of paving as features in the center of the areas (at the approximate locations of the 12'x12' required area). Our concept was that the sidewalks would lead to the edge of these open areas but not necessarily the areas of paving. It does look like we have some plantings on the landscape design that will block this access - we plan on removing these to provide open access to open space areas. Will this be sufficient? We could also remove the paved areas so that the open areas are entirely soft surfaces. See attached landscape plan with plantings to be removed noted, as well as addressing the planting standards per BDC Table 60.05.60.2.S4.b.1. prior to resubmission.

Best,

Amy

On Thu, Jun 1, 2023 at 3:59 PM Aaron Harris <aharris@beavertonoregon.gov> wrote:

Hi Amy,

Thanks for your patience. The accessibility requirement is a 5-foot wide paved walkway, consistent with 60.55.25.

Best,

Aaron Harris, AICP

Senior Planner | Current Planning |Community Development

City of Beaverton | PO Box 4755 | Beaverton, OR 97076-4755

www.beavertonoregon.gov

COVID-19 Update: Please note: I am working remotely/in office at this time. My work hours are: **8-5pm M-F**. The best number to reach me is **503-616-8453**. Response times may be longer than normal as we adapt to remote work.

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From: Amy Peterson <apeterson@convarc.com>

Sent: Friday, May 26, 2023 1:59 PM

To: Aaron Harris <aharris@beavertonoregon.gov>

Cc: Eli Elder <eelder@convarc.com>

Subject: [EXTERNAL] 9th and Hall Quadplexes completeness letter

CAUTION: This email originated from outside the City of Beaverton. Exercise caution when opening attachments or clicking links from unknown senders.

Aaron,

We have been working through the more complicated site and transportation requirements at 9th and Hall. One question was about the accessibility requirements for the proposed open spaces. We could not find specifics on the requirements other than being "easily accessible, physically or visually" in Section 60.53.15 3B. Does the Development Code or the Standards have different sections specifying these requirements?

