



## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

### CITY COUNCIL

January 11, 2022

Virtual Meeting • [www.redmondoregon.gov/CityCouncilLive](http://www.redmondoregon.gov/CityCouncilLive)

#### COUNCIL MEMBERS

George Endicott  
*Mayor*

Jay Patrick  
*Council President*

Krisanna  
Clark-Endicott  
*Councilor*

Clifford Evelyn  
*Councilor*

Ed Fitch  
*Councilor*

Shannon Wedding  
*Councilor*

Cat Zwicker  
*Councilor*

**JANUARY 11, 2022**

**REGULAR MEETING AGENDA**

**6:00 PM**

**I. CALL TO ORDER / ESTABLISH A QUORUM**

**II. BLESSING - Father Todd Unger, St Thomas Catholic Church**

**III. PLEDGE OF ALLEGIANCE**

**IV. COMMENTS FROM CITIZENS AT THE MEETING**

**V. CONSENT AGENDA**

- A. Minutes of November 9, 2021, Council Meeting
- B. Resolution #2022-01: A resolution of the City of Redmond declaring certain City property to be surplus. (Umatilla Park Playground Equipment)

**VI. PROCLAMATIONS**

- A. School Choice Week

**VII. FUTURE AGENDA TOPICS**

- A. Discontinuation of Future Agenda Topics (Clark-Endicott)

**VIII. BID AWARDS / BID REJECTIONS**

- A. Purchase of Replacement Playground Equipment at Umatilla Park (PK2201); \$130,000
- B. Highway 126 Sidewalk Project (TR2004): \$205,642.67

**IX. PUBLIC HEARINGS**

- A. Ordinance #2021-11: An ordinance approving a Master Development Plan, Tentative Subdivision, and Cottage Development compliant with the 2040 Greater Redmond Area Comprehensive Plan and Zone Map. (Canyon Trails)
- B. Ordinance #2021-12: An Ordinance to amend the Redmond Sites of Historical Interest Inventory in the City of Redmond Historic Preservation Plan (McCaffery House).
- C. Deschutes Public Library Land Deed

**X. ACTION ITEMS**

- A. Resolution #2021-35: A resolution declaring certain territory as being annexed to and incorporated within the City of Redmond.
- B. Resolution #2021-36: A Resolution requesting the transfer of County Right-of-Way from Deschutes County to the City of Redmond.

**XI. MAYOR'S COMMENTS**

**XII. COUNCIL COMMENTS**

**XIII. CITY MANAGER COMMENTS**

**XIV. ADDITIONAL COMMENTS FROM CITIZENS AT THE MEETING**

**XV. ADJOURN**

Regular Council meetings are broadcast live on COTV11 – BendBroadband Channel 11 beginning at 6:00 p.m. on the 2<sup>nd</sup> and 4<sup>th</sup> Tuesdays of each month. Rebroadcasts are scheduled for the non-meeting Tuesdays at 6:00 p.m.

The City of Redmond encourages all citizens to participate in its programs and activities. This meeting location is accessible to people with disabilities. Requests for accommodation may include sign language interpreter service, assistive listening devices, materials in an alternate format or any other accommodation. If any accommodations are needed, please contact the ADA Coordinator at 541-504-3036 or [access@redmondoregon.gov](mailto:access@redmondoregon.gov). Requests should be made as soon as possible, but at least 3 business days prior to the scheduled meeting.

The City of Redmond does not discriminate on the basis of disability status in the admission or access to, or treatment, or employment in, its programs or activities



REGULAR CITY COUNCIL MEETING OF THE CITY OF REDMOND WAS HELD NOVEMBER 9, 2021, VIA GOTOMEETING.

**COUNCIL MEMBERS PRESENT:** Krisanna Clark-Endicott – George Endicott – Clifford Evelyn – Ed Fitch – Jay Patrick – Shannon Wedding

**COUNCIL MEMBERS EXCUSED:** Jon Bullock

**STAFF PRESENT:** City Manager Keith Witcosky – City Attorney Keith Leitz – Airport Director Zachary Bass – Police Chief Dave Tarbet – Public Works Director Bill Duerden – City Recorder Kelly Morse – Deputy City Manager John Roberts – IT Manager Matt Hayes – Chief Financial Officer Jason Neff – Accounting and Financial Reporting Director Brooks Slyter – Communications Director Heather Cassaro

**MEDIA PRESENT:** None

**CALL TO ORDER / ESTABLISH A QUORUM**

Mayor Endicott calls the meeting to order at 7:12 p.m. A quorum is established.

**PLEDGE OF ALLEGIANCE**

Councilor Patrick led the Pledge of Allegiance.

**COMMENTS FROM CITIZENS AT THE MEETING**

Mayor Endicott noted a letter on homelessness was received from Edward Kimball.

**CONSENT AGENDA**

**A. Minutes of October 26, 2021, Council Meeting**

Councilor Patrick moved, seconded by Councilor Clark-Endicott, to approve the Consent Agenda as presented, motion passed. (Clark-Endicott-yes, Endicott-yes, Evelyn-yes, Fitch-yes, Patrick-yes, Wedding-yes)

**ACTION ITEMS**

**A. City/County Wetlands Complex Memorandum of Understanding**

Councilor Fitch moves, seconded by Councilor Patrick, to approve the Memorandum of Understanding and authorize the City to execute the same, motion passed. (Clark-Endicott-yes, Endicott-yes, Evelyn-yes, Fitch-yes, Patrick-yes, Wedding-yes)

**MAYOR'S COMMENTS**

**Mayor Endicott** addressed Councilor Bullock's letter of resignation effective today. Mayor Endicott will work on an application process for appointing a replacement. The application window for those interested in joining City Council will be November 15<sup>th</sup> to the 30<sup>th</sup>.

**COUNCIL COMMENTS**

- A. Councilor Bullock's Written Comments**
- B. Councilor Fitch's Written Comments**

**Councilor Fitch** provided an update on the recent Chamber of Commerce board meeting noting they want to avoid the culture wars on both the left and the right, so no flags will be allowed from either side. Everything regarding the Christmas Starlight Parade must be oriented toward Christmas and the Fourth of July parade must honor the United States, not anything else. If there are problems in the future, the police department will assist the Chamber in enforcing those rules and asking anyone violating them to

leave the parade. Councilor Fitch also stated he believes it is time for the Council to meet in person. Mayor Endicott agreed Council should meet in person to the extent possible.

**Councilor Evelyn** stated he thought the issues raised at a prior meeting regarding downtown street closures had been straightened out, but suggested the Council review existing policies, procedures, and rules since Redmond continues to grow. He also noted many owners with businesses located just before Black Butte Boulevard feel left out and not involved in events that are going on, which causes them to lose potential revenue.

City Manager Witcosky reminded Council about the forum in September and noted Staff is following up with stakeholders and businesses to get a sense of what they want and will bring back some real data to Council in January/February of 2022.

**Councilor Clark-Endicott** reported on the recent Central Oregon Area Commission on Transportation meeting she attended then shared detail of the Infrastructure Investment and Jobs Act presentation given by Oregon Department of Transportation (ODOT) Assistant Director of Revenue, Finance and Compliance Travis Brouwer.

Mr. Witcosky stated the City had been working with ODOT on the South Highway 97 project and has the Urban Renewal Area in place. The project is a priority for both the City and ODOT and would likely be the easiest project to receive federal funding. The Airport has also been working with staff and elected officials at the federal level to obtain funding for the new airport terminal expansion. The project will require \$90-\$200 million from the federal government in order to move forward.

In response to questions from Councilor Clark-Endicott regarding letters from citizens on the new Quartz Park design changes, Mr. Witcosky explained that staff has already responded to the residents noting the Parks Committee will determine where the amenities will be located. Mayor Endicott asked that the Parks Committee review the amenities through the Parks Master Plan and whether that area on the south side of Quartz Avenue was supposed to be designated a natural area or an improved area. Because of the concerns raised by Councilor Fitch on having certain amenities across the street, the Council agreed to move them to the north side of Quartz Avenue. Mayor Endicott stated those amenities are going away and that is not what the Council agreed to.

**Councilor Patrick** noted if ODOT receives increased funding, perhaps they could build the Quarry interchange. Mr. Witcosky explained the interchange project is not far enough along to be competitive right now.

#### **CITY MANAGER COMMENTS**

**City Manager Keith Witcosky** provided updates regarding the mural on the Farmers Insurance building and the work FFA is doing with the police department and others on features and amenities of the new Public Safety Facility. A formal update will take place in January or February. Although costs are increasing, FFA is confident with the estimate of \$25 million to \$30 million. Next week, Staff will review the Five-Year Capital Improvement Plan in detail, informing Council about cost increases on some larger capital projects and the materials driving those increases.

#### **ADDITIONAL COMMENTS FROM CITIZENS AT THE MEETING**

Kurtis Haines addressed the Council as a disheartened citizen due to recent events at a local business during the Downtown Trick-or-Treat event. Trend Kill Body Piercing forced families to shout, "Let's go, Brandon", a right-wing catchphrase used to disrespect President Joe Biden before they would hand out candy to the crowd. Mr. Haines opined Redmond has an opportunity to show who they are and that everyone is welcome. Redmond's citizens are watching and deciding where they want to live and spend their money. He recalled a similar incident at the Fourth of July parade with a Confederate flag being flown. He emphasized that these happenings do not send a message of acceptance and hopes the

DRAFT

Council will speak out, on behalf of their citizens, against these actions that do not represent who Redmond is.

There being no further business, the meeting is adjourned at 7:32 p.m.

Prepared by ABC Transcription Service and reviewed by Kelly Morse, City Recorder

APPROVED by the City Council and SIGNED by the Mayor this 11<sup>th</sup> day of January 2022.

\_\_\_\_\_  
George Endicott, Mayor

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder



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# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** City Council  
Keith Witcosky, City Manager  
**THROUGH:** John Roberts, Deputy City Manager  
Bill Duerden, Public Works Director  
**FROM:** Maria Ramirez, Parks Planner and Project Manager  
**SUBJECT:** Resolution #2022-01: A resolution of the City of Redmond declaring certain City property to be surplus.  
(Umatilla Park Playground Equipment)

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### Addresses Council Goal:

Goal # 3 A: Endeavor to adequately maintain the City's roads, utility infrastructure, parks and pedestrian/bicycle infrastructure.

### Report in Brief:

This item requests City Council declare certain property as surplus and seeks authorization to dispose of it through public auction or other means that is in the best interest of the City.

### Background:

Redmond City Code allows for a process to surplus unneeded City equipment. Items valued at more than \$1,000 requires official authorization from City Council.

### City Code Section 2.420 – Surplus Property states:

The City Manager shall have the authority to dispose of surplus property by any means determined to be in the best interest of the City, including but not limited to, transfer to other departments, government agencies, non-profit organizations, sale, trade, auction, or destruction, provided however that disposal of personal property having a residual value of more than \$1,000 shall be subject to authorization by resolution by the City Council.

### Discussion:

The playground equipment at Umatilla Park was installed in 2003. It has become outdated and will be replaced by modern play equipment as part of the City's \$250,000 investment to update the park. However, the existing equipment may be of value to residents or entities serving children and will be sold by public auction through the auction site GovDeals.com.

| <u>Item</u>                                   | <u>City Asset #</u> | <u>Estimated Value</u> |
|-----------------------------------------------|---------------------|------------------------|
| Playground equipment located at Umatilla Park | #342-000            | \$1,000                |

### Fiscal Impact:

There will be no additional cost associated with declaring this equipment as surplus. Proceeds from the sale of the equipment will be recorded as revenue within the Parks & Facilities Fund.

### Alternative Courses of Action:

1. Declare the playground equipment surplus.
2. Do not declare the playground equipment surplus.
3. Request additional information.

### Recommendation / Suggested Motion:

"I move to adopt Resolution #2022-01."

**CITY OF REDMOND  
RESOLUTION NO. 2022-01**

**A RESOLUTION OF THE CITY OF REDMOND DECLARING CERTAIN CITY  
PROPERTY TO BE SURPLUS.**

**WHEREAS**, certain property of the City of Redmond is beyond its service life; and

**WHEREAS**, certain City of Redmond property needs to be disposed of accordingly.

**THEREFORE**, be it resolved that such City of Redmond Property listed below shall be declared surplus and disposed of in the most judicious manner.

- Playground equipment located at Umatilla Park, City Asset #342-000

**SECTION ONE.** The City Council finds that it is in the best interest of the City to enact this resolution immediately upon passage of this resolution; and therefore, this resolution shall be effective upon the date of passage.

**ADOPTED** by the City Council and **SIGNED** by the Mayor this 11<sup>th</sup> day of January 2022.

\_\_\_\_\_  
George Endicott, Mayor

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder

# City of Redmond PROCLAMATION

**A proclamation designating January 23 – January 29, 2022, as**

## **SCHOOL CHOICE WEEK**

**WHEREAS**, all children in Redmond should have access to the highest quality education possible; and

**WHEREAS**, the City of Redmond recognizes the important role that an effective education plays in preparing all students in Redmond to be successful adults; and

**WHEREAS**, quality education is critically important to the economic vitality of Redmond; and

**WHEREAS**, Redmond is home to a multitude of high quality public and nonpublic schools from which parents can choose for their children, in addition to families who educate their children in the home; and

**WHEREAS**, educational variety not only helps to diversify our economy, but also enhances the vibrancy of our community; and

**WHEREAS**, Redmond has many high-quality teaching professionals in all types of school settings who are committed to educating our children; and

**WHEREAS**, School Choice Week is celebrated across the country by millions of students, parents, educators, schools and organizations to raise awareness of the need for effective educational options.

**NOW, THEREFORE BE IT RESOLVED THAT** City Council hereby proclaims the week of January 23 – January 29, 2022, to be **SCHOOL CHOICE WEEK** in the City of Redmond.

**APPROVED** by the City Council and **SIGNED** by the Mayor this 11<sup>th</sup> day of January 2022.

The City of Redmond, Oregon

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George Endicott, Mayor

ATTEST:

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Kelly Morse, City Recorder



**CITY OF REDMOND**  
Redmond City Council

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Redmond, OR 97756

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**FUTURE AGENDA ITEM TEMPLATE**  
**(TO BE FILLED OUT BY CITY COUNCIL MEMBERS)**

**City Council Member:** Krisanna Clark-Endicott

**Topic:** Future Agenda Item Discussion

**Purpose of Item:** Determine need for "Future Agenda Item" monthly discussion.

**Objectives:**

Discontinuation of "Future Agenda Topics" submission and consideration by individual councilors.

The Council has been holding "Future Agenda Topics" discussions the first work session of every month for several months as originally proposed as a way for Councilors to bring up issues they would individually like the Council to discuss/address.

My initial concern is that these items take staff time to prepare and research, taking them away from Council Goals and Objectives that the Council, as a majority body, has already approved for action.

Secondly, in every case so far, every "Future Agenda Topic" has failed by a majority vote of the council and has not resulted in the addition of any agenda item.

Thirdly, the previous process of a Councilor adding an agenda item was already established under "Mayor's Functions at Council Meetings" in accordance with our Charter, Chapter IV, Section 17, which reads "He or She shall have the authority to preserve order, enforce the rules of the Council and determine the order of business under the rules of the Council.". With this process, Councilors that would like a future agenda topic placed on a future agenda need only to discuss their topic with the Mayor and receive agreement from him/her to have their topic placed on the agenda. So far, none of the Councilors that have proposed a "Future Agenda Topic" have approached the Mayor to ask for the proposed item to be placed on the Council agenda, even though the Council agreed that this is the preferred method of placing items on a future agenda, as the Mayor has the authority to do so.

Finally, each Councilor has an opportunity to present items during their respective "Council Comments" section on the agenda at each regular Council meeting. I am proposing that we vote to do away with the "Future Agenda Topics" process as it has never achieved any action other than to create busy work for staff.

**Requested Worksession Month:** Jan, 2022



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**DATE:** January 11, 2022  
**TO:** City Council  
Keith Witcosky, City Manager  
**THROUGH:** John Roberts, Deputy City Manager  
Bill Duerden, Public Works Director  
**FROM:** Maria Ramirez, Parks Planner and Project Manager  
**SUBJECT:** Purchase of Replacement Playground Equipment at Umatilla Park (PK2201); \$130,000

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### Addresses Council Goal:

Goal # 3 A: Endeavor to adequately maintain the City's roads, utility infrastructure, parks and pedestrian/bicycle infrastructure.

### Report in Brief:

The Parks Division requests City Council approval to enter into a contract in the not to exceed amount of \$130,000 with Ross Recreation Equipment, Inc. for the purchase and installation of playground equipment at Umatilla Park.

### Background:

Redmond's parks system offers a variety of facilities and play equipment that require regular re-investment and repair to maintain safe and accessible open spaces. Umatilla Park was originally built in 1990 and has since received a series of upgrades to include the installation of play equipment in 2003.

Since installation, residential and community users have grown around the area, increasing the demand for the current play equipment. The equipment has served the community well over the last 18 years, but issues with accessibility, increased maintenance requirements, and increased pressure on the system have resulted in a need for replacement.

### Discussion:

The removal and replacement of the existing Umatilla Park playground equipment located at 3000 SW Umatilla Avenue is identified as a priority project in the City's Americans with Disabilities Act (ADA) Transition Plan and the Parks Master Plan. This is due to barriers to handicap access in the play area as well as the age and physical condition of the play equipment.

The City requested design proposals from four playground designers and received a total of eight design alternatives. The preferred design selected by the Parks Committee was provided by Ross Recreation with a purchase and installation cost of \$117,366 (see attached quote). A not to exceed amount of \$130,000 is established for the contract to allow for the possibility of unfavorable site conditions.

The contract with Ross Recreation will be made through an interstate cooperative procurement agreement administered by NPPGov per ORS 279A.220. This mechanism provides competitive pricing established through national solicitations performed in compliance with Oregon public contracting provisions and results in a savings of five percent off material list price. A notice of intent to establish a contract through an interstate cooperative procurement was published on December 31, 2021. Vendors were given seven days to submit comments.

The total budget for the Umatilla Park Project is \$250,000. The contract with Ross Recreation is limited to the purchase and installation of the play equipment. The remainder of the park upgrades to implement ADA ramps and walking paths will be completed through separate procurement processes.

### Fiscal Impact:

Funding for the Umatilla Park Renovation Project is included in the Fiscal Year 2021/2022 budget from Parks System



Development Charges (see attached). The total project cost is estimated at \$250,000, of which a not-to-exceed amount of \$130,000 is associated with this City Council action.

**Alternative Courses of Action:**

1. Authorize the City Manager to enter into a contract with Ross Recreation Equipment, Inc.
2. Do not authorize the contract.
3. Request additional information.

**Recommendation / Suggested Motion:**

"I move to authorize the City Manager to enter into a contract with Ross Recreation Equipment, Inc. for the purchase and installation of playground equipment in the not to exceed amount of \$130,000.00."