Best,

Amy

Amy Peterson, LFA - Designer

Convergence Architecture

[7302 N Richmond Ave](#) | Portland, OR 97203

tel. 503.308.1028, ext. 119 | cell 503.382.9891

pronouns: she/her

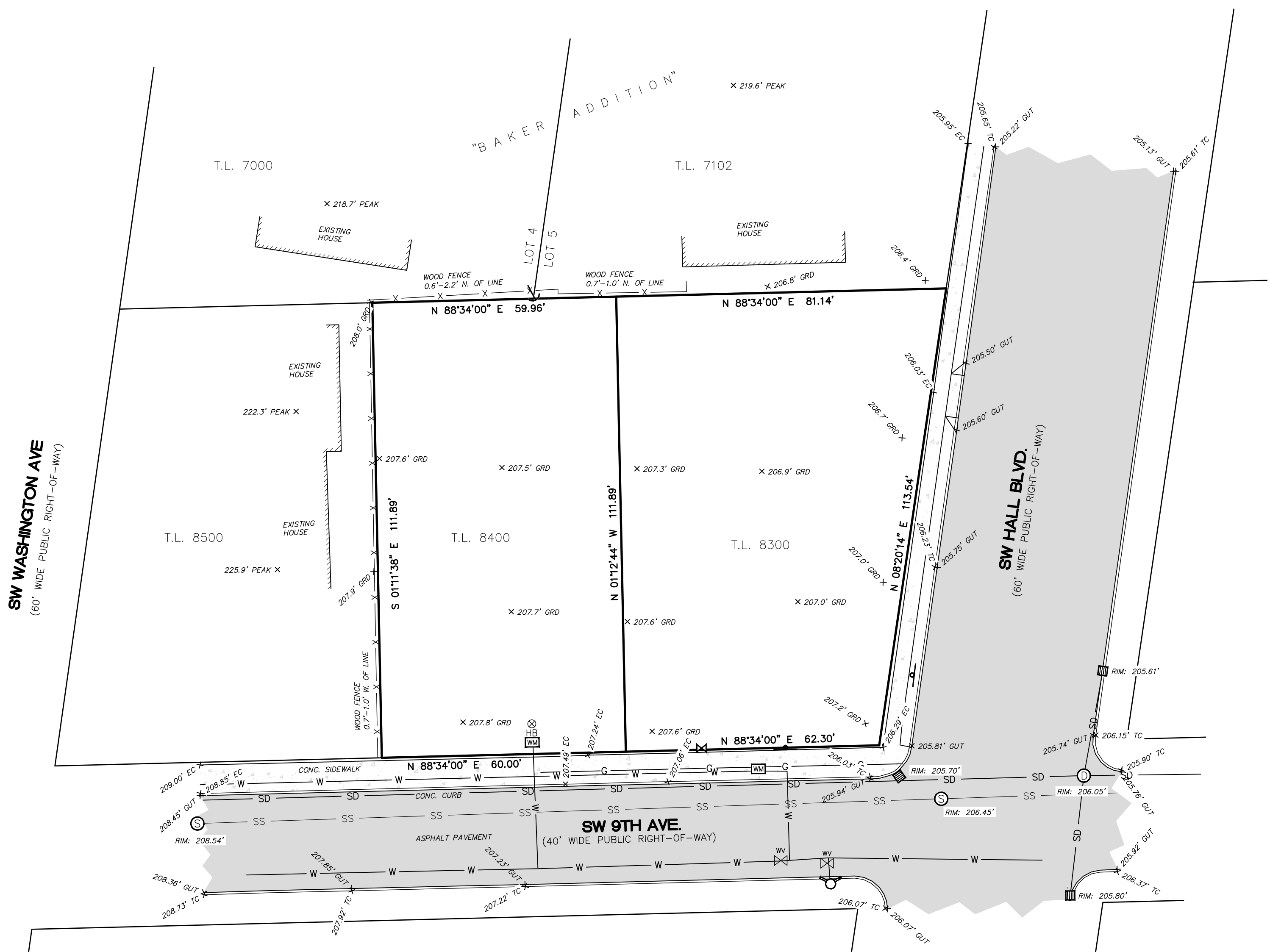
apeterson@convarc.com

www.convarc.com



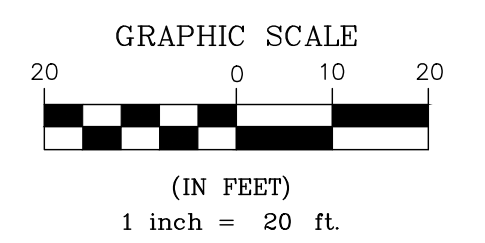
SITE SURVEY
FOR: FARZAD MORADIAN
IN THE SW 1/4 OF SECTION 15
T.1S, R.1W, W.M.
CITY OF BEAVERTON
WASHINGTON COUNTY, OREGON
TAX MAP 1S 1 15CB
MARCH 3, 2022

- NOTES:**
- ELEVATIONS ARE BASED ON WASHINGTON COUNTY BENCHMARK NO. 1934, HAVING AN ELEVATION OF 188.914 FEET.
 - THE BOUNDARIES AS SHOWN ON THIS MAP ARE BASED ON FOUND MONUMENTS, AND RECORD SURVEY AND DEED INFORMATION. THIS MAP DOES NOT REPRESENT A SURVEY TO BE RECORDED, BUT WAS DONE FOR SITE/TOPO INFORMATION ONLY.
 - THIS SURVEY IS MADE FOR THE ORIGINAL PURCHASER OF THE SURVEY ONLY. ANDY PARIS & ASSOCIATES, INC. ASSUMES NO LIABILITY FOR INFORMATION SHOWN HEREON TO ANY OTHER INSTITUTIONS OR SUBSEQUENT PURCHASERS OF THE PROPERTY.
 - SURVEY IS VALID ONLY IF PRINT HAS SEAL AND SIGNATURE OF SURVEYOR.
 - THE LOCATION AND OR EXISTENCE OF UTILITY SERVICE LINES AS SHOWN ON THIS MAP ARE BASED ON FIELD OBSERVATION ONLY. THERE MAY EXIST ADDITIONAL SERVICE LINES NOT SHOWN ON THIS SURVEY.
 - SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED OR CONSIDERED AS A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS TRACT.
 - THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY SURVEYOR. THERE MAY EXIST EASEMENTS, CONDITIONS, OR RESTRICTIONS THAT COULD AFFECT THE TITLE OF THIS PROPERTY. NO ATTEMPT HAS BEEN MADE IN THIS SURVEY TO SHOW SUCH MATTERS THAT MAY AFFECT TITLE.



LEGEND

	AREA DRAIN OR CATCH BASIN		UNDERGROUND GAS LINE
	GUY ANCHOR		UNDERGROUND STORM LINE
	HOSE BIB		UNDERGROUND SANITARY LINE
	WATER VALVE		UNDERGROUND WATER LINE
	FIRE HYDRANT		FENCE LINE AS NOTED
	IRRIGATION CONTROL BOX		GROUND SHOT - SPOT ELEVATION
	SIGN POST		EDGE OF CONCRETE - SPOT ELEVATION
	SANITARY SEWER MANHOLE		GUTTER FLOWLINE - SPOT ELEVATION
	STORM DRAIN MANHOLE		TOP OF WALL - SPOT ELEVATION
	WATER METER		FINISH FLOOR - SPOT ELEVATION
			ROOF PEAK - SPOT ELEVATION



REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
SEPTEMBER 10, 2019
BRIAN LEGGS
77667PLS
RENEWS: DEC. 31, 2022

(SINCE 1952)

ANDY PARIS AND ASSOCIATES, INC.
PROFESSIONAL LAND SURVEYORS
16057 BOONES FERRY ROAD
LAKE OSWEGO, OREGON 97035
PH: 503-636-3341
www.andyparis.com

PROJECT: 22026
DRAWING: 22026SP1.DWG
DRAFTED: AH 3/3/2022

Received
Planning Division
06/26/2023

Stormwater Management Plan
for
New Quadplex development
Located at
SW 9th Street and SW Hall Blvd in Beaverton, Oregon



RENEWS: 12/31/2024

Date:	5/30/2023
City of Beaverton #	TBD
Project Type:	Land partition and development of 3x quadplexes
Project Location:	N/W corner of SW 9 th Street and SW Hall Blvd. in Beaverton Oregon
Taxlot ID:	1S115CB08300 and 1S115CB08400
Plan Prepared By:	Cole Lathrop, PE
Designed by:	Cole Lathrop, PE
Stormwater manuals cited:	Clean Water Services Design Manual, 2019 City of Beaverton EDM 2019

Location:

N/W corner of SW 9th Street and SW Hall Blvd. in Beaverton Oregon.

Existing Conditions:

The existing site is a flat, undeveloped urban lot.

Project Description:

Proposal for 3x quadplexes with updates to the public ROW.

Soil Permeability:

Soils at the site have a Hydrologic soil class rating of C and are considered to be moderately well-draining.

Contributing Impervious Area:

The contributing impervious areas come from three taxlots. Each taxlot contains buildings and walkways. The parking areas are to be constructed using low impact development measures with pervious asphalt concrete conforming to CWS 4.09.15 standards. The Below is a summary of the impervious areas per lot and ROW:

	Building Area	Walkways	Totals
Lot 1- Private	1124.5 sq ft	448 sq ft	1572.5 sq ft
Lot 2- Private	1103.5 sq ft	348 sq ft	1451.5 sq ft
Lot 3- Private	1103.5 sq ft	419 sq ft	1522.5 sq ft
SW Hall-Public	0 sq ft	799 sq ft	799 sq ft
SW 9 th - Public	0 sq ft	1489 sq ft	1489 sq ft
Total	3331.5 sq ft	3503.0 sq ft	6834.5 sq ft

CWS Water Quantity Control

Per CWS design manual, the development is required to incorporate techniques for mitigating impacts to the public stormwater system in accordance with section 5.05 of the CWS.

All new storm system pipes have been designed for a full build-out of the 100year peak runoff rate per CWS section 5.05.1/2. See attached calculation sheets for calculations.

As part of the development, the storm sewer main in the public right of way is being upgraded to a 12" minimum line. This improves any upstream backwatering that could potentially have existed and provide enough capacity for the storm system to the downstream manhole.

CWS Hydromodification Category

Per CWS design manual 4.03.3, the development must provide a Hydromodification assessment. See below for the specific assessments for this project.

Reach Specific Risk Level. The site is located in the inner-urban area of Beaverton, Oregon with existing stormwater conveyance facilities. Based on the CWS Hydromodification Map, the existing stormwater conveyance facilities direct stormwater to Beaverton Creek, near the Beaverton Transit Center. Beaverton Creek is classified as a **low-risk reach** in this area.

Development Class. This site is located in a **developed area**, based on the CWS Hydromodification Map.

Project Size. This project has less than 12,000 square feet of impervious area, and therefore is classified as a **small project**.

Hydromodification approach category. Based on table 4-2 in CWS Design manual, this project is a **Category 1** project.

Hydromodification Management Selection

Per CWS 4.03.5.a. The three options for Hydromodification management are 1) an infiltration facility, using simplified sizing methods, 2) payment of Hydromodification Fee-In-Lieu in accordance with district Rates and Charges or 3) any option listed in Category 2 or 3.

Due to on-site site constraints, the applicant is opting to manage the Hydromodification requirements per the Fee-In-Lieu route.

Water Quality Treatment Management

Per CWS 4.04, this project will be required to manage stormwater runoff quality.

Using the CWS design standards, below is a summary of the water quality treatment requirements using 6% for simplified sizing and CWS 4.05.6.3 for standard sizing w/ City of Beaverton's EDM's modifications for storm duration. Note that SWH Hall and SW 9th are reconstructed areas and include a 3x modification factor per CWS design standard 4.08.1.d.1:

	Impervious Area	Simplified Sizing (Sq ft)	Water Quality Flow (cfs)
Lot 1- Private	1572.5 sq ft	94.35	0.004235
Lot 2- Private	1451.5 sq ft	87.09	0.003899
Lot 3- Private	1522.5 sq ft	91.35	0.004096
SW Hall-Public	2397.0 sq ft	143.82	0.006658
SW 9 th - Public	4,467.0 sq ft	268.02	0.012408
Total	11,266.5 sq ft	684.63	0.031295

The overall goal of this project is to support the City of Beaverton's Community development strategic plan, specifically Priority #2 and #3 by providing affordable housing units near the downtown area. In order to do this, the development has maximized the lot coverage while still accommodating required outdoor spaces and parking per Beaverton's development code.

The City of Beaverton's Engineering Design Manual (EDM) provides an order of precedence for SWM Facilities. Below is a summary of each option's review.

1. *Enactment and/or Expansion of Existing Public SWM Facility*
 - a. There is no known existing public SWM facility in the immediate area or downstream in the public storm sewer system of the proposed development.
2. *New Public Vegetated SWM Facility.*
 - a. The development will generate roughly 11 square feet of impervious surfacing. Using CSW's simplified sizing factor of 6%, the required treatment area for most vegetated facilities is 684.36 square feet for the entire development.
 - i. Because the lots are maximized for buildings, circulation requirements, outdoor space requirements, the development would have to eliminate or substantially reduce the parking lot footprint. Given the location of the site and limited on-street parking availability, providing parking for this site is

a priority for the development, therefore a public vegetated facility has been deemed infeasible.

3. *Private Vegetated SWM Facility*
 - a. Lots 1-3 can accommodate a flow-through planter configuration to meet CWS 4.04 quality requirements. See the grading and drainage plan for flow-through planter sizing.
4. *Private Proprietary Treatment Facility*
 - a. The private stormwater is being managed with a private vegetated facility, therefore this option was not evaluated.
5. *Street Side LIDA Swale/Planter in public ROW*
 - a. The new/reconstructed impervious on SW 9th and SW Hall can be managed with a street side planter in the public ROW.
 - i. 9th street includes many utility conflicts and is being proposed as a line facility.
 - ii. SW Hall's facility does not have a public stormwater main nearby. Given this facility is strictly for quality treatment and not hydromodification, the development is proposing to replace the standard beehive grate outlet with a CG-30 curb inlet for the overflow. Overflow water will continue to the downstream inlet located at SW 7th and SW Hall. This matches the pre-development runoff flow.

Pre-Treatment

Per CWS 4.07.1, Pre-treatment is required on all flow from impervious surfaces. For this development, discharge from roof impervious is to be conveyed by downspouts directly into planters per standard details. Discharge from concrete walkways shall flow through a catch basin w/ sump prior to entering the storm sewer conveyance system.