**National  
Purchasing  
Partners  
Government**

ALL PURCHASE ORDERS, CONTRACTS, AND  
CHECKS TO BE MADE OUT TO:  
**Ross Recreation Equipment, Inc.**  
100 Brush Creek Road, #206  
Santa Rosa, CA. 95404  
707.538.3800 - accounting@rossrec.com

PS21070

## Prepared For:

|                  |                                                             |                |                                                             |
|------------------|-------------------------------------------------------------|----------------|-------------------------------------------------------------|
| Contact Name     | Maria Ramirez                                               | Phone          | (541) 504-2010                                              |
| Bill To Name     | City of Redmond                                             | Ship To Name   | City of Redmond                                             |
| Bill To          | 411 SW 9th Street<br>Redmond, Oregon 97756<br>United States | Ship To        | 243 E. Antler Ave<br>Redmond, Oregon 97756<br>United States |
| Quote Number     | 00037005                                                    | Quote Date     | 12/29/2021                                                  |
| Opportunity Name | Umatilla Park Playground                                    | Quote Exp Date | 1/28/2022                                                   |
| Quote Name       | Umatilla Park Playground - NPP                              | Est Lead Time  | 6-8 weeks                                                   |

| Quantity | Product           | Product Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sales Price | Total Price |
|----------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| 1.00     | Bond              | Bond - Standard 3% on total project amount including tax and freight.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | \$3,352.00  | \$3,352.00  |
| 1.00     | Installation      | <p>Installation of Landscape Structures Design #1159391-1-2 by a manufacturer certified installer. Pricing includes install, travel time, out of town expenses, and prevailing wages</p> <p>Pricing does not include offload / receiving, site work, curbing, or temporary fencing.</p> <p>*Project DIR # needed for State Prevailing Wage projects.</p> <p>**Installation price quoted for favorable working conditions. If rock, poor soil conditions, a high water table and/or other unforeseen site conditions exist requiring additional materials and labor, additional charges may be incurred. Pricing has not factored in using a boring / drilling company is boulders / rocks are present.</p> <p>*Installation quoted includes standard manufacturer provided footing details; if different footing details are provided by the owner/specifier, a change order will be required.</p> <p>*Installation quoted includes installing footings through native soil or 95% compacted base rock. If installing through concrete, asphalt or through less compacted or permeable base or drain rock, or in other conditions, please provide additional details and a change order may be required.</p> | \$30,535.00 | \$30,535.00 |
| 1.00     | NPP Ross Discount | Please Provide Customer NPP #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -\$3,921.00 | -\$3,921.00 |
| 1.00     | PlayBooster, 5-12 | Landscape Structures PlayBooster, ages 5-12. Design #1159391-1-2. Design includes: SmartPlay Tree Tops, Saddle Spinner, High Step, Peg Bridge, Rope Climb, Spiderwalk, 2 Bay Single Post Swing Frame with (2) belt seats, (1) Full Bucket Seat, and (1) Molded Bucket with Harness.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | \$78,430.00 | \$78,430.00 |

|              |                              |                  |              |
|--------------|------------------------------|------------------|--------------|
| Credit Terms | Net 30 On Materials Shipment | Materials Amount | \$74,509.00  |
|              |                              | Tax Amount       | \$0.00       |
|              |                              | Labor Amount     | \$33,887.00  |
|              |                              | Freight Amount   | \$8,970.00   |
|              |                              | Total            | \$117,366.00 |

Ben Stanford

bens@rossrec.com

Notes to Customer

SIGNATURE BELOW ACCEPTING THIS PROPOSAL WILL CONSTITUTE A PURCHASE ORDER ONLY UPON APPROVAL BY ROSS RECREATION EQUIPMENT, INC. CUSTOMER RECEIPT OF AN ORDER ACKNOWLEDGEMENT CONSTITUTES SUCH APPROVAL.

Signature \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_



## NOTES ON THE FISCAL YEAR 2021/22 BUDGET

- A transfer of \$190,000 to the Capital Vehicle and Equipment sub-fund. Two service trucks (\$120,000), a backhoe (\$105,000), a dingo trencher (\$60,000), and a large area mower (\$70,000) are all purchases planned in FY 2021/22. The table below lists the major equipment planned to be purchased in the near term.

| Equipment - New and Replacement, Near-Term List | Main Use         | Cost              |
|-------------------------------------------------|------------------|-------------------|
| Backhoe (FY 21/22)*                             | New addition     | \$ 105,000        |
| Service Truck (FY 21/22)                        | New addition     | \$ 60,000         |
| Service Truck (FY 21/22)                        | New addition     | \$ 60,000         |
| Dingo Trencher (FY 21/22)                       | New addition     | \$ 60,000         |
| Large Area Mower (FY 21/22)                     | Replace existing | \$ 70,000         |
| Service Truck (FY 22/23)                        | New addition     | \$ 60,000         |
| Walker Mower (FY22/23)                          | New              | \$ 20,000         |
| Walker Mower (FY22/23)                          | Replacement      | \$ 20,000         |
| Service Truck (FY 23/23)                        | New addition     | \$ 60,000         |
| Service Truck (FY 23/23)                        | New addition     | \$ 60,000         |
| <b>Total</b>                                    |                  | <b>\$ 575,000</b> |

\* Purchase carried forward from FY 20/21.

- A \$165,020 SDC Improvement debt service payment for Dry Canyon property purchased in 2007. This debt was refinanced at a lower interest rate in 2012 and will mature in 2 years (FY 2022/23).
- A budgeted operating contingency of \$361,627 is included. This amount is equal to approximately 60 days of operations for Parks and Cemetery (Council Goal 1D).
- \$2,700,000 is included for the construction of Quartz Park. Quartz Park will be a new park at the southern terminus of the Dry Canyon at Quartz Ave. The park will serve both as a gateway into the Dry Canon and as an 8-acre neighborhood park that will include play structures and games, concrete and asphalt pathways, irrigation, landscaping, open lawn, natural areas, a parking lot, and restroom. Community outreach and design was completed in FY 2020/21. Funding for the project will come from SDC Improvement funds.
- \$250,000 is included for the upgrade and replacement of the play structure at the Umatilla Sports Complex.
- \$75,000 is included for the planning and design of improvements within the Central Dry Canyon.
- \$1,500,000 is included for the potential acquisition of land needed for future park development.
- The anticipated costs for major capital improvements and infrastructure maintenance projects are summarized below:

| Project                               | SDC Improvement     |
|---------------------------------------|---------------------|
| Maple Avenue Staircase*               | \$ 165,000          |
| Quartz Park Construction*             | \$ 2,700,000        |
| Umatilla Playground Update            | \$ 250,000          |
| Central Dry Canyon Planning & Design* | \$ 75,000           |
| Potential Land Acquisition            | \$ 1,500,000        |
| Future Projects                       | \$ 100,000          |
| <b>Total</b>                          | <b>\$ 4,790,000</b> |

\* Project carried forward from FY 20/21





# UMATILLA PARK IMPROVEMENTS

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## PLAY EQUIPMENT CONTRACT AWARD

CITY COUNCIL  
JANUARY 11, 2022

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SLIDE / 1





# IDENTIFIED COMMUNITY PARK IMPROVEMENTS

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**IMPROVED ADA PATHWAYS**

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**UPDATED PLAY EQUIPMENT**

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**IMPROVED PEDESTRIAN CONNECTION**

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**WAYFINDING SIGNAGE**



# PLAYGROUND SELECTION

**SOLICITED EIGHT ALTERNATIVES FROM THREE  
DIFFERENT PLAYGROUND DESIGNERS**

**PREFERRED DESIGN BY ROSS RECREATION  
EQUIPMENT, INC IN THE AMOUNT NOT TO  
EXCEED \$130,000.00**

**PURCHASED THROUGH A NATIONAL COOPERATIVE  
PROCUREMENT AGREEMENT**





## Umatilla Playground

1159391-01-02-04 • 12.02.2021



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*landscape*  
structures

Umatilla Playground

1159391-01-02-04 • 12.02.2021

**ROSS**  
Recreation Equipment

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*landscape*  
structures

## Umatilla Playground

1159391-01-02-04 • 12.02.2021

**ROSS**  
Recreation Equipment

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# TIMELINE

JANUARY  
2022



EQUIPMENT PURCHASED

APRIL  
2022



SITE PREPPED

MAY  
2022



INSTALL COMPLETE





# QUESTIONS?

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SLIDE / 8







## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** City Council  
Keith Witcosky, City Manager  
**THROUGH:** John Roberts, Deputy City Manager  
Mike Caccavano, City Engineer  
**FROM:** Steve Wilson, Civil Engineer II  
**SUBJECT:** Highway 126 Sidewalk Project (TR2004): \$205,642.67

### Addresses Council Goal:

3.C City Infrastructure: Leverage General Fund revenues by exploring resource development opportunities, grants, and other sources of revenue to address City's infrastructure needs.

### Report in Brief:

This item requests City Council approve a contract with Van Nevel Concrete and Curb, Inc. for the construction of sidewalks adjacent to Highway 126, between SW 26<sup>th</sup> and SW 35<sup>th</sup> Streets, in the amount of \$205,642.67.

### Background:

There are missing sections of sidewalk on the south side of Highway 126 between SW 26<sup>th</sup> Street and SW 35<sup>th</sup> Street (map attached). With continued development and increased traffic on SW 35<sup>th</sup> Street and Highway 126, City and Oregon Department of Transportation (ODOT) staff identified a need to complete the missing sections of sidewalks to improve pedestrian safety and access.

### Discussion:

This project is funded through Cooperative Agreement 32801 with ODOT and cost is split 50/50. Under the agreement, ODOT provided the survey for design purposes, and the City provided design, project bidding and construction management.

The City procured design services per Oregon Revised Statutes Section 279C and State of Oregon Model Rules for construction services. Public Bids were opened on December 15, 2021. The Engineer's estimate of costs was \$270,000.00. Three bids were received:

|                                      |              |
|--------------------------------------|--------------|
| 1. Van Nevel Concrete and Curb, Inc. | \$205,642.67 |
| 2. Wilson Curb, Inc.                 | \$275,309.00 |
| 3. Cascade Civil Corp                | \$292,145.00 |

### Fiscal Impact:

Half of the project (\$102,821.33) will be reimbursed by ODOT via Cooperative Agreement 32801. Costs for the project are available in the Fiscal Year 2021/22 budget and will be accounted for in the following account:

| Sub-Fund Name                            | Account Number        | Amount       |
|------------------------------------------|-----------------------|--------------|
| Transportation Capital Projects Sub-Fund | 22181-01-000-07-01-02 | \$205,642.67 |

### Alternative Courses of Action:

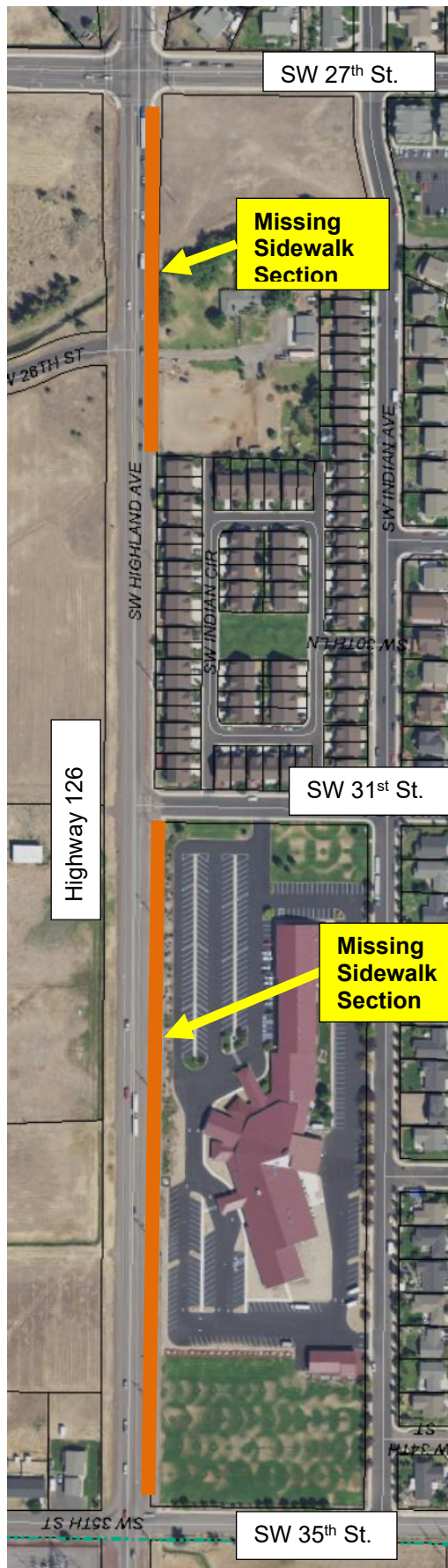
1. Approve the bid award.
2. Do not approve the bid award.
3. Request additional information.



**Recommendation / Suggested Motion:**

"I move to award the Highway 126 Sidewalk Project to Van Nevel Concrete and Curb, Inc. in the amount of \$205,642.67 and authorize the City Manager to sign the contract.

**PROJECT MAP:**





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# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** Redmond City Council  
**THROUGH:** Keith Witcosky, City Manager  
John Roberts, Deputy City Manager  
**FROM:** Kyle Roberts, Senior Planner  
**SUBJECT:** Ordinance #2021-11: An ordinance approving a Master Development Plan, Tentative Subdivision, and Cottage Development compliant with the 2040 Greater Redmond Area Comprehensive Plan and Zone Map. (Canyon Trails)

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### Addresses Council Goal:

7. COMPREHENSIVE PLANNING: Enhance the quality of life through adoption of programs, policies, and standards that manage growth while maintaining Redmond's small-town feel.
- A. Promote quality development.
  - B. Support orderly annexation from Urban Growth Boundary.

### Report in Brief:

This item requests City Council approve the Canyon Trails Master Development Plan. A public hearing was opened at the December 14, 2021, City Council meeting and continued to January 11, 2022. Staff requested the continuance to provide time to review a revised master plan submitted on December 9, and update related findings and conditions of approval.

The application is comprised of three land use approvals:

- Master Development Plan.
- 92-lot Tentative Subdivision.
- 17-unit Cottage Development.

### Background:

The subject property is 19.23 acres and is located at 3627 NW 10th Street, north of Elton Gregory and Tom McCall schools and outside the Redmond city limits. Locator maps are contained in Exhibit A attached.

In March 2021, the property owner submitted a petition for annexation and the Council approved an annexation agreement. Approval of this Ordinance will allow the subject property to be formally annexed via Resolution #2021-35.

In 2006, this parcel was among the more than 2,300 acres of "urbanizable" land added along the City's western boundary of its Urban Growth Boundary (UGB). At the same time, a Framework Plan was adopted by the City as part of the expanded UGB to provide general guidance for future land uses, densities, neighborhood amenities and the necessary public facilities and services to serve the parcels.

The Framework Plan envisioned a number of neighborhood centers distributed throughout the newly urbanized lands. These centers called for high density residential and mixed use, transitioning to lower residential density moving outward and to the periphery. The subject property is not part of the Highway Area Plan (HAP), but it is adjacent to it.

### Discussion:

The applicant proposes a Master Development Plan pursuant to the annexation agreement that includes subdividing the property into 92 individual lots. Seventy-five lots will range in size from 5,500 to 10,240 square feet and will be developed with single-family dwellings. The remaining 17 will be developed with cottage units with lot sizes ranging from 2,240 to



2,892 square feet. It is contemplated the master development will be developed in three phases.

The 2040 Redmond Comprehensive Plan has designated the subject property as R-4 (General Residential zoning) to be assigned when the property is annexed. The applicant is requesting this R-4 designation.

The proposed development will extend existing infrastructure and provide continuity to adjacent developments to the east, west, and south. Tracts will provide for open space, including but not limited to, a tract on the development's east boundary and a tract that will act as an urban-rural interface buffer along the UGB to the north. The development will also provide a portion of the Central Oregon Irrigation District (COID) trail that will eventually be connected to the adjacent developments to the west.

Conditions have been added to the approval to ensure all appropriate street, access, water and sewer improvements, and dedications are completed.

Staff has reviewed the applicant's 'burden of proof' and finds the proposal complies with all required findings. The 'Conclusionary Findings' are contained in Ordinance #2021-11 and indicate how the proposal complies with all applicable criteria and the Redmond Development Code (Chapter 8). The attachments included as part of this staff report and Ordinance include:

- Attachment A - Project Plans
- Attachment B - Applicant's Burden of Proof
- Attachment C - City Department and Related Agency Comments
- Attachment D - Letters Received from the Public
- Attachment E - Transportation Impact Analysis
- Attachment F - Annexation Agreement

The Urban Area Planning Commission (UAPC) held three public hearings to review the proposal on October 18, November 1, and November 15, 2021. There was no oral public testimony from citizens. The applicant provided oral testimony, primarily pertaining to transportation and water-related conditions of approval. Following the hearing, an in-depth discussion took place, in which the UAPC voted unanimously to recommend the Council approve the proposal. Based on that recommendation, the applicant made revisions to the street and lot layout and submitted a revised master plan in December that staff found complies with the UAPC's transportation-related conditions of approval and all applicable criteria in the Redmond Development Code. Therefore, staff and the UAPC recommend Council approve the Canyon Trails Master Plan.

As required, notices regarding this public hearing were posted in three places (the Library, the Police Department, and the Redmond Chamber of Commerce) in addition to City Hall on December 7, 2021, and January 4, 2022, and three copies of the Ordinance were available for review at City Hall.

#### **Fiscal Impact:**

There are no initial costs which are the responsibility of the City. All applicable System Development Charges will be paid prior to permit issuance. The City will be responsible for ongoing maintenance of the streets, water and sewer systems.

#### **Alternative Courses of Action:**

After conducting the public hearing and considering all the evidence and testimony:

1. Accept the Planning Commission recommendation to approve.
2. Accept the Planning Commission recommendation, make additional modifications and approve.
3. Continue the public hearing and leave the written record open to request additional information.
4. Deny the Planning Commission recommendation.

#### **Recommendation / Suggested Motion:**

"I move to have a first and second reading of Ordinance #2021-11 by title only." (Voice vote)

(City Attorney will read ordinance by title only, twice.)

"I move to approve Ordinance #2021-11." (Roll call vote)

**CITY OF REDMOND  
ORDINANCE NO. 2021-11**

**AN ORDINANCE APPROVING A MASTER DEVELOPMENT PLAN, TENTATIVE SUBDIVISION, AND COTTAGE DEVELOPMENT COMPLIANT WITH THE 2040 GREATER REDMOND AREA COMPREHENSIVE PLAN AND ZONE MAP.**

**WHEREAS**, the City of Redmond has adopted, and the state has acknowledged the 2040 Greater Redmond Area Comprehensive Plan and Zone Map; the City has adopted zoning and planning regulations in accordance with Oregon Revised Statutes Chapter 227 that regulate and control the development of land within the City; and

**WHEREAS**, the City of Redmond City Council has adopted a set of goals that include: “Enhance the quality of life through adoption of programs, policies, and standards that balance growth while maintaining our unique character”; and

**WHEREAS**, the 2040 Redmond Comprehensive Plan is the product of hundreds of citizens from the public and private sector who participated in the outreach and planning process; and

**WHEREAS**, the 2040 Redmond Comprehensive Plan contains multiple visioning statements, including statements on improving urban form and community design; and

**WHEREAS**, the City of Redmond has set the action steps necessary to implement the goals and policies in the 2040 Redmond Comprehensive Plan related to the vision; and

**WHEREAS**, the Redmond Urban Area Planning Commission held a public hearing on October 18, November 1, and November 15, 2021, and, after reviewing the record and gathering public testimony, has recommended that the Redmond City Council approve the Master Development Plan, Tentative Subdivision, and Cottage Development, subject to conditions of approval; and

**WHEREAS**, the City Council opened a public hearing on December 14, 2021, and continued the hearing to January 11, 2022, to consider the recommendation of the Redmond Urban Area Planning Commission, review the existing record and gather additional evidence and public testimony; and

**WHEREAS**, the City Council has received the Urban Area Planning Commission’s recommendation and, after receiving additional evidence and testimony, determined that the requested Master Development Plan, Tentative Subdivision, and Cottage Development is in compliance with the Redmond Development Code and would contribute to the 2040 Redmond Comprehensive Plan goals and policies; and

**WHEREAS**, the City Council finds that the proposed Master Development Plan, Tentative Subdivision, and Cottage Development, furthers the interests of the City.

**NOW, THEREFORE, THE CITY OF REDMOND ORDAINS AS FOLLOWS:**

**SECTION ONE:** The City of Redmond hereby approves the Master Development Plan, Tentative Subdivision, and Cottage Development, subject to the conditions of approval. The Decision and Conditions, Findings, and Project Plans are attached hereto as Exhibit A.

**SECTION TWO:** In support of the approval, the City of Redmond hereby adopts the findings, which are attached hereto as Exhibit A, which were prepared by City staff and demonstrate compliance with the Redmond Development Code, Section 8.0300 – Master Development Plans, Section 8.2335 – Tentative Subdivisions, and Section 8.0285 – Cottage Developments, and the applicable Statewide Planning Goals.

**SECTION THREE: SEVERABILITY.** The provisions of this Ordinance are severable. The invalidity of any section, clause, sentence, or provision of this Ordinance shall not affect the validity of any other part of this Ordinance, which can be given without such invalid part, or parts.