Stormwater Calculations for City of Beaverton Stormwater Runoff

Site Impervious

	Value	Metric	Tree Cred.	Adjusted
Total Site Area	13353.56	sq ft	N/A	4546.5 sq. ft.
Impervious Area	4546.5	sq ft	N/A	0 sq. ft.
Pervious Area	8807.06	sq ft	N/A	4546.5 sq. ft.

Time of Concentration

$$T_c = T_{t1} + T_{c2} + T_{c3} + \dots T_{cn}$$

$$T_{t1} = L/60V$$

$$L = 100 \text{ ft}$$

$$V = 7.873078 \text{ f/s}$$

$$T_{t1} = 0.211692 \text{ min}$$

$$T_{c2} = 5 \text{ min (min)}$$

$$T_c = 5.211692 \text{ min}$$

Runoff Curve Numbers- SWMM Table A-2

Impervious	98
Existing/Pervious	75
Combined	83 (weighted based on sq ft)

Infiltration Rates- Open Pit Falling Head

Measured	2 in/hr
Factor of Safety	2
Used for Calculations	1 in/hr (20 in/hr max allowable)

Design Storm- CWS table 1280

- 2.5 inches for 2 year- 24 Hour Storm
- 3.1 inches for 5 year- 24 Hour Storm
- 3.45 inches for 10 year- 24 Hour Storm
- 3.9 inches for 25 year- 24 Hour Storm
- 4.5 inches for 100 year- 24-Hour Storm

Pre Dev. Runoff Calcs- See Calculation Sheets

- 0.188 cfs - Peak runoff for 2-year storm
- 0.233 cfs - Peak runoff for 5-year storm
- 0.259 cfs - Peak runoff for 10-year storm
- 0.293 cfs - Peak runoff for 25-year storm
- 0.338 cfs- Peak runoff for 100-year storm

Post Dev. Runoff Calcs- See Calculation Sheets

- 0.21 cfs - Peak runoff for 2-year storm
- 0.26 cfs - Peak runoff for 5-year storm
- 0.29 cfs - Peak runoff for 10-year storm
- 0.32 cfs - Peak runoff for 25-year storm
- 0.37 cfs- Peak runoff for 100-year storm

3180 cf - Total discharge for 10-year 24-hour storm

4148 cf - Total discharge for 100-year 24-hour storm

Post Dev. Runoff Calcs- Per lot

	Imperv.	2-year	5-year	10-year	25-year	100-year
Lot 1	1572.5	0.072	0.089	0.099	0.112	0.129
Lot 2	1451.5	0.066	0.082	0.091	0.103	0.119
Lot 3	1522.5	0.069	0.086	0.096	0.108	0.125
Total	4546.5	0.21	0.26	0.29	0.32	0.37

Conveyance

See attached pipe sizing calculations for minimum pipe size for each site's discharge.

Pipe Information							100 year			25 year			10 year			5 year			2 year		
Inlet		Outlet		Length (FT)	Slope (%)	C (PVC)	Q (CFS)	Diameter (IN)		Q (CFS)	Diameter (IN)		Q (CFS)	Diameter (IN)		Q (CFS)	Diameter (IN)		Q (CFS)	Diameter (IN)	
Location	Elevation	Loation	Elevation					Calc	Used		Calc	Used		Calc	Used		Calc	Used		Calc	Used
Lot 1	204.3	Basin	203.000	65	2.00%	130	0.129114889	2.66	4	0.1119	2.52	4	0.098988	2.40	4	0.088946	2.31	4	0.07173	2.13	4
Lot 2	205	Basin	203.000	100	2.00%	130	0.119179817	2.58	4	0.103289	2.44	4	0.091371	2.33	4	0.082102	2.24	4	0.066211	2.06	4
Lot 3	204.3	Basin	203.000	65	2.0%	130	0.125009488	2.63	4	0.108342	2.49	4	0.095841	2.37	4	0.086118	2.28	4	0.06945	2.10	4

Stormwater Runoff Calculations
Post-Development

1380	1390	0.4	98	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.450	0.014	8.346	2045	0.012	3.038	0.017	10.35	2536	0.014	3.381	0.019	11.52	2822	0.016	3.822	0.022	13.02	3190	0.018	4.410	0.025	15.02276	3680.575
1390	1400	0.4	98.4	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.460	0.014	8.346	2053	0.012	3.050	0.017	10.35	2546	0.014	3.395	0.019	11.52	2833	0.016	3.838	0.022	13.02	3203	0.018	4.428	0.025	15.02276	3695.598
1400	1410	0.4	98.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.470	0.014	8.346	2061	0.012	3.063	0.017	10.35	2556	0.014	3.409	0.019	11.52	2845	0.016	3.853	0.022	13.02	3216	0.018	4.446	0.025	15.02276	3710.62
1410	1420	0.4	99.2	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.480	0.014	8.346	2070	0.012	3.075	0.017	10.35	2567	0.014	3.422	0.019	11.52	2856	0.016	3.869	0.022	13.02	3229	0.018	4.464	0.025	15.02276	3725.643
1420	1430	0.4	99.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.490	0.014	8.346	2078	0.012	3.088	0.017	10.35	2577	0.014	3.436	0.019	11.52	2868	0.016	3.884	0.022	13.02	3242	0.018	4.482	0.025	15.02276	3740.666
1430	1440	0.4	100	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.500	0.014	8.346	2086	0.012	3.100	0.017	10.35	2587	0.014	3.450	0.019	11.52	2879	0.016	3.900	0.022	13.02	3255	0.018	4.500	0.025	15.02276	3755.689

Stormwater Runoff Calculations
Post-Development

Type 1A Hyeotgraph				Treatment Volumes					2-year					5-year					10-year					25-year					100-year				
Start	Stop	% rainfall	% Cumulative	Incremental Rainfall	Cumulative Rainfall	Inflow (cfs)	Inflow (cf)	Cumulative	Incremental Rainfall	Cumulative Rainfall	Inflow (cfs)	Inflow (cf)	Cumulative	Incremental Rainfall	Cumulative Rainfall	Inflow (cfs)	Inflow (cf)	Cumulative	Incremental Rainfall	Cumulative Rainfall	Inflow (cfs)	Inflow (cf)	Cumulative	Incremental Rainfall	Cumulative Rainfall	Inflow (cfs)	Inflow (cf)	Cumulative					
0	10	0.4	0.4	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.010	0.015	9.217	9.217	0.012	0.012	0.019	11.43	11.43	0.014	0.014	0.021	12.72	12.72	0.016	0.016	0.024	14.38	14.38	0.018	0.018	0.028	16.5913	16.5913
10	20	0.4	0.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.020	0.015	9.217	18.43	0.012	0.025	0.019	11.43	22.86	0.014	0.028	0.021	12.72	25.44	0.016	0.031	0.024	14.38	28.76	0.018	0.036	0.028	16.5913	33.1826
20	30	0.4	1.2	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.030	0.015	9.217	27.65	0.012	0.037	0.019	11.43	34.29	0.014	0.041	0.021	12.72	38.16	0.016	0.047	0.024	14.38	43.14	0.018	0.054	0.028	16.5913	49.7789
30	40	0.4	1.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.040	0.015	9.217	36.87	0.012	0.050	0.019	11.43	45.72	0.014	0.055	0.021	12.72	50.88	0.016	0.062	0.024	14.38	57.52	0.018	0.072	0.028	16.5913	66.36519
40	50	0.4	2.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.050	0.015	9.217	46.09	0.012	0.062	0.019	11.43	57.15	0.014	0.069	0.021	12.72	63.6	0.016	0.078	0.024	14.38	71.9	0.018	0.090	0.028	16.5913	82.95649
50	60	0.4	2.4	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.060	0.015	9.217	55.3	0.012	0.074	0.019	11.43	68.58	0.014	0.083	0.021	12.72	76.32	0.016	0.094	0.024	14.38	86.27	0.018	0.108	0.028	16.5913	99.54779
60	70	0.4	2.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.070	0.015	9.217	64.52	0.012	0.087	0.019	11.43	80.01	0.014	0.097	0.021	12.72	89.04	0.016	0.109	0.024	14.38	100.7	0.018	0.126	0.028	16.5913	116.1391
70	80	0.4	3.2	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.080	0.015	9.217	73.74	0.012	0.099	0.019	11.43	91.44	0.014	0.110	0.021	12.72	101.8	0.016	0.125	0.024	14.38	115	0.018	0.144	0.028	16.5913	132.7304
80	90	0.4	3.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.090	0.015	9.217	82.96	0.012	0.112	0.019	11.43	102.9	0.014	0.124	0.021	12.72	114.5	0.016	0.140	0.024	14.38	129.4	0.018	0.162	0.028	16.5913	149.3217
90	100	0.4	4.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	0.100	0.015	9.217	92.17	0.012	0.124	0.019	11.43	114.3	0.014	0.138	0.021	12.72	127.2	0.016	0.156	0.024	14.38	143.8	0.018	0.180	0.028	16.5913	165.913
100	110	0.5	4.5	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.113	0.019	11.52	103.7	0.016	0.140	0.024	14.29	128.6	0.017	0.155	0.026	15.9	143.1	0.022	0.176	0.030	17.97	161.8	0.025	0.203	0.035	20.73912	186.6521
110	120	0.5	5.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.125	0.019	11.52	115.2	0.016	0.155	0.024	14.29	142.9	0.017	0.173	0.026	15.9	159	0.022	0.195	0.030	17.97	179.7	0.025	0.225	0.035	20.73912	207.3912
120	130	0.5	5.5	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.138	0.019	11.52	126.7	0.016	0.171	0.024	14.29	157.2	0.017	0.190	0.026	15.9	174.9	0.022	0.215	0.030	17.97	197.7	0.025	0.248	0.035	20.73912	228.1303
130	140	0.5	6.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.150	0.019	11.52	138.3	0.016	0.186	0.024	14.29	171.4	0.017	0.207	0.026	15.9	190.8	0.022	0.234	0.030	17.97	215.7	0.025	0.270	0.035	20.73912	248.8695
140	150	0.5	6.5	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.163	0.019	11.52	149.8	0.016	0.202	0.024	14.29	185.7	0.017	0.224	0.026	15.9	206.6	0.022	0.254	0.030	17.97	233.7	0.025	0.293	0.035	20.73912	269.6086
150	160	0.5	7.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	0.175	0.019	11.52	161.3	0.016	0.217	0.024	14.29	200	0.017	0.242	0.026	15.9	222.6	0.022	0.273	0.030	17.97	251.6	0.025	0.315	0.035	20.73912	290.3477
160	170	0.6	7.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.190	0.023	13.83	175.1	0.019	0.236	0.029	17.14	217.2	0.021	0.262	0.032	19.08	241.7	0.023	0.296	0.036	21.57	273.2	0.027	0.342	0.041	24.88695	315.2347