**PASSED** by the City Council and **APPROVED** by the Mayor this 11<sup>th</sup> day of January 2022.

\_\_\_\_\_  
George Endicott, Mayor

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder



**CANYON TRAILS MASTER DEVELOPMENT PLAN, 17-UNIT COTTAGE DEVELOPMENT, AND 92-LOT TENTATIVE SUBDIVISION**

**HEARING DATE:** January 11, 2022 at 6:00 PM via digital conference (GoTo Meeting)

**HEARINGS BODY:** Redmond City Council

**FILE NUMBER:** 711-21-000192-MD, 711-21-000193-COD, 711-21-000194-SUB

**FILE NAME:** Canyon Trails

**REQUEST:** Approval of a Master Development Plan, 17-unit Cottage Development, and 92-lot Tentative Subdivision on a 19.23-acre parcel

**LOCATION:** 3627 NW 10<sup>th</sup> Street (Tax Lot #141333C000300) in Redmond, OR 97756

**APPLICANT:** Hayes McCoy, H.A. McCoy Engineering & Surveying

**PROPERTY OWNER:** Nicko Properties, LLC

**REVIEWING STAFF:** Kyle Roberts, AICP, Senior Planner

**RECOMMENDATION:** Approval with Conditions



*Figure 1 - Vicinity Map*

## I. BACKGROUND

### Site Description:

The project area is generally described as 3627 NW 10<sup>th</sup> Street located in north Redmond; Tax Map and Lot #141333C000300. The subject property is located outside Redmond city limits and abuts city limits to the south, west, and east. Furthermore, the property is located south of NW Pershall Way, west of NW 10<sup>th</sup> Street, and is zoned Urban Holding (UH-10). It is 19.23 acres (837,659 square feet) in size and is the site of an existing single-family dwelling and several outbuildings, located in the northwest section of the property. A Central Oregon Irrigation District (COID) canal runs east-west through the property. See area outlined in red in *Figure 1* on page 1.

### Land Use History:

In 2006, the Redmond added more than 2,300 acres of “urbanizable” land along the City’s western boundary to its Urban Growth Boundary (UGB), including the subject parcel. At the same time, a Framework Plan was adopted by the City as part of the expanded UGB to provide general guidance for future land uses, densities, neighborhood amenities and the necessary public facilities and services to serve the parcels.

The Framework Plan envisioned a number of neighborhood centers distributed throughout the newly urbanized lands. These centers called for high density residential and mixed use, transitioning to lower residential density moving outward and to the periphery. The subject property is not part of the Highway Area Plan (HAP), but it is adjacent to it.

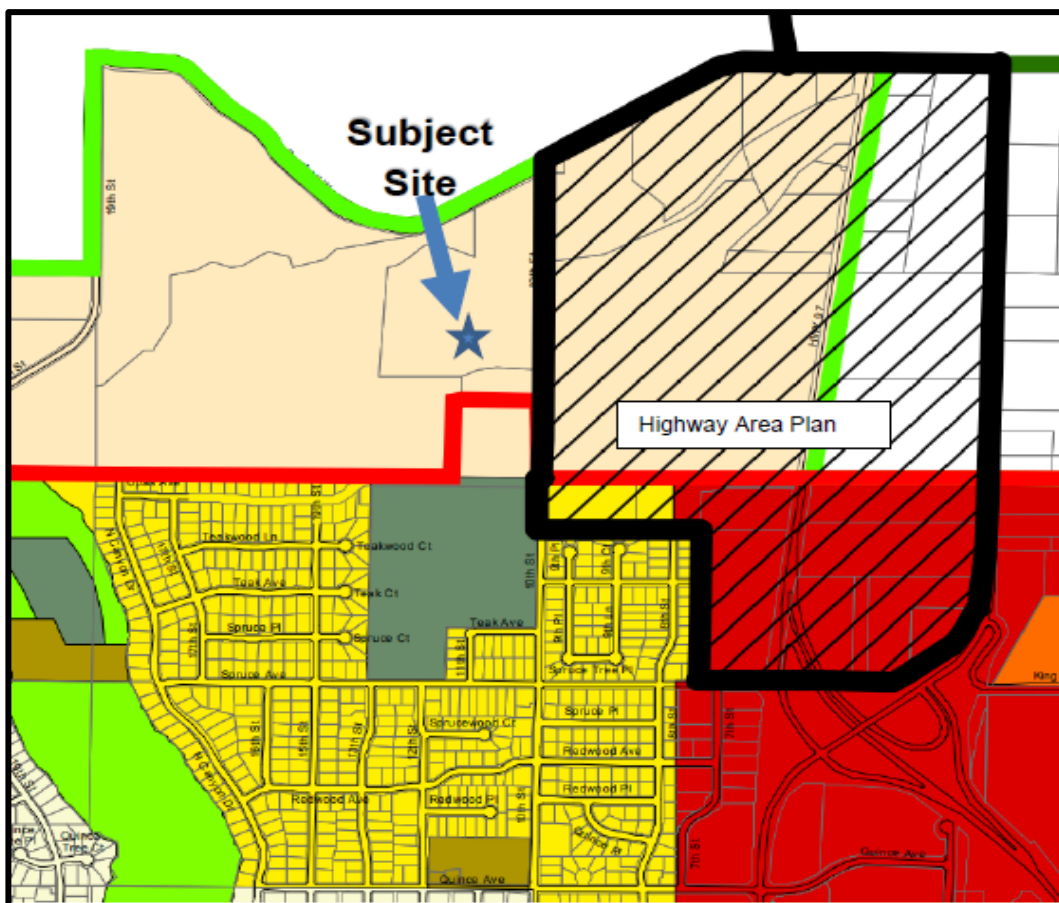


Figure 2 – Vicinity Map. H.A. McCoy Engineering, LLC

### **Proposal:**

Currently the subject property is located outside Redmond city limits. The applicant filed an annexation agreement with the City and the agreement was approved by the City Council in March 2021. The agreement requires the property owner to receive master development plan approval prior to development and formal annexation of the property. In July, the applicant submitted applications for a master development plan, 17-unit cottage development, and 92-lot tentative subdivision. After review by the Planning Commission in November, the applicant submitted a revised master plan in December that changed the street and lot layout.

The Comprehensive Plan has designated the subject property as R-4, General Residential zoning to be assigned when the property is annexed. The applicant is requesting R-4 and therefore, no zoning amendment application is required with the applicant's proposed project. As shown in Figure 3 above, the applicant is proposing a 92-lot master planned subdivision comprised of 75 single family lots and 17 cottage housing lots, for a grand total of 92 units. The proposed development's single family lots range in size from 5,500 to 10,240 square feet and equate to a total density of 6.9 units per net acre. The proposed development's cottage lots range in size from 2,240 to 2,892 square feet and equate to a total density of 6.3 units per net acre.

The proposed development will be built in three phases. A 6,000 square foot tract is proposed on the northwest corner and a 3,000 square foot tract is proposed on the southeast corner of the development. These will be the sites of open space. Two proposed tracts adjacent to NW 10<sup>th</sup> Street, will include a multi-use pedestrian trail and landscaping.

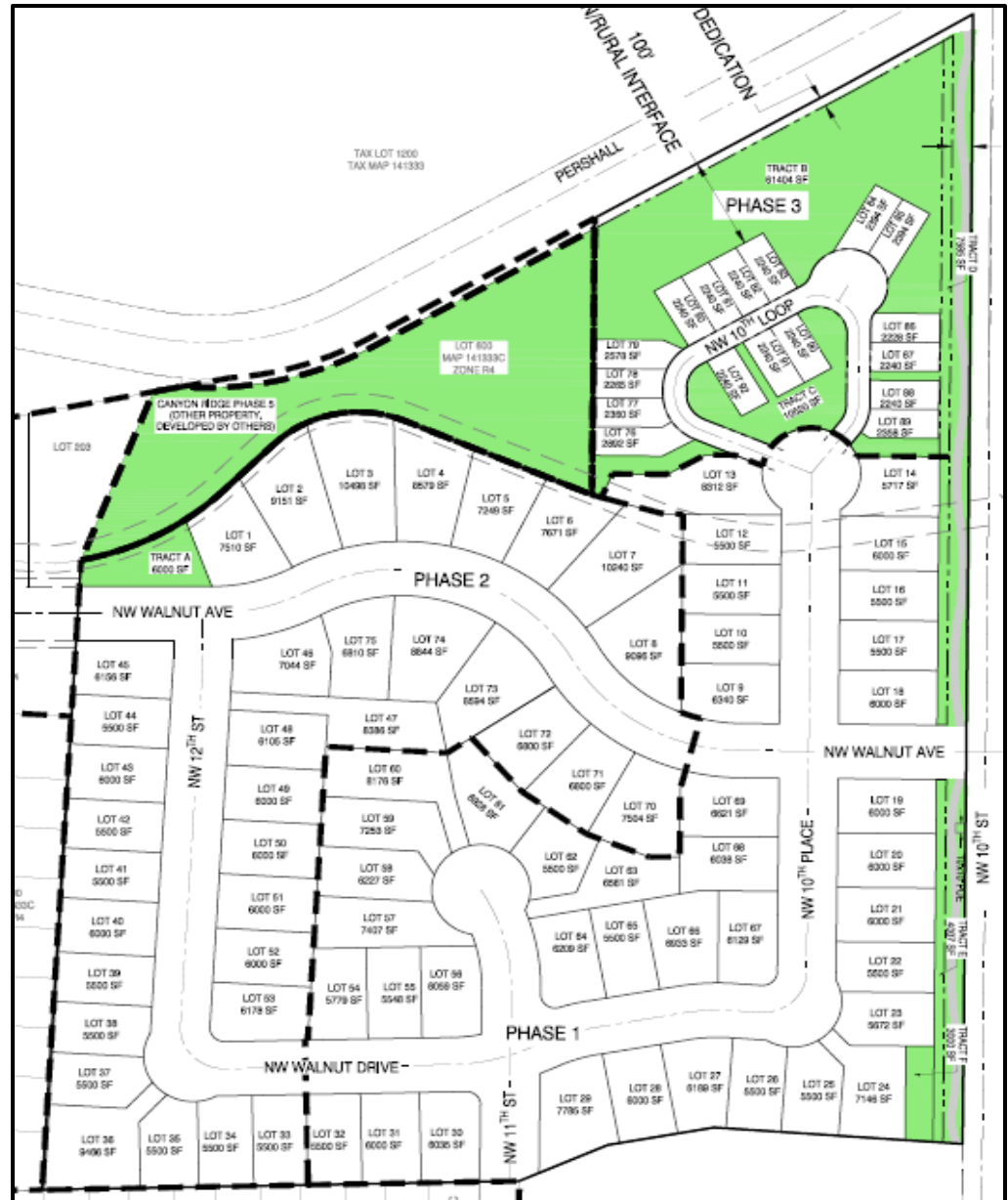


Figure 3 - Proposed project layout. H.A. McCoy Engineering, LLC

**Adjacent Zoning & Land Uses:**

|       | <b>Zoning</b>                                           | <b>Land Use</b>                              |
|-------|---------------------------------------------------------|----------------------------------------------|
| North | Exclusive Farm Use (EFUTRB) & General Residential (R-4) | Gravel mining (northside of NW Pershall Way) |
| East  | General Residential (R-4)                               | Future neighborhood residential development  |
| South | Limited Residential (R-3) & General Residential (R-4)   | Future neighborhood residential development  |
| West  | Limited Residential (R-3)                               | Vacant, undeveloped land                     |

**Comments:**

At the time of the completion of this staff report, there was no public comment received from notified property owners by the Planning Department concerning this application during the comment period.

**Attachments:**

Attachment A – Project Plans, December 9, 2021

Attachment B – Applicant Burden of Proof

Attachment C – City Department and Related Agency Comments

Attachment D – Letters Received from the Public

Attachment E – Transportation Impact Analysis

Attachment F – Annexation Agreement

**Application Timeline:**

The following items are included herein by reference in this land use decision and are located in the record for this matter and are on-file with the Community Development Department, Planning Division:

- Master Development Plan, Cottage Development, and Subdivision applications and materials submitted by the applicant on July 22, 2021
- Application deemed complete on August 20, 2021
- City department and related agency request for comments routed on September 23, 2021
- Adjacent property owner notices mailed on September 23, 2021 and November 18, 2021
- Public Hearing Notices published in *The Redmond Spokesman* on October 6, 2021 and December 1, 2021
- Canyon Trails Public Hearing opened on October 18, 2021; Planning Commission granted staff-requested continuance to November 1, 2021
- Public Hearing held with the Redmond Urban Area Planning Commission on October 18, November 1, and November 15, 2021 (Planning Commission granted staff-requested continuances on October 18 and November 1)
- Revised Master Development Plan submitted by the applicant on December 9, 2021
- Adjacent property owner notices mailed on December 16, 2021
- Canyon Trails Public Hearing opened on December 14, 2021; City Council granted staff-requested continuance to January 11, 2022
- Final action 120-day deadline (ORS 227.178) is January 17, 2022 (Applicant granted staff-requested 30-day review period extension on November 1)

**Applicable Criteria:**

The following are the applicable sections from the Oregon Revised Statutes, Oregon Administrative Rules, the City of Redmond Urban Area Comprehensive Plan, and the Redmond Development Code:

- City of Redmond Comprehensive Plan 2040
- City of Redmond Transportation System Plan



- City of Redmond Public Facility Master Plans
- City of Redmond Park Master Plan
- Oregon Revised Statutes (ORS) – ORS 197.250
- Oregon Administrative Rules (OAR), Chapter 660:
  - Division 12, Transportation Planning Rule
  - Division 15, Statewide Planning Goals and Guidelines
- City of Redmond Development Code:
  - Article I – Zoning Standards
    - Section 8.0065: Establishment of Zones and Districts
    - Section 8.0085: Zoning of Annexed Areas
    - Section 8.0135: Table A, Residential Zones, Uses Permitted
    - Section 8.0140: Table B, Minimum Standards
    - Section 8.0285: Cottage Developments
    - Section 8.0300: Master Development Plans
  - Article II – Land Use Procedures
  - Article III – Land Division Standards
    - Section 8.2200: Pre-application Meeting
    - Section 8.2220: Phased Development Plan
    - Section 8.2225: Approval of Phased Development Plan
    - Section 8.2230: Development Following Approval
    - Sections 8.2235 & 8.2236: Required Findings for Tentative Subdivision Approval
    - Section 8.2240: Improvement Requirements
    - Section 8.2700: Compliance Required
    - Section 8.2705: Blocks, Lots and Parcels
    - Section 8.2710: Streets
    - Section 8.2715: Fundamental Design Elements
    - Section 8.2720: Grading of Building Sites
    - Section 8.2815: Transportation Impact Analysis
    - Section 8.2820: Access Management Standards
    - Section 8.2825: Street Dedications

## II. FINDINGS & CONCLUSIONS

### **Findings:**

Redmond Development Code, Article I – Zoning Standards: Sections 8.0065, 8.0085, 8.0135, 8.0140, 8.0285, and 8.0300; Article II – Land Use Procedures; and Article III – Land Division Standards: Sections 8.2200, 8.2220-8.2240, 8.2700-8.2720, and 8.2815-8.2825 set forth the procedure and standards for approval. Staff findings for all applicable standards are presented below.

### ***ARTICLE I – ZONING STANDARDS > INTRODUCTORY PROVISIONS***

#### ***RDC Sections 8.0065 and 8.0085***

#### **8.0065 Establishment of Zones and Districts.**

...

R-4 General Residential Zone. To provide high density residential neighborhoods with a mix of single-family residences, duplexes and some conditionally permitted multi-family residential development. Limited commercial uses such as offices are also conditionally permitted where compatible with surrounding development.

**FINDING:** The applicant is proposing to create 92 lots for the purpose of constructing single family residences and cottage housing, for a grand total of 92 units in a high-density development.

**8.0085 Zoning of Annexed Areas.** Property annexed to the city shall be zoned in compliance with approved Urban Area Master Plans or with a zoning classification that is compatible with planned land use designations in the Comprehensive Plan, the Redmond Urban Area Framework Plan, as determined by the City.

**FINDING:** The applicant is seeking master development plan approval that is required as part of the formal annexation process. Furthermore, the applicant is requesting R-4 zoning, which is compliant with the Comprehensive Plan as the Plan has designated the subject property as R-4 to be assigned at time of annexation.

# **ARTICLE I – ZONING STANDARDS > RESIDENTIAL USE ZONES**

*RDC Sections 8.0135 and 8.0140*

**8.0135 Table A, Residential Zones, Uses Permitted.** The following uses are allowed outright or conditionally in each of the Residential zones as follows:

“O” means Permitted Outright  
 “C” means Permitted Conditionally  
 “N” means Not Allowed

| LAND USE:                                                                                                                                                                         | ZONE:      |            |            |            |            | RESTRICTIONS AND REQUIREMENTS:                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Residential Uses:</b>                                                                                                                                                          | <b>R-1</b> | <b>R-2</b> | <b>R-3</b> | <b>R-4</b> | <b>R-5</b> |                                                                                                                                              |
| Accessory Building:                                                                                                                                                               |            |            |            |            |            |                                                                                                                                              |
| Sheds, shops, garages excluding railroad cars not in railroad right of way, and movable shipping containers or similar storage containers that are not classified as structures.* | O          | O          | O          | O          | O          | Detached; includes greenhouse, workshops, potting sheds, and the like must be located within the property and not in the yard setback areas. |
| Guest House                                                                                                                                                                       | O          | O          | O          | O          | O          | No kitchen; uses main houses' sewer & water                                                                                                  |
| Accessory Dwelling Unit / Accessory Suite                                                                                                                                         | O          | O          | O          | O          | O          | Uses main houses' sewer & water or individual City Services; may have kitchen                                                                |
| Accessory Use                                                                                                                                                                     | O          | O          | O          | O          | O          | Includes Home Occupations                                                                                                                    |
| Apartments                                                                                                                                                                        |            |            |            |            |            | See Multi-Family Complex / Dwelling                                                                                                          |
| Bed and Breakfast                                                                                                                                                                 | C          | C          | C          | C          | C          |                                                                                                                                              |
| Boarding or Rooming House                                                                                                                                                         | N          | N          | C          | O          | O          |                                                                                                                                              |
| Cluster Development                                                                                                                                                               | O          | O          | O          | O          | O          |                                                                                                                                              |
| Cottage Development                                                                                                                                                               | O          | O          | O          | O          | O          |                                                                                                                                              |
| Condominium                                                                                                                                                                       | O          | O          | O          | O          | O          | Condo plats are State regulated                                                                                                              |
| Duplex                                                                                                                                                                            | O          | O          | O          | O          | O          |                                                                                                                                              |
| Duplex Lot                                                                                                                                                                        | O          | O          | O          | O          | O          |                                                                                                                                              |
| Manufactured Home                                                                                                                                                                 | O          | O          | O          | O          | O          | See Single Family Dwelling                                                                                                                   |
| Manufactured Home Park                                                                                                                                                            | N          | N          | C          | C          | C          |                                                                                                                                              |
| Manufactured Home Subdivision                                                                                                                                                     | N          | N          | O          | O          | O          | Subject to compliance w/ applicable ORS                                                                                                      |
| Multi Family Complex (5 + units)                                                                                                                                                  | C          | C          | C          | O          | O          |                                                                                                                                              |

|                                                     |   |   |   |   |   |                                 |
|-----------------------------------------------------|---|---|---|---|---|---------------------------------|
| Multi Family Dwelling (3 & 4 plex)                  | O | O | O | O | O |                                 |
| Nursing, Convalescent, and Assisted Living Facility | N | N | C | C | C | More than 15 people             |
| Planned Unit Development                            | N | N | C | C | C |                                 |
| Residential Care Facility                           | N | N | C | C | O | Defined in and regulated by ORS |
| Residential Care Home                               | O | O | O | O | O | Defined in and regulated by ORS |
| Single Family Dwelling                              | O | O | O | O | O |                                 |
| Townhouse                                           | O | O | O | O | O |                                 |

**FINDING:** The applicant is proposing to create 92 lots to ultimately construct 75 single-family dwellings and 17 cottage housing which are both outright permitted uses in the R-4 zoning district.

**8.0140 Table B, Minimum Standards.** The following minimum standards apply in each of the Residential zones as follows:

| Zone:                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |        |        |        |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|-------|
| Standard:                                                                                                                                                                                                                                                                                                                                                                                                                                        | R-1    | R-2    | R-3    | R-4    | R-5   |
| <b>Minimum Lot size - Square Feet</b>                                                                                                                                                                                                                                                                                                                                                                                                            |        |        |        |        |       |
| Single Family                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9,000  | 9,000  | 7,500  | 5,500  | 5,500 |
| Duplex                                                                                                                                                                                                                                                                                                                                                                                                                                           | NA     | 10,000 | 8,000  | 7,500  | 7,500 |
| Duplex Lot                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |        | 4,250  | 3,750  | 3,750 |
| Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |        | E      | E      | E     |
| Multi-family Dwelling                                                                                                                                                                                                                                                                                                                                                                                                                            | NA     | NA     | NA     | F      | F     |
| Multi-family Complex                                                                                                                                                                                                                                                                                                                                                                                                                             | NA     | NA     |        | F      | F     |
| <b>Minimum Density/Gross Acre</b>                                                                                                                                                                                                                                                                                                                                                                                                                | 4      | 4      | 5      | 10     | 15    |
| <b>Minimum Setback Distance – See</b><br>C, F, and H below                                                                                                                                                                                                                                                                                                                                                                                       |        |        |        |        |       |
| Front Façade, excluding garage which must be 20 feet back from property line                                                                                                                                                                                                                                                                                                                                                                     | 15     | 15     | 15     | 10     | 10    |
| Interior Side                                                                                                                                                                                                                                                                                                                                                                                                                                    | B 5/10 | B 5/10 | B 5/10 | B 5/10 | 5     |
| Street Side                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15     | 15     | 15     | 15     | 15    |
| Rear                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20     | 20     | 20     | 20     | 5     |
| Garage                                                                                                                                                                                                                                                                                                                                                                                                                                           | 20     | 20     | 20     | 20     | 20    |
| <b>Maximum Building Height <sub>F</sub></b>                                                                                                                                                                                                                                                                                                                                                                                                      | 32     | 32     | 32     | 40,E   | 40,E  |
| <b>Minimum Street Frontage</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |        |        |        |        |       |
| Standard Street                                                                                                                                                                                                                                                                                                                                                                                                                                  | 50     | 50     | 50     | 50     | 50    |
| Cul-de-sac                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30     | 30     | 30     | 30     | 30    |
| Flag Lot                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20     | 20     | 20     | 20     | 20    |
| Duplex lot (non flag or cul de sac)                                                                                                                                                                                                                                                                                                                                                                                                              | N/A    | N/A    | 25     | 25     | 25    |
| Townhouse                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |        |        | E      | E     |
| A Interior side yards must provide a minimum of 5 feet on one side and 10 feet on the other side for single family and duplex residences. Where alley access is provided, both interior side yards may be reduced to 5'. Exceptions to this 10' setback are allowed (1) when the lot was created prior to the adoption of this standard (November 9, 2006); or (2) on cul de sac lots; or (3) on flag lots, or (4) parcels created by partition. |        |        |        |        |       |
| B Does not include solar setbacks, which are calculated separately                                                                                                                                                                                                                                                                                                                                                                               |        |        |        |        |       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D Pursuant to the Townhouse Development Standards in Chapter 8, Article IV Site and Design Review Standards, Section 8.3035.4.f.2, Table A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| E Does not apply to development standards for Multi-family Dwellings and Multi-family Complexes which are located in Chapter 8, Article IV, Site and Design Review Standards, Section 8.3035.4.E.2., Table A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| F. Street trees are required to be provided in accordance with Section 8.3035(5)(K)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| G. ADU Rear-Yard and Other Setbacks (Zones R-1 and R-2 – <i>no change to setbacks since the lot sizes are quite large.</i> )<br><br>For all other zones:<br><br>2 story ADUs – 20-foot rear yard setback;<br>2 story ADU that abuts an alley – 10-foot rear yard setback (driveway, if proposed, must still be 20 feet deep)<br>1 story ADU – 10-foot rear yard setback<br>1 story ADU that abuts a 20-foot-wide alley – 5-foot rear yard setback (driveway must still be 20 feet deep)<br>ADU abutting a street corner – maintain front yard setback – side may be 5 feet for either 1 or 2 stories (driveway must still be 20 feet deep) ADU cannot extend in front of the house or front yard setback.<br>ADU on lot abutting a commercial/industrial property – 5-foot rear yard setback regardless of height. |
| N/A = "not allowed"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**FINDING:** Seventy-five single family lots are proposed and all meet the minimum lot size of 5,500 square feet.\* The minimum density required in the R-4 zone is 10 units per net acre and the proposed density only equates to 6.9 units per net acre. The proposed density does not meet the required standard; however, staff finds that this standard can be considered for the following two reasons: (1) The applicant has designed their project using the limitations in the sewer capacity analysis (refer to Infrastructure Capacity Allocation Review in Attachment C). (2) Given the land use (gravel mining) to the north, it is very unlikely the urban growth boundary will expand to the north in the relatively near future. The proposed project's medium density will provide an appropriate transition from high and medium density to the south.

All proposed building envelopes meet required building setbacks as well as minimum street frontages.

\*Cottage development lots are proposed as well. Those standards are addressed below.

## **ARTICLE I – ZONING STANDARDS > PLANNED UNIT DEVELOPMENT**

### **RDC Section 8.0285**

#### **8.0285 Cottage Developments.**

1. The purpose of a Cottage Development (COD) is as follows:
  - A. To provide a greater flexibility in development of land on sites that may be too small or not desirable for a Planned Unit Development;
  - B. To provide housing types that respond to changing household sizes and ages (e.g., retirees, single person households, small families);
  - C. To provide opportunities for ownership of dwelling units;
  - D. To encourage a creative approach in land development and for a consistent and interesting architectural theme within each development;



- E. To encourage creation of more usable open space for residents of the development through flexibility in density and lot standards; and,
  - F. To provide guidelines to ensure compatibility with surrounding land uses.
2. Throughout section 8.0285, the term “Development” shall mean a Cottage Development (COD).
  3. The uses shown in 8.0285 (Table 8c) are permitted in a residential Cottage Development.
  4. Refer to Section 8.0286 for specific application and review procedures. Modification of approved COD’s is subject to the provisions of Section 8.0287.

**Table 8c. Uses Permitted.** The following uses are permitted in Cottage Developments:

| Land Use                           | Comments & References                                      |
|------------------------------------|------------------------------------------------------------|
|                                    |                                                            |
| Accessory Structure                | Includes ADU’s, sheds, storage bldgs., residential garages |
| Dwelling, Single Family            |                                                            |
| Park (public or private)           | e.g., playgrounds, recreation centers, pools, etc.         |
| Parking Garage (public or private) | Private only; common area maintained by HOA                |

**FINDING:** The applicant is proposing 17 single family dwellings, which are an allowed use.

5. The following exceptions to City standards may be allowed through the COD approval process without a variance:
  - A. Minimum lot sizes.
  - B. Yard setbacks, except perimeter yard requirements.
  - C. Permitted land uses.
  - D. Grid street spacing standards.
  - E. Street frontage requirements on public roads.
  - F. Connection to public utilities, subject to review and acceptance by City Engineering.
  - G. Landscaping requirements, as stated herein.
  - H. Solar setback standards (only on lots that are not along the northern border of the development).
  - I. Street and right of way widths on non-grid streets.
  - J. Sidewalk placement and size standards.
  - K. Changes to an approved Plan, when the requested change is so minor that the CDD Director or designate determines that it would be appropriate for an administrative decision. Examples of minor changes include, but are not limited to: (1) a reduction in the overall number of lots, (2) minor architectural changes to approved buildings, (3) changes to phases that do not impact public facilities or change the number of approved phases, (4) changes that result in a reduction of impacts (i.e. reduced traffic flows), or (5) changes that are required to protect or increase public safety.
6. Development Standards. CODs shall meet the following Standards unless otherwise specified. In the case that these standards conflict with other standards within Article I, III, or IV of the Redmond Development Code, these standards shall take precedence:
  - A. Cottage Developments (CODs) have no minimum site size but must include a minimum of 4 cottage units per development.

**FINDING:** The proposed development consists of 17 cottages, greater than the four cottage unit minimum.

- B. Densities.

| Zone | Densities (per net acre)          |
|------|-----------------------------------|
|      |                                   |
| R-1  | Not applicable (CODs not allowed) |
| R-2  | 4 to 9 units / acre               |
| R-3  | 4 to 10 units /acre               |
| R-4  | 5 to 12 units / acre              |
| R-5  | 8 or more units / acre            |

**FINDING:** The proposed cottage development has a density of 6.4 units per acre. This complies with the R-4 requirement of 5 to 12 units per acre.

#### C. Design Requirements

| Feature                    | Standard                                                                                                                                                                             |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                                                                                                                                                                                      |
| Building Height            | 25 feet                                                                                                                                                                              |
| Lot area                   | No minimum                                                                                                                                                                           |
| Lot width                  | No minimum                                                                                                                                                                           |
| Lot depth                  | No minimum                                                                                                                                                                           |
| Floor area                 | Average of 1000 s.f. not to exceed 1250 s.f. per unit excluding garage. 400 s.f. car garages only, no RV garages.                                                                    |
| Open space:                | 800 s.f. per each dwelling unit                                                                                                                                                      |
| Setbacks: <sup>6</sup>     |                                                                                                                                                                                      |
| Perimeter:                 | 20' when abutting an arterial or collector street (along perimeter), underlying zone in all other cases; Setbacks to common areas determined at the discretion of the Hearings Body. |
| Front:                     | No minimum                                                                                                                                                                           |
| Side (corner lot)          | No minimum, but 10' required between bldgs                                                                                                                                           |
| Side (non corner lot)      | No minimum, but 10' required between bldgs                                                                                                                                           |
| Rear                       | No minimum, but 10' required between bldgs                                                                                                                                           |
| Solar                      | Northern perimeter only                                                                                                                                                              |
| Non permeable surface area | 60% of parent property (maximum)                                                                                                                                                     |
| Bldg coverage              | 50% of parent property (maximum)                                                                                                                                                     |
| Parking:                   |                                                                                                                                                                                      |
| Residential                | 1.75 spaces / cottage d.u.                                                                                                                                                           |

**FINDING:** The applicant has not supplied information on building footprints or elevations. All design requirements listed in the table above pertaining to building size, height, and setbacks must be complied with in order to receive building permit approval. The proposed 17 lots range in size from 2,240 to 2,892 square feet (there is no minimum lot size or dimension requirement). For 17 units, a minimum of 13,600 square feet of open space must be provided. This standard is met. The proposed development includes a required 20-foot perimeter setback on the development's eastern and northern boundaries as NW Pershall Way is an arterial and NW 10<sup>th</sup> Street is a collector street. The maximum non-permeable surface area allowed for the parent property is 60% and the proposed non-permeable

<sup>6</sup> Setbacks listed are the minimum required. Setbacks are measured from foundation of any building requiring a building permit to the nearest property line. Foundation includes anchors for posts/supports where structurally related.

surface equates to approximately 44%. The maximum building coverage allowed for the parent property is 50% and the proposed maximum building coverage equates to approximately 32%.

D. Open Space, Park, and Common Area.

1. "Open space" means land area which can be physically accessed and used by occupants and users of the COD for scenic, landscaping, or open recreational purposes within the development.
2. Open Space Land Area Requirements:

For all CODs, the required land area<sup>7</sup> used as open space or common area shall:

- a. Be a minimum of 800 square feet per cottage.
- b. Have at least one centrally located open space or common area at least 60 feet wide, within the development.
- c. At least 60% of the cottages must abut on at least two sides of open space or common area.
- d. In addition to the centrally located open space, a series of interconnected open spaces are also allowed, but the connections between open spaces shall not contribute toward meeting the open space area and be a minimum of 20 feet wide.

**FINDING:** A minimum of 800 square feet of open space or common space per cottage must be provided. The proposed open space exceeds this standard. The proposed common area width exceeds the minimum requirement of 60 feet. At least 60% of the proposed cottages must abut on at least two sides of open space or common area. Approximately 65% (Lots 80, 83-92) of the proposed cottage lots meet this standard.

3. Cottage Orientation Requirements:

- a. Cottages abutting the common open space shall be oriented around and have the main entry taken from the common open space.
- b. Cottages not abutting the common open space shall be within 60 feet walking distance from the common open space and served with paths.
- c. The open space shall be distinguished from the private outdoor areas with a walkway, fencing (not to exceed four feet in height), landscaping, berm, or similar method to provide a visual boundary around the perimeter of the common area.

**FINDING:** The applicant's plans have not demonstrated that the proposed project meets the cottage orientation requirements as listed above.

4. Open Space – General Requirements.

- a. Public and private roads shall not be considered as open space.

**FINDING:** The proposed private roadway (NW 10<sup>th</sup> Loop) has not been included in the open space calculation.

- b. Development plans shall assure that natural features of the land are preserved and landscaping is provided, or a finding shall be made by the Hearings Body that preservation of significant natural feature(s) is not feasible.

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<sup>7</sup> Required land area means the total acreage of the project, excluding roads that will be dedicated through the development approval process.

**FINDING:** The subject property does not include any significant natural features aside from 15 existing trees. Ten of these trees will need to be removed to allow for the construction of needed infrastructure. The remaining five are proposed to be retained, adding to the proposed landscaping as part of the proposed cottage development.

- c. Parking areas shall not exceed four spaces and shall be separated from other parking areas by a distance of 20 feet.

**FINDING:** The applicant is not proposing parking areas. All required parking is being proposed on each individual cottage lot.

- d. Up to 10% of the required open space / common area / landscaped areas may be left in a natural and non-irrigated state at the discretion of the Hearings Body; however this shall not apply to any required landscaped screening or landscaped strips abutting public or private roads. If the development has a significant natural feature in excess of the 10% allowance, the Hearings Body may allow additional natural feature open space credit.

**FINDING:** The applicant is proposing to landscape the open space area as there is no significant natural features to maintain.

- e. Open space, common areas, and common structures shall be financially assured of continued maintenance. A legal mechanism shall be provided which guarantees the continued maintenance of such areas and structures.

**FINDING:** The applicant understands that the open space areas must be maintained and will create an HOA for the purpose of structuring a financial mechanism that can be used for the purposes of maintenance. Draft CC&Rs shall be submitted for review prior to final plat.

- 5. General Development Design Requirements.
  - a. All Development parking lots shall be screened from view from public or private streets (excluding driveways of 20' width or less), and from all residences by a screen of no less than 3' in height. Screening shall not exceed a height of 4'.
  - b. Parking lot screening shall be achieved by either landscaping or fencing, or a combination of each.
  - c. All parking spaces shall be paved, and shall meet the parking space standards within sections 8.0500 -.0515 of the RDC, and all applicable code standards.
  - d. If detached parking structures are proposed, the following shall apply:
    - 1. Pitched roofs are required on all parking structures, and shall be no less than a 4:12 pitch.
    - 2. Paint color and building materials shall be consistent with the design of the dwelling closest to the structure.

**FINDING:** The proposed project is not proposing any parking lots. All required parking will be provided on-site of individual cottage lots, therefore criteria 5 a., b., and d. do not apply.

- e. Usable Open Space. All required open space within any planned development shall be 'usable' as passive or active recreational land without



sharing the space as a combined use with non recreational uses, including (but not limited to) drainage retention.

**FINDING:** The proposed open space will be usable and accessible by residents as passive or active recreational land without sharing the space as a combined use with non-recreational uses.

- f. Yards. Private open space shall be a minimum of 300 s.f. of private, contiguous, usable open space adjacent to each dwelling unit, for the exclusive use of the cottage resident.

**FINDING:** The applicant's plans do not show private open space. However, given the proposed cottage lot sizes and the maximum cottage building size allowed, it is likely that each lot can provide at least 300 square feet of private, contiguous, usable open space adjacent to each cottage. This standard must be met.

- g. Porches/Patios: Cottages shall have a minimum of 10% of floor area S.F. as a roofed porch or patio combination. Porches are not included within floor area calculations.

**FINDING:** The applicant has not supplied building floor plans and elevations. This standard is not met.

- h. Required Parking Distance from Cottages. All required parking for Cottage Developments shall be located within 100 feet of the cottage that it serves.

**FINDING:** As mentioned previously, the applicant is not proposing parking lots as all required parking will be provided on-site of each individual cottage lot and by doing so, this standard will be met.

- i. Accessory structures in cottage developments are limited to storage buildings that may be up to 80% of the smallest cottage, and to parking structures or garages that may contain up to 6 parking spaces on the interior. All accessory structures in cottage developments shall have an architectural theme that matches the theme of the cottages.

**FINDING:** The applicant is not proposing accessory structures as part of this application.

- 6. Trash Enclosures. Centralized Trash Enclosures may be required at the discretion of city staff. If required, Trash Enclosures shall be architecturally compatible in terms of color and materials with the cottage units. Trash collection bins or carts shall be as approved by the collection company.

**FINDING:** The proposed project is not proposing centralized trash enclosures. All trash cans are proposed to be kept on the individual sites.

- 7. Procedure for Cottage Developments. The following procedure shall be followed in requesting a PUD approval. A mandatory Pre-Application Meeting is required for any Cottage proposal.
  - A. An applicant shall submit to the city an electronic version of the complete application. The plan shall show, at an engineer's scale of no less than 1"= 10', the following information.
    - 1. The relationship of the property to the surrounding area.
    - 2. The preliminary plan of subdivision or re-subdivision, if any, which shall include the information required by the Subdivision Ordinance.
    - 3. Land uses, building locations, density proposed, architectural style, efficiency

- measures, housing market served, and number of dwelling units.
4. The arrangement of streets and pedestrian ways.
  5. Proposals that include reduced yards and lot size shall be designed to be served by private alleys or drives.
  6. The location of off-street parking spaces, and a parking management plan if the total number of spaces required exceeds 75. Parking Management plan requires are found at Section.
  7. The location of public or common open space/recreation area.
  8. Plans for site grading and drainage.
  9. Plans for water supply and sewage disposal.
  10. Plans for transfer of ownership of the property, if any, and arrangements for maintenance of common areas and facilities.
  11. Landscape plan including the list species proposed and size/coverage at time of planting and at five years.
  12. Proposed project timing schedule and surety, if required by City.

**FINDING:** The applicant met with City staff in a pre-development meeting, held on March 31, 2021, regarding this project. This standard is met.

**ARTICLE I – ZONING STANDARDS > SUPPLEMENTARY PROVISIONS**  
*RDC Section 8.0300*

**8.0300 Master Development Plans.** A Master Development Plan is required to annexation as a condition of annexation, or after annexation but prior to or concurrent with rezoning from Urban Holding-10 to other City zoning districts.

Section 8.0300(3)(B)(1) provides the review and approval criteria for Master Development Plans:

- A. Whether the proposed Plan is generally consistent with the Framework Plan and is consistent with an adopted Area Plan and Comprehensive Plan in terms of land use, density, transportation systems and networks, adequacy of infrastructure and open space.

**FINDING:** Staff has examined the record in this matter and finds the applicant has met the criteria because the proposal is generally consistent with the Framework Plan and Comprehensive Plan in terms of land use, transportation systems, adequacy of infrastructure, and open space. The proposal is not consistent with regard to density (refer to finding for Section 8.0140). The proposed development will be zoned R-4, consistent with the Comprehensive Plan, and provide for a mix of residential (single family and cottages). According to City Engineering, there is adequate capacity to serve the project, subject to conditions of approval.

The proposed development includes an interconnected street system, complete with sidewalks, that will connect to existing and planned streets adjacent to the subject property. Additionally, proposed are 6,000 and 3,000 square foot tracts of dedicated open space for the 75 single family residences. Two additional tracts will provide for a pedestrian pathway with landscaping along the eastern perimeter of the development. Finally, a proposed portion of a COID trail will traverse through the property's cottage development portion, connecting to the proposed north-south pedestrian pathway.

- B. Whether the proposed Plan is generally suitable for the area in which it is proposed, considering existing and planned neighborhoods, shopping and employment areas; and natural resources and hazards.

**FINDING:** Staff has examined the record in this matter and finds the proposed development is generally suitable for the area as it will provide medium-high residential use on the edge of the urban growth boundary. As envisioned in the Framework Plan, the proposed residential development will provide for complete connectivity to the adjacent existing and future residential developments.

- C. Whether the proposed Plan is functionally integrated with developed or planned areas.

**FINDING:** Staff has examined the record in this matter and finds the applicant has met the criteria because the master plan proposes similar land uses and densities as the existing and planned areas around it. The proposed development will extend the street grid through the property, connecting new developments to the existing NW 10<sup>th</sup> Street. The proposal includes a multi-use trail connection that will help functionally integrate it with surrounding developed and planned areas, which includes residential development and schools to the south.

- D. The proposed plan meets the applicable Great Neighborhood Principles in Section 8.0300(3)(C)(13). Master Development Plans shall address applicable Redmond Great Neighborhood Principles described below. In instances where the property proposed for a Master Development Plan is located within the boundary of an adopted Area Plan, the Master Development Plan shall also address the Great Neighborhood Principles according to the specificity provided in the Area Plan.

**FINDING:** Each element of the Great Neighborhood Principles is addressed below. Staff has examined the record in this matter and finds the applicant has met the criteria or can meet the criteria through conditions of approval as further detailed below.