170	180	0.6	8.2	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.205	0.023	13.83	189	0.019	0.254	0.029	17.14	234.3	0.021	0.283	0.032	19.08	260.8	0.023	0.320	0.036	21.57	294.8	0.027	0.369	0.041	24.88695	340.1216
180	190	0.6	8.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.220	0.023	13.83	202.8	0.019	0.273	0.029	17.14	251.5	0.021	0.304	0.032	19.08	279.8	0.023	0.343	0.036	21.57	316.3	0.027	0.396	0.041	24.88695	365.0085
190	200	0.6	9.4	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.235	0.023	13.83	216.6	0.019	0.291	0.029	17.14	268.6	0.021	0.324	0.032	19.08	298.9	0.023	0.367	0.036	21.57	337.9	0.027	0.423	0.041	24.88695	389.8955
200	210	0.6	10.0	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.250	0.023	13.83	230.4	0.019	0.310	0.029	17.14	285.7	0.021	0.345	0.032	19.08	318	0.023	0.390	0.036	21.57	359.5	0.027	0.450	0.041	24.88695	414.7824
210	220	0.6	10.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.015	0.265	0.023	13.83	244.3	0.019	0.329	0.029	17.14	302.9	0.021	0.366	0.032	19.08	337.1	0.023	0.413	0.036	21.57	381	0.027	0.477	0.041	24.88695	439.6694
220	230	0.7	11.3	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.283	0.027	16.13	260.4	0.022	0.350	0.033	20	322.9	0.024	0.390	0.037	22.26	359.3	0.027	0.441	0.042	25.16	406.2	0.0315	0.509	0.048	29.03477	468.7042
230	240	0.7	12	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.300	0.027	16.13	276.5	0.022	0.372	0.033	20	342.9	0.024	0.414	0.037	22.26	381.6	0.027	0.468	0.042	25.16	431.4	0.0315	0.540	0.048	29.03477	497.7389
240	250	0.7	12.7	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.318	0.027	16.13	292.7	0.022	0.394	0.033	20	362.9	0.024	0.438	0.037	22.26	403.9	0.027	0.495	0.042	25.16	456.5	0.0315	0.572	0.048	29.03477	526.7737
250	260	0.7	13.4	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.335	0.027	16.13	308.8	0.022	0.415	0.033	20	382.9	0.024	0.462	0.037	22.26	426.1	0.027	0.523	0.042	25.16	481.7	0.0315	0.603	0.048	29.03477	555.8085
260	270	0.7	14.1	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.353	0.027	16.13	324.9	0.022	0.437	0.033	20	402.9	0.024	0.486	0.037	22.26	448.4	0.027	0.550	0.042	25.16	506.9	0.0315	0.635	0.048	29.03477	584.8432
270	280	0.7	14.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	0.370	0.027	16.13	341	0.022	0.459	0.033	20	422.9	0.024	0.511	0.037	22.26	470.6	0.027	0.577	0.042	25.16	532	0.0315	0.666	0.048	29.03477	613.8778
280	290	0.82	15.62	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.391	0.031	18.9	359.9	0.025	0.484	0.039	23.43	446.3	0.028	0.539	0.043	26.08	496.7	0.032	0.609	0.049	29.48	561.5	0.0369	0.707	0.057	34.01216	647.8902
290	300	0.82	16.44	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.411	0.031	18.9	378.8	0.025	0.510	0.039	23.43	469.8	0.028	0.567	0.043	26.08	522.8	0.032	0.641	0.049	29.48	591	0.0369	0.740	0.057	34.01216	681.9023
300	310	0.82	17.26	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.432	0.031	18.9	397.7	0.025	0.535	0.039	23.43	493.2	0.028	0.595	0.043	26.08	548.9	0.032	0.673	0.049	29.48	620.5	0.0369	0.777	0.057	34.01216	715.9145
310	320	0.82	18.08	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.452	0.031	18.9	416.6	0.025	0.560	0.039	23.43	516.6	0.028	0.624	0.043	26.08	574.9	0.032	0.705	0.049	29.48	649.9	0.0369	0.814	0.057	34.01216	749.9266
320	330	0.82	18.9	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.473	0.031	18.9	435.5	0.025	0.586	0.039	23.43	540	0.028	0.652	0.043	26.08	601	0.032	0.737	0.049	29.48	679.4	0.0369	0.851	0.057	34.01216	783.9388
330	340	0.82	19.72	#REF!	#REF!	#REF!	#REF!	#REF!	0.021	0.493	0.031	18.9	454.4	0.025	0.611	0.039	23.43	563.5	0.028	0.680	0.043	26.08	627.1	0.032	0.769	0.049	29.48	708.9	0.0369	0.887	0.057	34.01216	817.951
340	350	0.95	20.67	#REF!	#REF!	#REF!	#REF!	#REF!	0.024	0.517	0.036	21.89	478.3	0.029	0.641	0.045	27.15	590.6	0.033	0.713	0.050	30.21	657.3	0.037	0.806	0.057	34.15	743	0.04275	0.930	0.066	39.40433	857.3553
350	360	0.95	21.62	#REF!	#REF!	#REF!	#REF!	#REF!	0.024	0.541	0.036	21.89	498.2	0.029	0.670	0.045	27.15	617.8	0.033	0.746	0.050	30.21	687.5	0.037	0.843	0.057	34.15	777.2	0.04275	0.973	0.066	39.40433	896.7596
360	370	0.95	22.57	#REF!	#REF!	#REF!	#REF!	#REF!	0.024	0.564	0.036	21.89	520.1	0.029	0.700	0.045	27.15	644.9	0.033	0.779	0.050	30.21	717.7	0.037	0.880	0.057	34.15	811.3	0.04275	1.016	0.066	39.40433	936.164
370	380	0																															