- a. Transportation. Connect people and places through a complete grid street network and trail system that invites walking and bicycling and provides convenient access to parks, schools, neighborhood service centers, and possible future transit stops. Traffic calming techniques and devices may be required to slow vehicles. Curves streets are encouraged to provide interest and variety in neighborhood design. Trails shall be provided to link with other pedestrian facilities existing, or planned in the future.

**FINDING:** The proposed development will provide for a multi-use trail along the development's eastern boundary that will connect residents to the residential subdivision to the south as well as the nearby schools. As NW Walnut Avenue will provide traffic through the development, the street has been designed with a curve to slow vehicles. As noted by Cascades East Transit (CET), given the new housing and employment opportunities in the area, planning for future transit stop(s) is needed in the area. As presented in Condition #7, CET would like to request that the construction of an 8' x 5' concrete pad for a bus stop be included in the plans.

- b. Housing. A mix of housing types and densities shall be integrated into the design of new neighborhoods unless a variance is approved. Housing developments containing more than five attached units must be designed to be consistent with the Higher Density Multifamily Design Guidelines.

**FINDING:** The proposed development is 19 acres in size and will consist of 75 lots of single-family dwellings on lots ranging in size from 5,500 to 10,240 square feet. Given the varied lot sizes, the applicant is proposing a mix of two single family dwelling types. An additional 17 lots will be provided for cottage units located in the development's northeast corner. As proposed, the development provides a mix of lot sizes, but lacks a mix of housing types in the designated R-4 zoning district that calls for high density residential that consists of single-family residences and a mix of other housing types.

- c. Open spaces, greenways, recreation. All new neighborhoods shall provide useable open spaces with recreation amenities that are integrated to the larger community. Central parks and plazas shall be used to create public gathering places where appropriate. Incorporate significant geological features such as rock outcroppings, stands of clustered native trees, etc. into the design of new neighborhoods. Neighborhood and community parks shall be developed in appropriate locations consistent with policies in Redmond's Parks Master Plan.

**FINDING:** Proposed is a 6,000 square foot open space located on the northwestern corner of the development, designated as Tract A, and a 3,000 square foot open space located on the southeastern corner, designated as Tract F. Additionally, proposed Tracts D and E include a pedestrian pathway, trees, and shrubbery. The scale of open space and amenities provided is sufficient for the proposed development's size.

- d. Integrated design elements. Streets, civic spaces, signage, and architecture shall be coordinated to establish a coherent and distinct character for the Master Development Plan. Plans may integrate design themes with adjacent developed or planned areas.

**FINDING:** The applicant has stated that the project will have single family homes, with sloped roofs in a varied Pacific Northwest style common in other areas of Redmond. Earth tones and either single story or multiple story options are available. All homes within the development will be constructed by one builder with the architecture the same or very similar to the illustrations shown on the submitted plans. The individual home plans vary to avoid a monotonous feel, but relate in theme, color and external fixtures in order to give the neighborhood a distinct character.

- e. Diverse mix of activities. A variety of uses is encouraged in order to create vitality and bring many activities of daily living within walking and biking distance or a short drive of homes. Amenities including, but not limited to, trails, recreation areas, open spaces, shall be constructed before occupancy of any residential unit, unless a phasing plan is approved. Commercial service areas must be supported by a market analysis and phasing program which will be used by the City to determine construction timing.

**FINDING:** The proposed pedestrian pathway will connect to adjacent development to the south as well as the nearby schools. Located east of the proposed development is the Highway 97 Area Plan that calls for a mix of zoning districts and uses. When this area develops, the diversity of activities available nearby will increase.

- f. Public art. Places for the installation of public art is required at the gateways to neighborhoods and/or in and around the center of neighborhoods to provide focal points.

**FINDING:** The applicant has stated that open space areas are proposed to be landscaped in a design that will draw visual interest; however, no public art is proposed at this time. The applicant's burden of proof has inadequately addressed this standard.

- g. Scenic views. Identify and preserve scenic views and corridors of the Cascade Range, Ochoco Mountains, and Smith Rock where practicable such as in street view sheds or park areas. Streets and common or public open spaces should be located and oriented to capture and preserve scenic views for the public. Minimize visual clutter from signs and utilities within scenic corridors.

**FINDING:** Although roughly half of the proposed lots will have homes facing north or south, half of the proposed streets will be oriented in an east-west fashion allowing for a street view shed of the Cascade



Range to the west. Additionally, as the applicant has stated, varied housing types and upper story development may offer view opportunities.

- h. Urban – rural interface. Urban development shall interface with rural areas through landscaped open space buffers at least 100 feet wide and the length of the urban development, excluding public streets, or shall be transitioned from higher density development to lower density development at the urban - rural interface, or utilize other appropriate and equivalent transitional elements.

**FINDING:** The proposed development is located next to the urban growth boundary and proposed is a 100-foot-wide buffer. The rural area will be buffered by a large open space adjacent to NW Pershall Way. Furthermore, as discussed in Section 8.0140 finding earlier, this proposed development, although zoned R-4, will provide for more of a medium density that is appropriate for the location.

- i. Fully developed “pocket parks” or “tot lots” shall be incorporated into medium and high density zoned residential subdivisions and site plans. These areas shall be developed for every twenty-five lots/units, a minimum of 3,000 square feet and privately maintained. Park amenities shall, at a minimum, include turf areas, benches, trees, and decorative features.

**FINDING:** The proposed development has proposed 6,000 and 3,000 square foot tracts of open space for the 75 single family lots. The applicant has not provided information on the amenities to be included within the privately maintained Tracts A and F. This standard is not met.

- j. Canal trails. If canals or laterals are present, multi-use trails at least 10 feet wide shall be provided, subject to the Central Oregon Irrigation District’s review and approval. Pedestrian amenities such as benches and trash receptacles shall be provided at appropriate locations.

**FINDING:** A minor COID sub-lateral travels through the northern portion of the subject property. As required by COID, this sub-lateral will be piped. The developer shall grant a public access easement for the trail that will traverse the subject property. No trees or shrubs will be allowed within COID easement. COID has requested that landscaping plans be provided for COID review and comment.

- k. Green Design. Environmentally friendly and energy efficient design is encouraged for public and private infrastructure, architecture and building orientation, open spaces and natural areas and transportation facilities. In addition, the planting of native, drought-resistant trees is encouraged to provide shade and to minimize water usage.

**FINDING:** The developer intends to furnish the development’s proposed open space with drought tolerant species, shrubs, trees, and ground covers to reduce water use. A complete landscaping plan for the open space is needed.

### **ARTICLE III – LAND DIVISION STANDARDS > SUBDIVISION APPLICATION PROCEDURE** *RDC Sections 8.2200, 8.2220 – 8.2240*

**8.2200 Pre-Application Meeting.** Prior to submitting a tentative subdivision plat each applicant or their representative is required to meet with the Community Development Director or a designated staff member(s) to review the proposal.

**FINDING:** A pre-development meeting on the proposed project was held with City staff on March 31, 2021.

**8.2220 Phased Development Plan.** An overall phased development plan shall be submitted for all developments for which phased development is contemplated. The phased development plan shall include but not be limited to, the following elements:

1. Overall development plan, including phase or unit sequence.
2. Show compliance with all applicable land division standards and policies as described in this Article.
3. Schedule of improvements initiation and completion.
4. Overall transportation and traffic pattern plan showing compliance with grid street standards, and for land within the North Redmond US 97 Interchange Area Management Plan (IAMP), compliance with the Local Street Connectivity Plan (Comprehensive Plan Addendum Chapter 9 Transportation Element figure 1).
5. General program for phasing timetable projection.
6. Development plans for any common elements or facilities.
7. If the proposed subdivision is believed to have an additional impact upon adjacent lands or lands within the general vicinity, the Hearings Body may require an additional impact analysis for various aspects of the development thought to cause such impacts.
8. Street tree plan.
9. Program for addressing applicable Great Neighborhood Principles in Section 8.0330(3)(C)(13) and adopted Area Plans.

**FINDING:** The applicant has proposed that the development will be developed in three phases: 40 single-family lots and Tracts E and F in phase 1; 35 single-family lots and Tract A developed in phase 2; and 17 cottage lots and Tracts B, C, and D in phase 3. The applicant has not provided a phasing timetable projection. The applicant has identified locations for street trees but no specifics about the types of trees. This standard is not met.

**8.2225 Approval of Phased Development Plan.** The Hearings Body shall review a phased development plan at the same time a tentative plat for the first phase is reviewed. A phased development plan may be approved before the tentative plat for the first phase is submitted. The Hearings Body may approve, modify, or disapprove the phased development plan and shall set forth findings for such decision. The Hearings Body may also attach conditions necessary to bring the plan into compliance with all applicable land use standards and policies. Any tentative plat submitted for the plan area shall conform to the phased development plan unless approved otherwise by the City.

**FINDING:** This section is procedural.

**8.2230 Development Following Approval.** Once a phased development plan is approved by the City, the plan shall be binding, upon both the City and the developer. The Hearings Body may attach conditions to any changes proposed that are deemed necessary to insure compliance with the Comprehensive Plan and implementing regulations. After five (5) years from the date of approval of the plan, the City may initiate a review of the plan for conformance with applicable City regulations. If necessary, the City may require changes in the plan to bring it into conformance with new applicable city regulations.

**FINDING:** This section is procedural. The proposed application is for a master development plan, developed in three phases.

### 8.2235 Required Findings for Tentative Subdivision Approval.

1. The Hearings Body shall approve no application for a subdivision unless the following requirements are met:

- A. Proposal is in compliance with ORS Chapter 92, the Comprehensive Plan, the Transportation System Plan (TSP), applicable zoning and the applicable Track in Section 8.2236.

**FINDING:** Upon approval by the City of Redmond, the applicant will have a licensed professional land surveyor prepare a final subdivision plat map in accordance with ORS 92.010 to 92.192. The subdivision plat map will be establishing 92 lawfully established lots, and dedications of all public streets. No lots shall be sold prior to final plat recording. The subject property is currently zoned UH-10 and designated as R-4 on the 2040 Greater Redmond Area Comprehensive Plan Map. The applicant is requesting the designated R-4 zone as assigned when annexed. The submittal requirements for a subdivision application require a traffic impact study if there are more than 20 lots, and as this development will have 92 lots, a traffic impact study has been submitted. The applicant is proposing sidewalks for pedestrian access and paved roads for vehicular access. Applicable zoning criteria is addressed in the applicant's burden of proof.

- B. Proposal does not conflict with acquired public access easements within or adjacent to the subdivision.

**FINDING:** The phase 3 cottage development public sewer system shall be revised to show 20 feet minimum City sewer easement that also encompassing the private street but with no encroachment or conflict by other utilities or lot/fence lines. Additionally, the applicant will need to contact the Central Oregon Irrigation District (COID) regarding the proposed easement location depicted on the plan as well as piping plans. COID has determined the proposed location does not provide sufficient access for operations and maintenance. COID's easement will remain at 30 feet and no trees or shrubs will be allowed within COID easement. It is unclear when piping is being proposed from Lot 1 to Lot 6.

- C. Each lot is suited for the use intended or offered.

**FINDING:** All proposed 75 single-family lots are of sufficient size for single family residential as contemplated, and all proposed 17 cottage lots are of sufficient size for cottage units.

- D. The subdivision will not exceed the operational capacity of public facilities and services as identified in the city's Water and Wastewater Master Plan and the Transportation System Plan, which are required to serve the development, or a determination that sufficient capacity can be provided.

**FINDING:** The proposed development will require the extension of public streets and public utilities, which are being proposed. Refer to Condition #16 for information regarding wastewater capacity.

- E. A water rights division plan has been approved by the applicable irrigation district.

**FINDING:** Per the Central Oregon Irrigation District (COID), the subject property has 15.80 acres of appurtenant COID water rights that have been quitclaimed to COID. Upon issuance of a final order by Oregon Water Resources Department (OWRD) on a water transfer, no water rights will remain within the boundary of the subject property.

- F. The subdivision contributes to orderly development and land use patterns in the area, and provides for the preservation of natural features and resources such as streams, lakes, natural vegetation, special terrain features.

**FINDING:** Much of the surrounding area has been previously approved for subdivision development. Generally, the proposed development will contribute to orderly development and land use patterns in the area, albeit with relatively low density for R-4. Due to the existing site's agricultural uses, natural features are not existent. There are no unique natural features on the property.

- 2. Access Management proposals comply with the standards set forth in Section 8.2820 and all other applicable standards.

**FINDING:** Findings for these standards are presented in Section 8.2820 below.

**8.2236 Subdivisions may be created following two tracks: Track 1 (General Criteria) and Track 2 (Clear and Objective Standards)**

**Track 2 – Subdivision, Tentative Plan Approval Criteria (Needed Housing).** General. The planning division shall approve, approve with conditions, or deny a proposed subdivision. Approval, or approval with conditions shall be based on compliance with the following criteria:

- A. The applicant has demonstrated that the proposed housing is needed housing as defined by State statutes.

**FINDING:** The proposed development includes 75 lots for single-family and 17 lots for cottage housing, which are both considered needed housing in Redmond.

- B. The proposed land uses and densities are consistent with the land use designation(s) shown on the comprehensive plan, in this code, and as refined in any applicable area plan, master plan, or framework plan.

**FINDING:** The proposed land uses are consistent with the R-4 (General Residential) designation shown on the comprehensive plan. As this proposed master development plan consists of two different styles of housing development, each have different density requirements. The proposed cottage development meets the R-4 density requirement for cottage developments. The density of the proposed 75 single-family lots is under the minimum density threshold for standard residential development in R-4 (refer to Section 8.0140 finding).

- C. The proposed subdivision complies with all of the following, unless specifically exempt from compliance through a code provision applicable to a special area zone or overlay zone. The proposed subdivision will:
  - 1. Not create risk of fire, flood, geological hazards, or other public health and safety concerns;
  - 2. Provide adequate transportation systems, water supply, sewage disposal, drainage, and other public utilities consistent with City Standards and Specifications.

**FINDING:** The proposed subdivision has been designed in a manner that will not create risk of fire, flood, geological hazards, or other public health and safety concerns. Adequate transportation systems, water supply, sewage disposal, drainage, and other public utilities will be provided as proposed and by complying with conditions of approval.

- D. The proposed subdivision provides direct bicycle and pedestrian access to any adjacent residential areas, transit stops, neighborhood activity centers, commercial areas, and employment areas.

**FINDING:** The proposed subdivision will provide direct bicycle and pedestrian access to adjacent residential areas via sidewalks and proposed trails on the eastern edge of the development.

- E. The proposed subdivision is designed and sited such so roads, infrastructure, utilities, and future development of proposed lots will minimize impacts to the natural landscape by addressing the following:
1. Tree Preservation. The proposed project shall be designed and sited to preserve trees having the following characteristics:
    - a. Healthy trees that have a reasonable chance of survival considering the base zone or special area zone designation and other applicable approval criteria;
    - b. Trees located within vegetated corridors and stands rather than individual isolated trees subject to windthrow;
    - c. Trees that fulfill a screening function, provide relief from glare, or shade expansive areas of pavement;
    - d. Trees that provide a buffer between potentially incompatible land uses;
    - e. Trees located along the perimeter of the lot(s) and within building setback areas;
    - f. Trees and stands of trees located along ridgelines and within view corridors;
    - g. Trees with significant habitat value;
    - h. Trees adjacent to public parks, open space and streets.
    - i. Trees along water features.
    - j. Heritage trees.

**FINDING:** As shown on pages MP1.1 and MP1.5 of the proposed project plans, the majority of existing trees are located on the north-central and north-eastern portions of the subject property. Given the proposed layout of the development, a number of the existing trees will need to be removed for the construction of needed infrastructure and structures. The plan proposes to preserve some existing trees in the area of the proposed cottage development's common open space.

2. Restoration or Replacement.
  - a. For areas not included on the City's acknowledged Goal 5 inventory, the proposal mitigates, to the greatest degree attainable or feasible, the loss of significant natural features described in criteria (a) above, through the restoration or replacement of natural features such as:
    - i. Planting of replacement trees within common areas; or
    - ii. Re-vegetation of slopes, ridgelines, and pedestrian corridors; or
    - iii. Restoration of native plant habitat.
  - b. For areas included on the City's acknowledged Goal 5 inventory, any loss of natural features shall be consistent with the acknowledged level of protection provided for the resource.

Street Trees. If the proposal includes removal of any street tree(s), removal of those street tree(s) has been approved or approved with conditions by the City.



**FINDING:** The subject property does not contain any Goal 5 resources. As mentioned earlier, there are a number of existing mature trees on the subject property. The applicant will work to preserve as many of these trees as possible but will need to remove many as needed to provide for infrastructure and needed housing. The applicant is proposing the planting of a number of trees in proposed Tracts B, D, and E. The proposal does not include removal of any street trees.

- F. On R-1 zoned property, if the subdivision results in a lot greater than 13,500 square feet in size the application shall indicate the location of lot lines and other details of layout that show future division of the lot may be made without violating the requirements of this development code and without interfering with the orderly extension of adjacent streets, bicycle paths, and accessways.

**FINDING:** The subject property will be zoned R-4; therefore, this standard does not apply.

- G. Lot side lines shall run at right angles to the street upon which the lots face, except that on curved streets they shall be radial to the curve.

**FINDING:** Proposed lot side lines comply with this standard.

- H. There shall be no proposed grading on portions of the development site that meet or exceed 15% slope.

**FINDING:** The subject property is relatively flat with exception of the northern portion of proposed Tract B; however, it does not appear to contain areas with slopes meeting or exceeding 15%.

- I. The proposal complies with the Traffic Impact Analysis Review provisions.

**FINDING:** The submitted Traffic Impact Analysis (TIA) has been reviewed by City Engineering and Engineering has provided recommendations as outlined in Condition #14.

- J. The street layout of the proposed subdivision shall disperse motor vehicle traffic onto more than one public local street unless approved by the City Engineer.

**FINDING:** The street layout of the proposed subdivision will disperse motor vehicle traffic onto more than one public local street.

- K. Urban development shall interface with rural areas (rural areas are those that lie within areas outside of the UGB or UAR) through landscaped open space buffers at least 100 feet wide and the length of the urban development, excluding public streets, or shall be transitioned from higher density development to lower density development at the urban - rural interface, or utilize other appropriate and equivalent transitional elements.

**FINDING:** The proposed development includes a transition from rural (north side of NW Pershall Way) to R-4 medium density development by proposing a 100-foot-wide buffer that includes open space on Tract B of the proposed cottage housing portion of the development. The urban-interface standard is met.

- L. Fully developed “pocket parks” or “tot lots” shall be incorporated into medium and high density zoned residential subdivisions and site plans. These areas shall be developed for every twenty-five lots/units, a minimum of 3,000 square feet and privately maintained. Park amenities shall, at a minimum, include turf areas for at least 50% of the lot, benches, trees, shrubs, and other landscape features.

**FINDING:** The subject property will be zoned R-4, a medium-high density zone. Open space requirements for the 17 cottage lots are calculated separately from the 75 single-family lots. That said, per the above standard, a minimum of 9,000 square feet of fully developed “pocket parks” or “tot lots” shall be provided. These must include amenities as described above and must be privately maintained. The applicant is proposing a total of 9,000 square feet (Tracts A and F) open space but has provided no detail on amenities. This standard is not fully met.

- M. No site grading of the site shall occur until the City has approved the subdivision application.

**FINDING:** A subdivision site grading and drainage plan with erosion/sediment control plan and drainage report shall be submitted and approved upon development of each project phase.

#### **8.2240 Improvement Requirements (For Track 1 and Track 2 Subdivisions).**

1. In the approval of a subdivision, the Community Development Director or Hearings Body shall consider the need for street and other improvements. All streets in new subdivisions, except for private streets, shall be dedicated to the public without reservation or restriction.

**FINDING:** All proposed streets as part of this subdivision will be dedicated to the public without reservation or restriction with exception of NW 10<sup>th</sup> Loop.

2. Private Alley Access. The Community Development Director or Hearings Body may require the applicant to improve a private alley access easement serving two or more lots according to the adopted City of Redmond Public Works Standards and Specifications, as amended.
  - A. Such access easements shall include provisions for permanent, long-term maintenance, including: maintenance measures to be employees; responsible parties; funding; design; timing; and, enforceability. These provisions shall be included as recorded Covenants, Conditions and Restrictions (CCR's) appurtenant to the affected properties.

**FINDING:** There are no proposed alleys as part of this development; therefore, this standard is not applicable.

3. The subdivider shall record the required (including but not limited to) land division agreement, public improvement agreement, shared access agreement or shared well agreement, as may be applicable, with the Deschutes County Clerk's office at the time of recording of the final subdivision plat.

**FINDING:** The applicant will record any required land division agreements, public improvement agreements, or shared access agreements with the County Clerk at the time of recording the final plat.

4. Paved access is guaranteed to each lot.

**FINDING:** The proposed development is proposing paved access/streets to all lots.

5. Each lot is to be connected to the City water and sewer system pursuant to Section 4.007 of the Code of the City of Redmond.

**FINDING:** The applicant is proposing connection to the City of Redmond water and sewer system. Upon receiving land use approval for the subdivision, the developer will submit detailed civil plans to the City's Engineering Department for review and approval prior to construction of the subdivision.

6. All required public utilities are available.

**FINDING:** All required public utilities are available and will be extended by the developer in order to provide services to the proposed development.

**ARTICLE III – LAND DIVISION STANDARDS > DESIGN STANDARDS & IMPROVEMENTS**  
*RDC Sections 8.2700 – 8.2720*

**8.2700 Compliance Required.**

1. Any land division or development shall be in compliance with the design and improvement standards and requirements of this section, and all other applicable provisions, as set forth in this Chapter.

**8.2705 Blocks, Lots and Parcels.**

1. Blocks. The resulting or proposed length, width and shape of blocks shall take into account the requirements for adequate building lot sizes, street widths, access needs and topographical limitations.
  - A. No block shall be more than 660 feet in length between street center lines unless it is adjacent to an arterial street, or unless topography or the location of adjoining streets justifies an exception and is so approved by the reviewing authority. In MUN, MUE and MULW zones, block lengths shall be an average of 330 feet, except where required to meet grid street or access management requirements.

**FINDING:** The proposed development does not include any blocks with lengths greater than 660 feet.

- B. The recommended minimum length of a block along an arterial street is 1,320 feet, except that along such blocks, a public right-of-way for pedestrian and bicycle access shall be dedicated at or nearest the mid-point of the block length as is practical. The right-of-way shall be a minimum of 10 feet wide, with an all weather surface a minimum of 5 feet wide, constructed and centered within the right-of-way.

**FINDING:** Adjacent to the north of the proposed development is NW Pershall Way, a minor arterial street. There will be no vehicular accesses onto NW Pershall Way from the development. For the purposes of this standard, it is met.

- C. A block shall have sufficient width to provide for 2 tiers of lots unless topography, the location of adjoining streets, or adjacency to an arterial street justifies an exception.

**FINDING:** Of the 75 standard lots, excluding the cottage lots, 37 of the lots are part of a two-tier pattern. Due to the fact that the remaining lots either abut a major roadway or adjacent property, they are precluded from being part of a block that could create two rows of lots. Therefore, based on the design constraints, it can be found that the subdivision is in substantial conformance with the criterion.

- D. Where appropriate at approved cul-de-sacs, dead-end streets, or along blocks approved at more than the maximum block length standard, pedestrian and bicycle access corridors shall be required to be constructed between lots to minimize travel distance between subdivisions, parks, school, and collector or arterial streets. Access corridors shall be located to provide a reasonably direct connection between likely pedestrian

destinations and shall be consistent with the City of Redmond Bicycle Refinement Plan where applicable. A reasonably direct connection is a route which minimizes out of direction travel for people likely to use the connection considering terrain, safety and likely destination. The Community Development Director or Hearings Body may determine based on evidence in the record that construction of a separate access corridor is inappropriate or impractical. Such evidence may include but is not limited to:

1. When the nature of abutting existing development makes construction of an access corridor impractical.
2. When the access corridor would cross a natural area with significant natural habitat and construction would be incompatible with protection of natural values.
3. When the access corridor would cross topography where slopes exceed 30% or where path grade would exceed 12% slope; or
4. When a cul-de-sac or dead-end street abuts rural resource land at the urban growth boundary. In industrial zones, this standard may be waived at the discretion of the Community Development Director or Hearings Body when it is determined that the City's grid street standards should not be applied to the industrial development.

**FINDING:** The proposed development does include two cul-de-sacs, one with a private loop street in the northeast portion of the proposed development. Access to the north is precluded by the existing intersection of NW Pershall Way and NW 10<sup>th</sup> Street. To mitigate the impact the cul-de-sac has on pedestrians, the design includes an accessway to NW 10<sup>th</sup> Street. The accessway is intended to reduce travel distance and provide direct access to the sidewalk system that is located along the major roadways, providing access to the nearby schools, parks, and (future) shopping centers.

2. Lots and Parcels. The size, width, and orientation of newly created lots and parcels shall be appropriate for the location of the land division and for the type of development and use contemplated. Lots and parcels shall be generally rectangular in shape and shall be consistent with the lot size provisions of the zoning standards and the density requirements as established in the City of Redmond Comprehensive Plan. Notwithstanding these requirements, the following exceptions may apply:
  - A. In areas beyond the City Limits where public sewer is not currently available, minimum lot and parcel sizes shall permit compliance with the requirements of the Department of Environmental Quality and shall be sufficient to permit adequate sewage disposal. Any problems posed by soil structure and water table as related to sewage disposal by septic tank shall be addressed and resolved in the applicant's initial plan.
  - B. Where property is zoned and planned for business or industrial use, other widths and areas may be permitted by the Community Development Director or Hearings Body. Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street service and parking facilities required by the type of use and development contemplated.
  - C. In steep terrain, increased lot or parcel sizes may be required to avoid excessive cuts, fills, and steep driveways.

**FINDING:** The development's intended use will consist of single-family dwellings and cottage units. The proposed lots are adequately sized and are generally rectangular in shape, with the exception of cul-de-sac lots, flag lots, and lots located along the curvature of NW Walnut Avenue. As mentioned earlier, the 75 single family development portion does not meet the minimum density requirement for R-4 (refer to Section 8.0140 finding).

The proposed development is located in an area where public sewer is available, is not zoned and planned for business or industrial use, and does not include steep terrain.

3. Frontage. Each newly created lot and parcel shall abut upon a public street other than an alley for at least 50 feet, except for lots fronting on the bulb of a cul-de-sac, then the minimum frontage shall be 30 feet. Flag lots shall have no less than 20' of street frontage measured at the property line. Lots created as part of a Planned Unit Development shall meet the same frontage requirements listed herein, except such frontage may be allowed along private streets. Vehicular access shall be provided as specified in Section 8.2820, Access Management Standards, of this Chapter, or as specified in Section 8.2705(6) below, for residential lots and parcels abutting collector and arterial streets. All lot and parcels shall be addressed from the primary public street frontage, not including alleys.

**FINDING:** All single family proposed lots abut a public local street with frontages of at least 50 feet with the exception of proposed Lots 13, 14, 23-25, 35-37, 47, and 58-63. These lots are considered cul-de-sac or flag lots. The proposed cul-de-sac lots all meet the minimum required frontage of 30 feet. All proposed flag lots meet the minimum required frontage of 20 feet. This standard is met.

4. Side Lot or Parcel Lines. All side lot lines shall be at right angles to street lines or radial to curved streets wherever practical except as provided for in subsection (10) of this section.

**FINDING:** Proposed lot side lines comply with this standard.

5. Through/Double Frontage Lots and Parcels. Through lots or parcels, and lots or parcels with double frontage shall be avoided whenever possible, including lots or parcels created adjacent to Collector and Arterial Streets, but not including alley frontage as described in Section 8.2705(6) below, except when they are necessary due to an irregular parent lot or parcel configuration, or are necessitated by topography or other unique circumstance.

**FINDING:** The proposed lots located along the eastern and northern boundary do not abut upon the adjacent right-of-way – they abut buffer tracts. The lots located along NW 10<sup>th</sup> Street are separated by a 10-foot landscape buffer as shown on the plan. The cottage lots are separated from NW Pershall Way by common open space and Urban-Rural interface buffer. As proposed, the entire development meets this criterion to the greatest degree practicable. This standard is met.

6. Residential Lots and Parcels Abutting Collector and Arterial Streets. Lots and parcels created adjacent to Collector and Arterial streets shall be oriented so that the front elevation of the residential development faces the Collector or Arterial Street. Vehicular access shall be provided pursuant to Section 8.2820, Access Management Standards, of this Chapter. In instances where direct vehicular driveway access to lot or parcel from the Collector or Arterial street is not permissible, alley access shall be provided to the rear of the lot or parcel in accordance with the design standards included in Section 8.2710(3) of this Chapter.

**FINDING:** As proposed, no lots directly abut NW 10<sup>th</sup> Street, a collector street. Proposed lots 14-23, and 86-89 abut Tracts D and E. Furthermore, the aforementioned lots will have driveway access off of local streets and therefore will be oriented so that the front elevation faces the local streets.

7. Corner Lots and Parcels. Corner lots and parcels shall be 5 feet more in width than other lots and parcels and also shall have sufficient extra width to meet the additional side yard requirements of the zoning district in which they are located.



**FINDING:** All proposed corner lots have widths at least five feet greater than the required minimum. This standard is met.

8. Special Building Setback Lines. If special building setback lines, in addition to those required by the applicable zoning, are to be established in a development, they shall be shown on the final plat of the development and included in the deed restrictions.

**FINDING:** There are no special building setback lines being proposed.

9. Large Building Lots; Re-division. In the case where lots or parcels are of a size and shape that future redivision is possible, the Community Development Director or Hearings Body may require that the blocks be of a size and shape so that they may be redivided into building sites, and the development approval and site restrictions may require provision for the extension and opening of streets at intervals which will permit a subsequent redivision of any tract of land into lots or parcels of smaller sizes than originally platted, and in conformance with the density provisions established in the City of Redmond Comprehensive Plan for the existing or intended Zone. A plan indicating the ability for re-division according to these standards may be required as part of the initial land division process.

**FINDING:** No proposed lots are considered large building lots; therefore, this standard is not applicable.

10. Solar Access. As much solar access as feasible shall be provided each lot and parcel in every new subdivision or partition considering topography, development pattern, and existing vegetation. The boundary lines of lots and parcels, as far as feasible, shall be oriented to provide solar access at ground level at the southern building line of the adjoining lot to the north two hours before and after the solar zenith from September 22 to March 21. If it is not feasible to provide solar access to the southern building line the solar access, if feasible, shall be provided at 10 feet above ground level at the southern boundary line two hours before and after the solar zenith from September 22 to March 21, and three hours before and after the solar zenith from March 22 to September 21. This solar access shall be protected by solar height restrictions on burdened properties for the benefit of lots receiving the solar access pursuant to Section 8.0370, of the City of Redmond Development Code, Solar Access Standards. If the solar access for any lot, either at the southern building line or at 10 feet above the southern building line, is not feasible, supporting information may be required with the application.

**FINDING:** Solar access has been accommodated as far as feasible given pre-ordained arrangement of streets stubbed to the property/City grid street standards. Solar setbacks are reviewed by the Building Department with each building permit for a house. This standard is met as far as feasible at this time.

11. Curvilinear Street and Block Design. Although a basic grid street design with minimum and maximum block lengths are requirements of this section, a curvilinear street/block design is encouraged for the purpose of adding interest to new subdivision development.

**FINDING:** The blocks are laid out in a grid pattern to the greatest degree practical given that NW Pershall Way and NW 10<sup>th</sup> Street restrict direct access, limiting design. The proposed NW Walnut Avenue is considered a curvilinear street. Additionally, proposed NW Walnut Drive provides some curve and elbow turns. These provide for visual interest as well as traffic safety within the development.

12. Flag Lots. A flag lot shall be considered as a "flag lot" if the pole of the flag lot is less than half the width of the average lot width. For flag lots, the following shall be required:
  - A. Flag poles shall be no less than 20' wide.

- B. Flag lot development, if allowed by the zone, is limited to one duplex or single-family dwelling per lot. All zone regulations apply, including the minimum required lot size and setbacks unless setback reductions are allowed as described in (E).
- C. Each flag lot shall contain a minimum 16' wide paved driveway.
- D. A flag lot is exempt from the 50-foot street frontage requirement; however, a minimum of 20 feet of street frontage is required.
- E. Front and/or rear yard setbacks may be reduced to no less than 10' subject to review and approval by the Community Development Director. The orientation of any structure (determination of front) may be suggested by the property owner and is subject to the review and approval of the Community Development Director or designee. The location(s) of all structures immediately adjacent to any flag lot shall be shown on a site plan (1) during planning review and during the act of creating any new flag lot, and (2) during a building permit review for any structure built on a flag lot.
- F. No flag lot shall be partitioned or further divided.
- G. The "pole" of the flag lot shall be no longer than 150' measured from the street intersection to the beginning of the base of the flag.
- H. The "pole" of the flag shall not be included in the minimum lot size calculation.
- I. Flag lots shall be exempt from street tree requirements unless the street frontage portion of the flag lot is 30' or greater.
- J. Flag lots are prohibited along or abutting the Dry Canyon Rim.
- K. Two off-street parking spaces shall be provided for each dwelling unit on a flag lot.

**FINDING:** Proposed lots 24, 36, 47, 60, and 63 are considered flag lots. These lots all have "poles" less than half the width of the average lot width and have minimum street frontage of 20 feet. These lots meet the minimum lot size requirement for R4 when excluding the "poles" in the calculation, as required. All "poles" are not longer than 150 feet measured from the street intersection to the beginning of the base of the "flag." These standards are met.

## 8.2710 Streets.

- 1. General. Streets shall be in conformance with the City of Redmond Transportation System Plan as specified herein.
  - A. Except along Arterial Street, public streets shall be spaced a maximum of 660 feet between centerlines. The purpose is to provide a street grid pattern of through streets to facilitate traffic movement. Street designs shall conform to topography and other existing natural and man-made conditions. Illustrative examples of other conditions include the dry canyon, main COID canal, Highway 97, and the Burlington Northern Railroad tracks.

**FINDING:** All proposed public streets are spaced under the maximum of 660 feet between centerlines. The proposed street layout provides a main through street (NW Walnut Avenue) to facilitate traffic movement to and through the subdivision. Additionally, proposed NW 11<sup>th</sup> Street will facilitate traffic movement to and through the subdivision at the south end.

- B. All proposed streets, sidewalks, bike lanes and pedestrian pathways shall connect to other streets, sidewalks bike lanes and pedestrian pathways within a development and to existing and planned streets, sidewalks, bike lanes and pedestrian pathways outside the development. Such facilities shall serve existing and planned parks, schools or other public lands within a neighborhood.

**FINDING:** The proposed streets provide street connectivity to planned and existing streets adjacent to the development. The proposed development does include streets, complete with sidewalks that will

provide for pedestrian connectivity. Additionally, proposed are Tracts D and E that includes a pedestrian trail that will provide connectivity to future developments to the south as well as the nearby schools.

- C. To the maximum extent possible, new local streets shall align and connect with existing local streets and collectors, and in certain special cases arterial streets. Cul-de-sac streets shall be permitted only where no feasible connection with an adjacent street exists, or if the local street connection would be to an arterial street and the function of the arterial street may be diminished as determined through the land use review process, or the block length would be less than that which is permitted by Section 8.2705(1)(B).

**FINDING:** All proposed streets are local streets and connect with existing or planned streets adjacent to the subdivision. Proposed are two cul-de-sac streets. The NW 10<sup>th</sup> Place cul-de-sac located at the northeast corner of the subdivision is necessary to provide access to NW 10<sup>th</sup> Loop. This loop will provide vehicular access to the cottage lots. Furthermore, NW 10<sup>th</sup> Place would not be permitted to connect to NW Pershall Way, an arterial street located at the property's northern boundary. Proposed NW 11<sup>th</sup> Street terminates with a cul-de-sac that is necessary to provide vehicular access to interior lots located in the central portion of the subdivision.

- D. Consideration should be given to alternative street designs other than required herein in the City's non-residential land use zones to allow for more effective developments. Such designs may be considered and approved during the subdivision or partition process without need for variance.

**FINDING:** The proposed development is not located in a non-residential zone; therefore, this standard is not applicable.

- E. All proposed or required streets and alleys shall comply with Section 8.2820 Access Management Standards, the Transportation System Plan, and with Local Street Connectivity Plans adopted as part of the transportation element of the Comprehensive Plan.

**FINDING:** The proposed development has been reviewed by City Engineering and will comply with this standard by complying with transportation-related conditions of approval.

- 2. Existing Streets. Whenever existing streets, adjacent to or within a tract, are of inadequate width to accommodate the increase in traffic expected from the land division or by the City's transportation policies as determined through a transportation impact analysis, additional right-of-way shall be provided at the time of the land division by the applicant. During consideration of the tentative plat for the subdivision or partition, the Hearings Body shall determine whether the improvements to existing streets, adjacent to or within the tract, are required. If so determined, such improvements shall be required as a condition of approval of the tentative plat. Improvements to adjacent streets shall be required where traffic on said streets shall be directly affected by the proposed subdivision. Notwithstanding these provisions, off-site improvements to streets not within or adjacent to the development may be required when impacts resulting from the development necessitate such improvements as demonstrated through a transportation impact analysis.

**FINDING:** NW Pershall Way is planned for reconstruction and re-alignment as a 3 to 5 lane City minor arterial street along property frontage per the current TSP. Upon annexation, public right-of-way dedication which provides a minimum width of fifty (50) ft. south of street centerline shall be required to

accommodate future construction of this minor arterial street along property frontage. Upon plat approval and at discretion of the City Engineer, a cash contribution for the south half of NW Pershall Way at City local street standards shall be required in lieu of constructing street frontage improvements. Street and right-of-way centerline shall match existing. NW 10<sup>th</sup> Street is a paved road and forty (40) ft. right-of-way exist, no curb or sidewalk, along the north 550 ft. ± of property frontage. A paved street with curb and sixty (60) ft. right-of-way exists along the south 700 ft. ± of property frontage per Cinder Butte Subdivision Phase 2. Upon annexation, public right-of-way dedication which provides a minimum width of forty (40) ft. west of centerline shall be required along property frontage. Street and right-of-way centerline shall match existing.

3. Minimum Right-of-Way and Roadway Width. The street right-of-way and roadway surfacing widths shall be in conformance with the standards as specified in Table 1 below:

**Table 1 - City of Redmond Right of Way and Roadway Design and Cross-Section Standards**

| Functional Class        | Width (ft)        |                    | Right-of-Way | Travel Lanes | Sidewalks | Bike Lanes** | Parking**              |
|-------------------------|-------------------|--------------------|--------------|--------------|-----------|--------------|------------------------|
|                         | Pavement Standard | Pavement (minimum) |              |              |           |              |                        |
| Residential Alley       | 16 ft             |                    | 20 ft        | n/a          | none      | shared       | none                   |
| Commercial Alley        | 20 ft             |                    | 20 ft        | n/a          | none      | shared       | none                   |
| Local Residential*****  | 36 ft             |                    | 60 ft        | 2***         | 5 ft      | shared       | both sides (unstriped) |
|                         | 28 ft*            |                    | 60 ft        | 2***         | 5 ft      | shared       | one side (unstriped)   |
|                         | 24 ft*            |                    | 60 ft        | 2***         | 5 ft      | shared       | none                   |
| Local Industrial        | 40 ft             | 38 ft              | 60 ft        | 2***         | 5 ft      | shared       | optional (unstriped)   |
| Industrial Collector    | 40 ft             | 38 ft              | 80 ft        | 2            | 5 ft      | 6 ft         | none                   |
| Minor Collector         | 40 ft             | 36 ft****          | 60 ft        | 2            | 5 ft      | shared       | both sides (8 ft)      |
| Major Collector         | 36-50 ft          | 36 ft****          | 80 ft        | 2            | 5 ft      | 6 ft         | none                   |
| Minor Arterial (3-lane) | 50 ft             | 48 ft              | 100 ft       | 3            | 7 ft      | 6 ft         | none                   |
| Minor Arterial (5-lane) | 74 ft             | 72 ft              | 100 ft       | 5            | 7 ft      | 6 ft         | none                   |

**Notes:**

\*May be constructed only in conjunction with the creation of covenants, conditions and restrictions (CCR's) and the establishment of a homeowners association (HOA) for the development. The CCR's shall provide that the primary responsibility for parking enforcement shall be the HOA, with the City of Redmond also being acknowledged in the CCR's as a beneficiary for such parking enforcement as a violation of the land use decision and/or city code.

\*\*In certain cases, bike lanes may be reduced to 5 ft, parking may be reduced to 7 ft, and travel lanes to 11 ft at the discretion of the City Engineer.