Stormwater Runoff Calculations
Post-Development

670	680	0.72	63.8	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.595	0.028	16.59	1470	0.022	1.978	0.034	20.57	1823	0.025	2.201	0.038	22.9	2029	0.028	2.488	0.043	25.88	2293	0.0324	2.871	0.050	29.86434	2646.312
680	690	0.72	64.52	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.613	0.028	16.59	1487	0.022	2.000	0.034	20.57	1844	0.025	2.226	0.038	22.9	2052	0.028	2.516	0.043	25.88	2319	0.0324	2.903	0.050	29.86434	2676.176
690	700	0.72	65.24	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.631	0.028	16.59	1503	0.022	2.022	0.034	20.57	1864	0.025	2.251	0.038	22.9	2075	0.028	2.544	0.043	25.88	2345	0.0324	2.936	0.050	29.86434	2706.041
700	710	0.72	65.96	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.649	0.028	16.59	1520	0.022	2.045	0.034	20.57	1885	0.025	2.276	0.038	22.9	2098	0.028	2.572	0.043	25.88	2371	0.0324	2.968	0.050	29.86434	2735.905
710	720	0.72	66.68	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.667	0.028	16.59	1537	0.022	2.067	0.034	20.57	1905	0.025	2.300	0.038	22.9	2120	0.028	2.601	0.043	25.88	2397	0.0324	3.001	0.050	29.86434	2765.769
720	730	0.72	67.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.685	0.028	16.59	1553	0.022	2.089	0.034	20.57	1926	0.025	2.325	0.038	22.9	2143	0.028	2.629	0.043	25.88	2423	0.0324	3.033	0.050	29.86434	2795.634
730	740	0.72	68.12	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.703	0.028	16.59	1570	0.022	2.112	0.034	20.57	1946	0.025	2.350	0.038	22.9	2166	0.028	2.657	0.043	25.88	2449	0.0324	3.065	0.050	29.86434	2825.498
740	750	0.72	68.84	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.721	0.028	16.59	1586	0.022	2.134	0.034	20.57	1967	0.025	2.375	0.038	22.9	2189	0.028	2.685	0.043	25.88	2475	0.0324	3.098	0.050	29.86434	2855.362
750	760	0.72	69.56	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.018	1.739	0.028	16.59	1603	0.022	2.156	0.034	20.57	1988	0.025	2.400	0.038	22.9	2212	0.028	2.713	0.043	25.88	2501	0.0324	3.130	0.050	29.86434	2885.226
760	770	0.57	70.13	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.753	0.022	13.13	1616	0.018	2.174	0.027	16.29	2004	0.02	2.419	0.030	18.13	2230	0.022	2.735	0.034	20.49	2521	0.02565	3.156	0.039	23.6426	2908.879
770	780	0.57	70.7	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.768	0.022	13.13	1629	0.018	2.192	0.027	16.29	2020	0.02	2.439	0.030	18.13	2248	0.022	2.757	0.034	20.49	2542	0.02565	3.182	0.039	23.6426	2932.512
780	790	0.57	71.27	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.782	0.022	13.13	1642	0.018	2.209	0.027	16.29	2036	0.02	2.459	0.030	18.13	2266	0.022	2.780	0.034	20.49	2562	0.02565	3.207	0.039	23.6426	2956.154
790	800	0.57	71.84	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.796	0.022	13.13	1655	0.018	2.227	0.027	16.29	2053	0.02	2.478	0.030	18.13	2285	0.022	2.802	0.034	20.49	2582	0.02565	3.233	0.039	23.6426	2979.797
800	810	0.57	72.41	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.810	0.022	13.13	1669	0.018	2.245	0.027	16.29	2069	0.02	2.498	0.030	18.13	2303	0.022	2.824	0.034	20.49	2603	0.02565	3.258	0.039	23.6426	3003.44
810	820	0.57	72.98	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.825	0.022	13.13	1682	0.018	2.262	0.027	16.29	2085	0.02	2.518	0.030	18.13	2321	0.022	2.846	0.034	20.49	2623	0.02565	3.284	0.039	23.6426	3027.082
820	830	0.57	73.55	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.839	0.022	13.13	1695	0.018	2.280	0.027	16.29	2102	0.02	2.537	0.030	18.13	2339	0.022	2.868	0.034	20.49	2644	0.02565	3.310	0.039	23.6426	3050.725
830	840	0.57	74.12	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.853	0.022	13.13	1708	0.018	2.298	0.027	16.29	2118	0.02	2.557	0.030	18.13	2357	0.022	2.891	0.034	20.49	2664	0.02565	3.335	0.039	23.6426	3074.367
840	850	0.57	74.69	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.867	0.022	13.13	1721	0.018	2.315	0.027	16.29	2134	0.02	2.577	0.030	18.13	2375	0.022	2.913	0.034	20.49	2685	0.02565	3.361	0.039	23.6426	3098.01
850	860	0.57	75.26	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.882	0.022	13.13	1734	0.018	2.333	0.027	16.29	2150	0.02	2.596	0.030	18.13	2393	0.022	2.935	0.034	20.49	2705	0.02565	3.387	0.039	23.6426	3121.653
860	870	0.57	75.83	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.896	0.022	13.13	1747	0.018	2.351	0.027	16.29	2167	0.02	2.616	0.030	18.13	2411	0.022	2.957	0.034	20.49	2726	0.02565	3.412	0.039	23.6426	3145.295
870	880	0.57	76.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.014	1.910	0.022	13.13	1761	0.018	2.368	0.027	16.29	2183	0.02	2.636	0.030	18.13	2430	0.022	2.980	0.034	20.49	2746	0.02565	3.438	0.039	23.6426	3168.938