\*\*\*Unstriped travel lanes

\*\*\*\*36 ft in existing built-out areas

\*\*\*\*\*All streets less than 28 feet wide shall be no longer than 300 feet in length, unless such streets include at least one (1) parking bay per lot, located along each lot frontage for the entire length of such street, up to the maximum block length. Streets 300 feet or less in length shall not have any direct driveway access. In no case shall any street less than 28 feet wide intersect with any other street less than 28 feet wide.

**FINDING:** All proposed streets and right-of-way widths have been reviewed by the City Engineering Department and are found to be in conformance with the standards in Table 1 above. Note that the proposed right-angle eyebrow corners at NW 10<sup>th</sup> Place and NW 12<sup>th</sup> Street shall have traffic volume estimates of less than 500 average daily trips (ADT) for each corner per City of Redmond (COR) Standard Drawing (Std Dwg) 2-5 as confirmed by the Transportation Impact Analysis (TIA). Otherwise, the City elbow/cul-de-sac standard shall be required per COR Std Dwg 2-4.

4. Future Extension of Streets. When necessary to give access to or permit a satisfactory future division of adjoining land, streets shall be extended to the boundary of the subdivision or partition and the resulting dead-end streets may be approved without a permanent turn around if they are 150 feet or less in length, although, an adequate temporary turn around to ensure emergency vehicle access must be provided if such streets are greater than 150 feet in length.

**FINDING:** The proposed development will provide stubbed streets (NW 11<sup>th</sup> Street) to the adjoining property to the south and west (NW Walnut Avenue) as shown on the project plans. Doing so will

facilitate interconnectivity between neighborhoods upon development of the adjoining parcels. Lastly, the proposed dead end (stubbed) streets are less than 150 feet in length, therefore, a temporary turnaround is not required.

5. Collector and Arterial Street Access. Notwithstanding the provisions of Section 8.2705 of this Chapter, if a land division abuts or contains an existing or proposed collector or arterial street, the Community Development Director or Hearings Body may require other treatments, including but not limited to frontage roads, necessary for adequate protection of residential properties and to afford separation of through and local traffic. Provision may be made for emergency access. All frontage roads shall comply with the City of Redmond Transportation System Plan.

**FINDING:** The proposed development does not propose any collector or arterial streets. Subdivision access will be provided to NW 10<sup>th</sup> Street, a collector, via a proposed local street. As shown on the project plans, Tracts D and E will provide a buffer between residential lots and NW 10<sup>th</sup> Street, a collector street.

6. Streets Adjacent to Railroads, Freeways and Parkways. When the area to be subdivided or partitioned is residentially zoned and abuts a railroad, freeway, or parkway, a provision may be required for a street approximately parallel to and on each side of such right-of-way at a distance suitable for use of the land between the street and railroad, freeway or parkway. In the case of a railroad, there shall be a land strip of not less than 25 feet in width adjacent and along the railroad right-of-way for screen planting between the railroad right-of-way and residential property. If the intervening property between such parallel streets and a freeway or a parkway is less than 80 feet in width, such intervening property shall be dedicated to park or thoroughfare use. The intersections of such parallel streets, where they intersect with streets that cross a railroad, shall be determined with due consideration as cross streets of a minimum distance required for approach grades to a future grade separation and right-of-way widths of the cross street.

**FINDING:** The subject property does not abut any railroad, freeways, or parkways; therefore, this standard is not applicable.

7. Continuation of Streets. Subdivision or partition streets which constitute the continuation of streets in contiguous territory shall be aligned so that their center lines coincide. Where straight line continuations are not possible, such center lines shall be continued as curves. These streets or the continuation of streets in contiguous territory may be required by the Community Development Director or Hearings Body where such continuation is necessary to maintain the function of the street or desirable in the surrounding area. Where solar orientation would not be possible if the street area continued, a new pattern may be started that is solar oriented.

**FINDING:** Refer to Section 8.2710(2) finding above.

8. Lot Layout. Local residential streets should be oriented on an east-west axis to the greatest possible extent to insure solar access for lots within the subdivision or partition.

**FINDING:** The proposed internal local residential streets are oriented on an east-west axis to the greatest extent practical. Existing development and arterial roadways preclude all roads from being oriented on an east-west axis.

9. Street Names. Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of an existing street in a nearby city or in the county. Street names and numbers shall conform to the established pattern in the City, including the



continuation of street names across intersecting streets, and shall be subject to the approval of the Fire Department or the responsible agency.

**FINDING:** Street names will be reviewed and approved by the City of Redmond and/or Redmond Fire and Rescue prior to approval of the final plat.

10. Sidewalks. Sidewalks are required to be installed on both sides of a public street and in any special pedestrian way within the subdivision or partition except that in the case of collectors, arterials, special industrial districts or in steep terrain, the Hearings Body may approve a subdivision or partition without sidewalk if alternative pedestrian routes are available or provided by the developer. Sidewalks shall be required along routes to existing or future school and park sites.

**FINDING:** The proposed development will include sidewalks on both sides of all public streets as shown on the submitted project plans.

11. Bicycle Routes. If appropriate to the extension of a system of bicycle routes, existing or planned pursuant to the City of Redmond Bicycle Refinement Plan, the Community Development Director or the Hearings Body may require the installation of separate bicycle lanes within streets and/or separate bicycle paths.

**FINDING:** As mentioned earlier, the development will include multi-purpose trail along the property boundary with NW 10<sup>th</sup> Street. The trail will be constructed to City of Redmond standards and specifications.

12. Intersection Angles. Street intersections shall be as near right angles as possible except where topography or existing conditions requires a lesser angle, but in no case shall the acute angle be less than as permitted by the adopted City of Redmond Public Works Standards and Specifications.

**FINDING:** As proposed and shown on the submitted plans, all street intersections are as near right angles as possible. This standard is met.

13. Alignment. Staggered street alignment shall whenever possible leave a minimum of 200 feet distance between the center line of the streets, but in no case be less than as permitted by Standards and Specifications.

**FINDING:** The proposed development does not include staggered street alignments.

14. Narrow Streets. Local residential grid streets designed at widths less than 36 feet as described in Section 8.2710(3)(Table 1), shall be permitted when the subdivision design is found to be in compliance with the following:
  - A. Narrow streets may only be permitted for continuous full length blocks internal to a Subdivision or Planned Unit Development with street connections at both ends.
  - B. Lots adjoining the narrow streets shall be a minimum of 5000 square feet and have a street minimum 50 feet of frontage.
  - C. Sidewalks shall be separated from the curb by a landscape strip with street trees conforming with Public Works Standards and Specifications.
  - D. Curb cuts along the narrow street shall not be less than the minimum width required within the adopted City of Redmond Public Works Standards and Specifications.

**FINDING:** The proposed development will include local residential streets with widths greater than 36 feet, as shown on the submitted plans. As such, the proposed streets are not considered narrow streets. This standard is not applicable.

#### **8.2715 Fundamental Design Elements.**

1. Lighting. The subdivider or partitioner shall provide underground wiring to the City standards and a base for any proposed ornamental streetlights at locations approved by the affected utility company.

**FINDING:** The developer will provide underground wiring and bases for streetlights. No ornamental streetlights are proposed at this time.

2. Multiple Access Points. Whenever possible, a minimum of two points of access to the subdivision or partition shall be provided to provide assured access for emergency vehicles and ease resident evacuation.

**FINDING:** The proposed development will include a minimum of two points of access.

3. Water/Sewer. All subdivisions and partitions shall provide water and sewer lines constructed to City standards and specifications approved by the City Engineer. All lots or parcels shall be served from the City of Redmond water and sewer systems or by water and sewer systems acceptable to the City. Water and sewer mains and service lines shall be installed prior to the curbing and paving of new streets in all new subdivisions or partitions.

**FINDING:** The proposed development will require the extension of water and sewer lines, which are being proposed. Refer to Conditions #15 and #16 for complete information.

4. Underground Utilities. All permanent utility service and minor power transmission lines that are within or immediately adjacent to lots in a subdivision or parcels in a partition shall be provided from underground facilities unless otherwise approved by the CDD Director or Hearings Body. The subdivider or partitioner or developer shall be responsible for complying with requirements of this section and shall:
  - A. Obtain a permit from Public Works for placement for all underground utilities within the public right-of-way.
  - B. Make all necessary arrangements with the utility companies and other persons or corporations affected by the installation of such underground utilities and facilities in accordance with rules and regulations of the Public Utility Commission of the State of Oregon.
  - C. All underground utilities, water lines, sanitary sewer lines and storm drains installed in streets shall be constructed prior to the surfacing of such streets to the extent practicable, and water and sanitary sewer service lines shall be placed to such lengths as will negate the necessity for disturbing the street improvements when service connections are made.

**FINDING:** The developer will provide underground new utilities and new minor power transmission lines in compliance with this standard.

5. Preservation of Natural Features. Existing trees, vegetation and natural features (i.e. rock outcrops) add character to the development and shall be preserved to the greatest extent practicable. All trees over 8 inches d.b.h. shall be noted and shown on the tentative plat.

**FINDING:** Staff concurs with the applicant's finding that there are no significant natural features inherent to the site. The property was previously utilized for agricultural purposes and has been cleared and planted with pasture grasses. As mentioned earlier, the developer will preserve existing trees to the greatest extent practicable. All trees greater than 8 inches d.b.h are shown on page MP1.1 of the project plans.

6. Scenic Views. Significant views shall be taken into consideration during subdivision design. The establishment of view corridors, building envelopes, building height restrictions or similar methods shall be employed for the retention and protection of views from individual lots and from public spaces to the greatest degree practicable as determined through the land use review process. Such measures shall be shown on the final plat and included in the deed restrictions.

**FINDING:** This standard was addressed in Section 8.0300(D)(g) above.

7. Land for Public Purposes.
  - A. If the City has an interest in acquiring a portion of a proposed development for a public purpose, it shall notify the property owner as soon as the City Council authorizes the transaction to proceed.
  - B. Within a development, or adjacent to a development in contiguous property owned by the developer, a parcel of land of not more than 5% of the gross area of the development may be required to be set aside and dedicated to the public for parks and recreation purposes by the developer. The parcel of land, if required, shall be determined to be suitable for the park and/or recreation purpose(s) intended, and the city may require the development of the land for the park or recreation use intended or identified as a need within the community.
  - C. In the event no such area is available that is found to be suitable for parks and/or recreation uses, the developer may be required, in lieu of setting aside land to pay to the appropriate parks and recreation agency a sum of money equal to the market value of the area required for dedication, plus the additional funds necessary for the development thereof if so required; if such is required, the money may only be utilized for capital improvements by the appropriate parks and recreation agency.
  - D. The foregoing land and development or money dedication (if require) may be provided for in lieu of an equal value of systems development charge assessment for parks if so approved by the collecting agency in accordance with the applicable provisions of the system development charge ordinance. If the collecting agency will not permit the land or money dedication in lieu of an applicable systems development charge, then the land and development or money dedication shall not be required.
  - E. If the nature and design, or approval, of a development is such that over 30% of the tract of land to be developed is dedicated to public uses such as streets, water or sewer system facilities and the like, then the requirements of this subsection shall be reduced so that the total obligation of the developer to the public does not exceed 30%.

**FINDING:** The proposed development is proposing Tracts A-F. These tracts must be privately maintained.

8. Easements.
  - A. Utility Easements. Easements shall be provided along property lines when necessary for the placement of underground utilities and to provide the subdivision or partition with electric power, communication facilities, street lighting, sewer lines, water lines, gas lines, or drainage. Such easements shall be labeled "Public Utility Easement" on the tentative and final plat; they shall be at least 12 feet in width and centered on lot lines where possible, unless determined otherwise by the City Engineer or designate.

Excepting utility pole guylines easements along the rear of lots adjacent to unsubdivided land may be reduced to 10 feet in width, unless determined otherwise by the City Engineer or designate.

**FINDING:** As shown on the project plans, public utility easements (PUE) are proposed along all street rights-of-way, that meet City Engineering's requirement of PUEs at least five feet in width. Note that the Phase 3 cottage development public sewer system shall be revised to show 20 feet minimum City sewer easement that also encompasses the private street but with no encroachment or conflict by other utilities or lot/fence lines.

- B. Drainage. If a tract is traversed by a water course, such as a drainage way, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of the water course or in such further width as will be adequate for the purpose. Streets or parkways parallel to major water courses and drainage ways may be required.

**FINDING:** A minor COID sub-lateral travels through the northern portion of the subject property for which a piping easement will be required. The applicant must contact COID regarding the proposed easement and piping plan.

**8.2720 Grading of Building Sites.** Grading of building sites shall conform to the following standards unless physical conditions demonstrate the propriety of other standards:

1. Slopes shall be less than or equal to 3 to 1 (horizontal to vertical) unless slope reinforcement and low maintenance surfaces are provided. Cut slopes as steep as 1 to 1 are permitted in native rock material if that material is suitable to stand at the slope without raveling. Toe of full slopes steeper than 3 to 1 and top of cut slope shall be no closer than 2 feet from the property line.
2. Structural engineering must be provided for retaining walls higher than four feet from the base of the footing to the top of the retaining portion of the wall and for retaining walls of any height that support a surcharge such as a structure, roadway or slope greater than 4 to 1.
3. Stormwater must be controlled in accordance with the City of Redmond Public Works Standards and Specifications to avoid erosion and impacts to adjacent property.
4. Cuts and fills greater than 5 feet from original ground to final grade should be avoided.
5. Foundations should be stepped or other measures used to minimize cuts and fills. Slopes steeper than 3:1 shall be landscaped, terraced, or receive other treatment to reduce the visual impact and minimize the need for maintenance.
6. Areas that require engineered fill to support structures, roadways or for other reasons shall be noted in the grading plan. Design and placement of engineered fill shall be under the direction of a licensed professional engineer. Fill material shall be tested and approved by the engineer prior to placement and tested with suitable methods after compaction. Fill in areas that do not support a structure shall be suitable with a minimum of voids and organic material.
7. The composition of soil for fill and the characteristics of lots and parcels made useable by fill shall be suitable for the purpose intended.
8. When filling or grading is contemplated by the subdivider or partitioner, they shall submit plans showing existing and finished grades for the approval of the City Engineer. In reviewing these plans, the City Engineer shall consider the need for drainage and effect of filling an adjacent property.
9. Grading shall be finished in such a manner as not to create steep banks or unsightly areas to adjacent property.
10. Any land that requires engineered fill shall be so noted on the plat. Design and placement of engineered fill shall be under the direction of a licensed professional engineer.

**FINDING:** The applicant will submit a final grading and drainage plan to the City Engineering Department for review and approval as part of the civil plan review process.

**ARTICLE III – LAND DIVISION STANDARDS > SUPPLEMENTARY PROVISIONS**  
*RDC Sections 8.2815 – 8.2830*

- 8.2815 Transportation Impact Analysis.** It shall be the burden of the developer to evaluate transportation system impacts through studies prepared by a qualified registered professional engineer. When a transportation impact analysis is required it must demonstrate that the following standards are met:
1. The standard of measurement that will determine the acceptability of traffic flow on City streets will be a delay-based level of service as defined by the Highway Capacity Manual, Special Report 209, third Edition (2000 update or subsequent document updates) published by the Transportation Research Board. The determination of LOS shall be calculated by a methodology that is approved by the City Engineer. The acceptable standard of LOS for City streets shall be LOS E during the peak 15 minutes of the peak hours of the average weekday. A lesser standard shall be acceptable at unsignalized intersections with low volume minor street approaches if the volume-to-capacity ratio is less than 0.90 and the 95<sup>th</sup> percentile vehicle queue is less than four vehicles during the peak hour.
  2. The Average Daily Traffic (ADT) volume of Local Street roadways within the City of Redmond shall be less than 1,200 vehicles per day (VPD). Developments which add vehicle trips to Local Streets with an ADT greater than 1,200 VPD may be asked to provide mitigation in the form of additional access to the site, when in the opinion of the City Engineer, the residential livability is degraded by excessive local street traffic volume.
  3. New development that will cause degradation below those levels shall be required to provide mitigating transportation system improvements that will restore the LOS to the accepted standard, as is practical, as determined by the City Engineer and pursuant to the adopted City of Redmond Transportation System Plan. Where there are impacts to the State Highways, the City and ODOT shall work cooperatively to determine appropriate courses of action based on ODOT and City standards.
  4. The following vehicle trip generation thresholds shall determine the level and scope of transportation analysis required for a new or expanded development. Trip ends shall be calculated as per the Institute of Transportation Engineers manual, Trip Generation, 8<sup>th</sup> edition (or subsequent document updates), or local trip generation studies prepared by a qualified registered professional engineer and approved by the City Engineer. The City Engineer shall determine when a TIA has satisfied the requirements of the development's impact analysis. The TIA shall bear the stamp and signature of a qualified registered professional Engineer with a license valid in the State of Oregon.
    - A. If a proposed development will generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, then a Transportation Impact Analysis (TIA) shall be required.
    - B. Projects that generate less than 200 daily or 20 p.m. peak hour trip ends may also be required to provide a Transportation Impact Analysis (TIA) when, in the opinion of the City Engineer or his/her designee, significant capacity and/or safety problem is caused, or adversely impacted by the development. The City Engineer or designee, shall determine the scope of this analysis.
    - C. A development may be required to provide a Trip Generation Report for developments which generate less than 200 daily or 20 p.m. peak hour vehicle trips.
  5. The impact analysis area shall include at a minimum, the following intersections:
    - A. All site access intersections
    - B. Nearest intersecting collector or arterial street upstream and downstream of the development.

- C. Any other collector or arterial street intersection that would experience an increase of 25 additional peak hour trips.
- D. Additional intersections requested by staff in the basis of anticipated impacts resulting from the development.
- 6. The analysis shall include the following study time frames:
  - A. Existing conditions.
  - B. Completion year of each significant phase of development.
  - C. Five year forecast beyond final phase
- 7. The following Tables are required in the TIA:
  - A. Trip Generation (including phase breakdown if applicable)
  - B. LOS Table (LOS for every analysis scenario at every study area intersection. Report LOS, delay, V/C ratio, 95% vehicle queue, and any additional pertinent analysis results)
- 8. The following Figures are required in the TIA:
  - A. Vicinity Map
  - B. Site or Tentative Plan Map
  - C. Background Traffic Volumes (all study intersections, all analysis years)
  - D. Trip Distribution and Assignment
  - E. Background + Site Generated Traffic Volumes (all study intersections, all analysis years)
- 9. Other Analysis Standards (as required by the study)
  - A. Signal Warrants shall be performed where applicable per the Manual on Uniform Traffic Control Devices, current edition.
  - B. Left Turn Lane Warrants shall be provided where applicable per ODOT criteria based on the Texas Transportation Institute (TTI) curves.
  - C. Right Turn Lane Warrants shall be provided where applicable per ODOT criteria.
  - D. The acceptability of sight distance at all study area intersections shall be determined per AASHTO (current edition) standards.
  - E. Traffic signal progression analysis may be required if a new signal is proposed. The City Engineer shall approve the method of traffic signal progression analysis.
  - F. Roadway improvements are to be based on the City of Redmond Standards and Specifications and ODOT design standards.

**FINDING:** The applicant submitted a Traffic Impact Analysis (TIA) conducted by Transight Consulting, LLC, dated July 13, 2021. The TIA has been reviewed by City Engineering and will require recommendations as outlined in Condition #14.

**8.2820 Access Management Standards.** All land divisions shall be in compliance with the following standards.

- 1. Driveway spacing and corner clearance as follows:

| <u>Roadway Classification</u> | <u>Minimum Access Driveway Spacing</u> | <u>Minimum Access Clearance to Corner</u> | <u>Intersection Spacing (Min.)</u> |
|-------------------------------|----------------------------------------|-------------------------------------------|------------------------------------|
| Local Street                  | No restrictions                        | 30 feet                                   | 165 feet                           |
| Minor Collector               | 50 feet                                | 80 feet                                   | 330 feet                           |
| Major Collector               | 165 feet                               | 165 feet                                  | 330 feet                           |
| Minor Arterial                | 330 feet                               | 330 feet                                  | ¼ mile                             |
| Major Arterial                | ODOT Stds                              | ODOT Stds                                 | ODOT Stds                          |

- 2. In all instances, access near an intersection shall be located beyond the influence of standing queues and opposing left turns sharing a continuous two-way left turn lane. This requirement may result in greater corner clearance or access spacing than the minimum distance indicated.