880	890	0.57	76.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.923	0.019	11.52	1772	0.016	2.384	0.024	14.29	2197	0.017	2.653	0.026	15.9	2445	0.02	2.999	0.030	17.97	2764	0.0225	3.461	0.035	20.73912	3189.677
890	900	0.5	77.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.935	0.019	11.52	1784	0.016	2.399	0.024	14.29	2212	0.017	2.670	0.026	15.9	2461	0.02	3.019	0.030	17.97	2782	0.0225	3.483	0.035	20.73912	3210.416
900	910	0.5	77.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.948	0.019	11.52	1795	0.016	2.415	0.024	14.29	2226	0.017	2.688	0.026	15.9	2477	0.02	3.038	0.030	17.97	2800	0.0225	3.506	0.035	20.73912	3231.155
910	920	0.5	78.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.960	0.019	11.52	1807	0.016	2.430	0.024	14.29	2240	0.017	2.705	0.026	15.9	2493	0.02	3.058	0.030	17.97	2818	0.0225	3.528	0.035	20.73912	3251.894
920	930	0.5	78.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.973	0.019	11.52	1818	0.016	2.446	0.024	14.29	2254	0.017	2.722	0.026	15.9	2509	0.02	3.077	0.030	17.97	2836	0.0225	3.551	0.035	20.73912	3272.633
930	940	0.5	79.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.985	0.019	11.52	1830	0.016	2.461	0.024	14.29	2269	0.017	2.739	0.026	15.9	2525	0.02	3.097	0.030	17.97	2854	0.0225	3.573	0.035	20.73912	3293.373
940	950	0.5	79.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	1.998	0.019	11.52	1841	0.016	2.477	0.024	14.29	2283	0.017	2.757	0.026	15.9	2541	0.02	3.116	0.030	17.97	2872	0.0225	3.596	0.035	20.73912	3314.112
950	960	0.5	80.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	2.010	0.019	11.52	1853	0.016	2.492	0.024	14.29	2297	0.017	2.774	0.026	15.9	2557	0.02	3.136	0.030	17.97	2890	0.0225	3.618	0.035	20.73912	3334.851
960	970	0.5	80.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	2.023	0.019	11.52	1864	0.016	2.508	0.024	14.29	2312	0.017	2.791	0.026	15.9	2573	0.02	3.155	0.030	17.97	2908	0.0225	3.641	0.035	20.73912	3355.59
970	980	0.5	81.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	2.035	0.019	11.52	1876	0.016	2.523	0.024	14.29	2326	0.017	2.808	0.026	15.9	2589	0.02	3.175	0.030	17.97	2926	0.0225	3.663	0.035	20.73912	3376.329
980	990	0.5	81.9	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	2.048	0.019	11.52	1887	0.016	2.539	0.024	14.29	2340	0.017	2.826	0.026	15.9	2604	0.02	3.194	0.030	17.97	2944	0.0225	3.686	0.035	20.73912	3397.068
990	1000	0.5	82.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.013	2.060	0.019	11.52	1899	0.016	2.554	0.024	14.29	2354	0.017	2.843	0.026	15.9	2620	0.02	3.214	0.030	17.97	2962	0.0225	3.708	0.035	20.73912	3417.807
1000	1010	0.4	82.8	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.070	0.015	9.217	1908	0.012	2.567	0.019	11.43	2366	0.014	2.857	0.021	12.72	2633	0.016	3.229	0.024	14.38	2976	0.018	3.726	0.028	16.5913	3434.399
1010	1020	0.4	83.2	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.080	0.015	9.217	1917	0.012	2.579	0.019	11.43	2377	0.014	2.870	0.021	12.72	2646	0.016	3.245	0.024	14.38	2991	0.018	3.744	0.028	16.5913	3450.99
1020	1030	0.4	83.6	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.090	0.015	9.217	1926	0.012	2.592	0.019	11.43	2389	0.014	2.884	0.021	12.72	2658	0.016	3.260	0.024	14.38	3005	0.018	3.762	0.028	16.5913	3467.581
1030	1040	0.4	84	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.100	0.015	9.217	1936	0.012	2.604	0.019	11.43	2400	0.014	2.898	0.021	12.72	2671	0.016	3.276	0.024	14.38	3020	0.018	3.780	0.028	16.5913	3484.172
1040	1050	0.4	84.4	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.110	0.015	9.217	1945	0.012	2.616	0.019	11.43	2412	0.014	2.912	0.021	12.72											

Stormwater Runoff Calculations
Post-Development

1400	1410	0.4	98.8	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.470	0.015	9.217	2277	0.012	3.063	0.019	11.43	2823	0.014	3.409	0.021	12.72	3142	0.016	3.853	0.024	14.38	3552	0.018	4.446	0.028	16.5913	4098.05
1410	1420	0.4	99.2	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.480	0.015	9.217	2286	0.012	3.075	0.019	11.43	2835	0.014	3.422	0.021	12.72	3155	0.016	3.869	0.024	14.38	3566	0.018	4.464	0.028	16.5913	4114.642
1420	1430	0.4	99.6	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.490	0.015	9.217	2295	0.012	3.088	0.019	11.43	2846	0.014	3.436	0.021	12.72	3167	0.016	3.884	0.024	14.38	3580	0.018	4.482	0.028	16.5913	4131.233
1430	1440	0.4	100	#REF!	#REF!	#REF!	#REF!	#REF!	0.01	2.500	0.015	9.217	2304	0.012	3.100	0.019	11.43	2857	0.014	3.450	0.021	12.72	3180	0.016	3.900	0.024	14.38	3595	0.018	4.500	0.028	16.5913	4147.824