3. Every lot or parcel shall be permitted an access. In the event that the access management standards cannot be achieved, shared access with adjacent property shall be explored and provided where available.
4. Access shall be taken from the lower order street or alley unless otherwise approved by Public Works and/or ODOT through the land use process.
5. Unless adequate demonstration of site necessity, intersection safety and functionality is provided, through the land use review process, new lots and/or parcels will be limited to a single vehicular access.
6. The access management standards apply to new development, redevelopment, subdivision and partitioning of land.
7. Corner clearance is measured from the edge of right-of-way to the nearest edge of access. Spacing is measured from centerline of access/intersection to centerline of access/intersection.
8. Adequate intersection sight distance and clear zone shall be maintained at all access/driveway locations per AASHTO standards (American Association of State Highway and Transportation Officials).
9. Public Works may require supporting information, including but not limited to traffic count data, trip generation, trip distribution, Transportation Impact Analysis study, etc., in order to make a proper determination of access/driveway location.
10. Access within the North Redmond US 97 Interchange Area Management Plan (IAMP) shall also conform to the "North Redmond US 97 Interchange Area Management Plan (IAMP)" provision of Chapter 9 Transportation Element of the Comprehensive Plan Addendum and Policy 12 n of Chapter 14 of the Comprehensive Plan.

**FINDING:** Driveway locations will be determined at time of building permit submittal. All proposed lots will have direct access to local streets. Staff has reviewed Access Management Standards and have found that the proposed development complies with all applicable standards.

**8.2825 Street Dedications.** Any person desiring to create a street not part of a subdivision or partition shall make written application to the Community Development Department.

1. Application. Said application shall be accompanied by the required information and appropriate filing fee. In cases where such dedication would have the effect of creating a land division, the dedication shall be treated as a new subdivision or partition as applicable.
2. Minimum Design Standards. The minimum standards of design and improvements for the dedication of a street shall be in compliance with the City of Redmond Public Works Standards and Specifications and all other applicable street standards and regulations as specified in Section 8.2710.
3. Procedure.
  - A. Upon receipt of written application and appropriate filing fee for street dedication, the Community Development Director shall refer the proposal to the City Engineer or designee for review and recommendation.
  - B. The City Engineer shall report his findings and recommendations regarding the proposed dedication to the Community Development Director
  - C. Upon receipt by the Community Development Director of written findings and recommendations from the City Engineer, the proposal shall be submitted to the City Council for a public hearing, unless part of a proposed project undergoing Planning Commission review.
  - D. The only notice required for a hearing under this section shall be by publication.
  - E. Following the hearing, the Council may accept or reject the proposed dedication.

**FINDING:** All proposed streets will be public and dedicated with the subdivision, with exception of NW 10<sup>th</sup> Loop that will be privately owned and maintained.

**Conclusion:**

Based upon the submitted plans, materials, and the proposed findings and conditions of approval included herein, staff believes that all requirements can be fulfilled to support the Master Development Plan, Cottage Development, and Tentative Subdivision of the subject property consistent with all applicable City policies, rules, and regulations.

**III. RECOMMENDATION & CONDITIONS OF APPROVAL****Recommendation:**

The Redmond Area Planning Commission held a public hearing on November 15<sup>th</sup> and voted unanimously in support of staff's recommendation. Based upon on that recommendation, the applicant made revisions to the street and lot layout and submitted a revised master plan in December. Based upon compliance with the annexation agreement, submitted plans, staff findings and conclusions, staff and the Planning Commission recommend the City Council approve the Canyon Trails project (City Files 711-21-000192-MD, 711-21-000193-COD, 711-21-000194-SUB), subject to the conditions of approval below.

**Conditions of Approval:**

The following conditions of approval shall be required:

1. Any substantial alteration to the approved plans, except as modified by the following conditions of approval, shall be subject to the standards and procedures in Section 8.1400 (*Modifications of Approval*) of the Redmond Development Code.
2. All land disturbed during construction shall be revegetated/landscaped immediately after construction is complete and dust created during construction shall be properly mitigated at all times, so as to not create significant impacts upon the neighboring properties.
3. The applicant's plans have not demonstrated that the proposed cottage development meets the cottage orientation requirements listed in Section 8.0285(6)(D)(3) of the Redmond Development Code. The applicant must submit plans for review that comply with this requirement.
4. In relation to the cottage development, Section 8.0285(6)(D)(4)(e) of the Redmond Development Code requires that open space, common areas, and common structures shall be financially assured of continued maintenance. A legal mechanism shall be provided, which guarantees the continued maintenance of such areas and structures. The applicant shall submit draft CC&Rs for review prior to final plat.
5. In relation to the cottage development, Section 8.0285(6)(D)(5)(f) of the Redmond Development Code requires that private open space (yards) shall be a minimum of 300 square feet of private, contiguous, usable open space adjacent to each dwelling unit, for the exclusive use of the cottage resident. The applicant must submit plans for review that comply with this requirement.
6. In relation to the cottage development, Section 8.0285(6)(D)(5)(g) of the Redmond Development Code requires that cottages have a minimum of 10% of floor area square footage as a roofed porch or patio combination (porches are not included within floor area calculations). The applicant must submit plans for review that comply with this requirement.
7. Given the new housing and employment opportunities in the area, planning for future transit stop(s) is needed. Cascades East Transit requests that the construction of an 8' x 5' concrete pad for a bus stop be included in the development's plans.

8. The applicant must provide specific plans to fulfill the Great Neighborhood Principle pertaining to public art.
9. To comply with Section 8.0300(C)(13)(i) of the Redmond Development Code, the applicant shall provide a landscaping plan for the proposed pocket parks, denoted on the plans as Tracts A and F. These tracts, in addition to Tracts D and E, must be privately maintained, and a complete landscaping and amenities plan must be submitted for review and approval prior to final plat approval.
10. The developer shall grant a public access easement for the portion(s) of the COID trail that traverse the subject property. Furthermore, the developer must describe how the trail will function and its final design.
11. The applicant shall supply a phasing timetable projection as well as a street tree plan as required in Section 8.2220 of the Redmond Development Code.
12. The applicant will need to contact the Central Oregon Irrigation District (COID) regarding the proposed easement location depicted on the plan and piping plans. COID has determined the proposed location does not provide sufficient access for operations and maintenance (refer to COID comments in Attachment C).
13. No on-street parking shall be permitted on NW 10<sup>th</sup> Loop.
14. Transportation: All public streets shall be designed, constructed and dedicated to current City of Redmond Standards & Specifications and Transportation System Plan (TSP) standards and extended to the limits of each project phase unless otherwise specified or approved. Five (5) ft. minimum width public utility easement (PUE) shall be dedicated along all street right-of-way per COR Standard Drawing 2-1. Street signage, lane striping, street lights and postal box installation shall be required. All street names shall be approved by Redmond Fire and Rescue and/or Deschutes County. The proposed revised master plan and public street system complies with City grid street and TSP standards subject to the following: *[COR Code 8.0300(3)(C)(10)] [COR Code 8.2240(1 & 4) 8.2320(2)(A) & 8.2710(1, 2, 3 & 10)] [CORPWSS Development Provisions 03]*
  - A) **NW Pershall Way** - minor arterial street. A paved county road and seventy (70) ft. right-of-way exists, no curb or sidewalks, along property frontage. NW Pershall Way is planned for reconstruction and re-alignment as a 3 to 5 lane City minor arterial street along property frontage per the current TSP. Upon annexation, public right-of-way dedication which provides a minimum width of fifty (50) ft. south of street centerline shall be required to accommodate future construction of this minor arterial street along property frontage. Upon plat approval and at the discretion of the City Engineer, a cash contribution for the south half of Pershall Way at City local street standards shall be required in lieu of constructing street frontage improvements. Street and right-of-way centerline shall match existing.
  - B) **NW 10<sup>th</sup> St.** - major collector street. A paved road and forty (40) ft. right-of-way exist, no curb or sidewalk, along the north 550 ft. ± of property frontage. A paved street with curb and sixty (60) ft. right-of-way exists along the south 700 ft. ± of property frontage per Cinder Butte Subdivision Phase 2. Upon annexation, public right-of-way dedication which provides a minimum width of forty (40) ft. west of centerline shall be required along property frontage. Street and right-of-way centerline shall match existing. Street frontage improvements conforming to City major collector street standards per COR Standard Drawing 2-1 shall be

required as follows:

- 1) North 550 ft. ± of property frontage - full width street improvements with new pavement section, turn lanes if warranted, curbs on both sides, sidewalk on the west side, storm drainage, bike lane and striping. Additional right-of-way dedication may be required if turn lane widening or intersection improvements at Pershall Way are warranted.
  - 2) South 700 ft. ± of property frontage - new sidewalk improvements shall be required on the west side along property frontage.
- C) **NW Walnut Ave.** - local grid street. Street improvements conforming to City local grid street standards shall be required per COR Standard Drawing 2-1 with new pavement, curb, sidewalk, storm drainage and sixty (60) ft. minimum right-of-way dedication. Street and right-of-way centerline shall match that of City approved Cinder Butte Subdivision to the east and Canyon Ridge Subdivision to the west.
- D) **NW 11<sup>th</sup> St.** - local grid street/cul-de-sac. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication. Street and right-of-way centerline shall match existing at the south property boundary.
- E) **NW Walnut Dr.** - local/cul-de-sac street. The proposed right-angle eyebrow corners at 10<sup>th</sup> Pl. and 12<sup>th</sup> St. shall have traffic volume estimates of less than five-hundred (500) average daily trips (ADT) for each corner per COR Std Dwg 2-5 as confirmed by the Transportation Impact Analysis (TIA). Otherwise, the City elbow/cul-de-sac standard shall be required per COR Std Dwg 2-4. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 and/or 2-5 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication.
- F) **NW 12<sup>th</sup> St.** - local street. Street improvements conforming to City local street standards shall be required per COR Standard Drawing 2-1 with new pavement, curb, sidewalk, storm drainage and sixty (60) ft. right-of-way dedication.
- G) **NW 10<sup>th</sup> Place** - local/cul-de-sac street. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication.
- H) **NW 10<sup>th</sup> Loop (Private)** – 10<sup>th</sup> Loop shall be privately owned and maintained. Improvements conforming to City alley standards with minimum twenty (20) ft. wide pavement are recommended. Private street driveway connections to the public cul-de-sac shall be constructed to City standards.
- I) **Street Storm Drainage:**
- 1) Stormwater drainage systems in the public right-of-way shall be subject to current City design standards. *[COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]*
  - 2) New drywells shall comply with City/DEQ pretreatment and City testing requirements. Drywell drain rock shall not extend under any street pavement section. *[COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]*
  - 3) The location of drywells or other UIC's within City streets shall not conflict with existing active private water wells, community water wells or existing/future municipal drinking water wells. Identify all existing water wells that are within 500 ft. or the two-year time of travel zone of subject properties. *[COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]*
- J) **Street Trees:**
- 1) No street trees within 50 ft. of a street intersection per COR Standard Drawing 2-27.
  - 2) No trees within 10 ft. of domestic water service, fire service or public storm facilities.
  - 3) Trees shall not conflict with street or stop sign/control device and pedestrian crossing/ADA ramp line of sight.

- 4) No trees within driveway clear vision areas or blocking public street lighting.
- 5) Street tree species shall be selected from Redmond Parks Division approved tree list.

K) Lot Access:

- 1) Vehicular access to each new lot shall conform to City access management, corner clearance, clear vision and driveway construction standards. [COR Code 3.300, 8.0305 & 8.2820]
- 2) Direct vehicular access to Pershall Way, a minor arterial street, and 10<sup>th</sup> St., a major collector street, shall not be permitted from any lot or alley except for approved emergency access connections. [COR Code 8.2820(4)]
- 3) Corner lots and double fronting lots shall take vehicular access from the lower order street, alley or access easement. [COR Code 8.2820(4)]
- 4) Postal box installation shall be subject to US Postal Service standards and City Engineer approval. [CORPWSS Design Standards II(A)(16)]

L) Traffic Impacts: The "Canyon Trails Master Plan Transportation Impact Analysis" (TIA) submitted by Transight Consulting dated 7-13-21 has been reviewed for master plan and subdivision approval per COR Code 8.0300(3)(C)(10) and 8.2815 and the following is recommended:

- 1) Traffic volume estimates at the proposed right-angle eyebrow corners in NW Walnut Dr. at 10<sup>th</sup> Pl. and 12<sup>th</sup> St. shall be provided.
- 2) ODOT and Deschutes County shall review and approve. [COR Code 8.2815(3)]
- 3) NW Pershall Way/US97 (O'Neil Junction) intersection shall be studied per COR Code 8.2815(5)(B); nearest up-downstream collector/arterial.
- 4) NW Pershall Way/US97 (O'Neil Junction); near-term solutions and/or contribution shall be provided to mitigate impact on existing conditions compounded by proposed development subject to ODOT review/approval. [COR Code 8.2815(3)]
- 5) No other mitigation will be required beyond Transportation SDC's.

15. Water: A twelve (12) inch City water main exists in 10<sup>th</sup> St. along the south 700 ft. ± of subject property per Cinder Butte Subdivision Phase 2. An eight (8) inch City water main exists in Varnish Ave at 11<sup>th</sup> St. south of subject property.

A) Subject property is located within City water pressure zone PZ3-3A per draft City Water System Plan (WSP) update to be served by the future twelve (12) inch water main line identified as P-58 in 10<sup>th</sup> St along property frontage and in Walnut Ave. west of 10<sup>th</sup> Street. [COR Code 8.0300(3)(C)(11), 8.2235(1)(D)] [CORPWSS Development Provisions 03]

B) Connection to the City's public water system shall be required for each new lot. [COR Code 8.2240(5) & 8.2715(3)]

C) Proposed public water system shall be subject to City "to & through" Public Facility Requirement and WSP standards for service to each new lot and adjacent property and the following: [COR Code 8.0300(3)(C)(11) & CORPWSS Development Provisions 03]

- 1) The twelve (12) inch public water main identified as P-58 per draft WSP update shall be extended in 10<sup>th</sup> St. along property frontage from existing per Cinder Butte Phase 2 north to Pershall Way and also extended in Walnut Ave. west of 10<sup>th</sup> Street. The P-58 water main may be eligible for City Water SDC credits equal to the cost of additional construction required for conformance to WSP standards.

- 2) Design review of the public improvement construction plans for compliance to City standards.

D) Private Interior Water System - proposed water system located on-site and serving the proposed Cottage lots including any fire hydrants shall be privately owned and maintained due to interior lots with no public right-of-way frontage. A single water master meter and City approved backflow prevention device located at the property/right-of-way line shall be required for the entire cottage complex. The private water system shall also be subject to Oregon Health Authority (OHA) review/approval. [COR Code 4.050(11), 8.2240(5) & 8.2715(3)] [CORPWSS Design Standards II(D)(1)(d)]

E) A separate domestic water service connection conforming to City standards shall be required for each new lot with meter located at the property/right-of-way line. A City approved backflow prevention device shall be required for all non-residential properties, water services larger than one (1) inch, fire sprinkler systems and irrigation systems. [COR Code 4.200, 4.161, 8.2240(5) & 8.2715 (3 & 4(C))]

F) Fire flow, fire hydrant locations and fire code requirements to be determined by Redmond Fire & Rescue (RFR).

1) A water system/fire flow analysis and mitigation plan prepared by a registered professional engineer shall be provided as required by the Redmond Fire Marshal. [CORPWSS Development Provisions 04.2.00] [CORPWSS Design Standards II(D)(1(a) & 3(a))]

2) Public water system improvements may be required as deemed necessary by the fire flow analysis mitigation plan to meet minimum fire code and fire flow requirements for the proposed development. [COR Code 8.2235(1)(D)] [CORPWSS Design Standards II(D)(1(a) & 3(a))]

G) Abandonment of any existing water well, cistern or other private water facility located on subject properties shall be in accordance with Oregon Water Resource Department regulations. [CORPWSS Development Provisions 04.7.00 & 22(13)]

16. Wastewater: Eight (8) inch City gravity sewer main exists in Varnish Ave. at 11<sup>th</sup> St. south of subject property. Eight (8) inch City gravity sewer main exists in 10<sup>th</sup> St. north of Walnut Ave. along Phase 1 property frontage per Cinder Butte Subdivision Phase 2. An inactive/dry section of the twenty-four (24) inch Far East Sewer Interceptor (FESI) City gravity sewer trunk main exists in Varnish Ave. and 15<sup>th</sup> St. south and west of subject property per current City Redmond Wastewater System Master Plan (RWSMP).

A) Subject property is located within a sanitary gravity sewer basin to be served by the future twenty-four (24) inch City gravity sewer trunk main identified as the Far East Sewer Interceptor (FESI) per the current RWSMP. The FESI is currently located in Varnish Ave and 15<sup>th</sup> St, just south and west of the proposed development but is inactive and incomplete until future extension southwest and connection to the City's Water Pollution Control Facility (WPCF) in the Dry Canyon. Based on the City's sewer system model, there is limited excess capacity available within existing City gravity sewer system including the ten (10) inch gravity sewer main in Upas Ave. and downstream to the WPCF. Therefore, in the absence of a complete and active FESI gravity system, the proposed connection to the existing active City gravity sewer system has been approved per Infrastructure Capacity Allocation Review memo by the City Engineer dated 2-19-21 subject to complete gravity sewer service: [COR Code 8.0300(3)(C)(11), 8.2235(D) & 8.2240(6)]

B) Connection to the City's public sewer system shall be required for each new lot. [COR Code 8.2240(5) & 8.2715(3)]

C) Proposed public gravity sewer system complies with City "to & through" Public Facility Requirement and RWSMP standards for service to each new lot and adjacent property subject to: [COR Code 8.0300(3)(C)(11) & CORPWSS Development Provisions 03]

1) The Phase 3 Cottage public sewer system shall be revised to show 20 ft. minimum City sewer easement that also encompasses the private street but with no encroachment or conflict by other utilities or lot/fence lines.

2) All public gravity sewer mains shall be designed and constructed to provide a gravity service to each new lot and neighboring properties unless otherwise approved by the City Engineer.

3) Sewer services shall be located to provide complete gravity service.

4) Sewer manholes shall be located on street centerline whenever possible, at 400 ft. max spacing and at any main line terminus. Manholes shall be added or moved accordingly to match street alignments and to avoid conflicts with public water.

5) Public sanitary sewer facilities located beyond public right-of-way will require dedication of



City sewer and/or public utility easements that provide unobstructed City access and turnarounds. [COR Code 8.2215(2)(E) & 3(B)), 8.2320(2)(B) & 8.2715(8)(4)] [CORPWSS Development Provisions 07]

6) Design review of the public improvement construction plans for compliance to City standards.

D) A separate sanitary sewer service conforming to City standards shall be required for each new lot with cleanout located at the property/right-of-way or easement line. All sewer services shall be connected at right angles to the sewer mainline, and not to manholes, unless otherwise approved by the City Engineer. [COR Code 8.2240(5) & 8.2715(3 & 4(C))]

E) Any existing sewage drill hole, septic tank or other private sewer facility located on subject property shall be permanently abandoned in accordance with Deschutes County and Oregon Dept. of Environmental Quality (DEQ) regulations. [COR Code 4.304(3)] [CORPWSS Development Provisions 04.7.00 & 22(13)]

17. Subdivision Grading and Drainage: A subdivision site grading and drainage plan with erosion/sediment control plan and drainage report shall be required upon development of each project phase per current City standards and the following: [COR Code 8.2720] [CORPWSS Development Provisions 23] [CORPWSS Design Standards II(B)]

A) Lot and Tract grading shall conform to current COR Development Code 8.2720 and shall not create steep banks, extreme cut/fills or areas unsightly to adjacent properties or lots.

B) All storm water runoff and drainage shall be maintained on each lot or tract and shall not drain onto public streets, neighboring properties or irrigation canals/ditches except as provided for in City standards.

C) Total contributing area to the public storm system shall include all right-of-way surface runoff and 100% of the future developed lots potential contributing areas unless otherwise approved by the City Engineer.

D) The stormwater system shall be designed to pass up-gradient flow through the site without damage to the proposed development, public stormwater facilities or neighboring properties.

E) Storm water runoff from private property shall not impact public right-of-way or easements unless otherwise approved by the Public Works Director or City Engineer.

F) New on-site private drywells and other underground injection control (UIC) systems not part of the public drainage system must be registered and approved or permitted by the Oregon Department of Environmental Quality (DEQ) prior to construction or building permit issuance. Contact DEQ UIC Program Coordinator at 503-229-5945. Send copy of UIC Registration Packet to DEQ and City of Redmond, 3100 NW 19<sup>th</sup> Street, Redmond, OR, 97756.

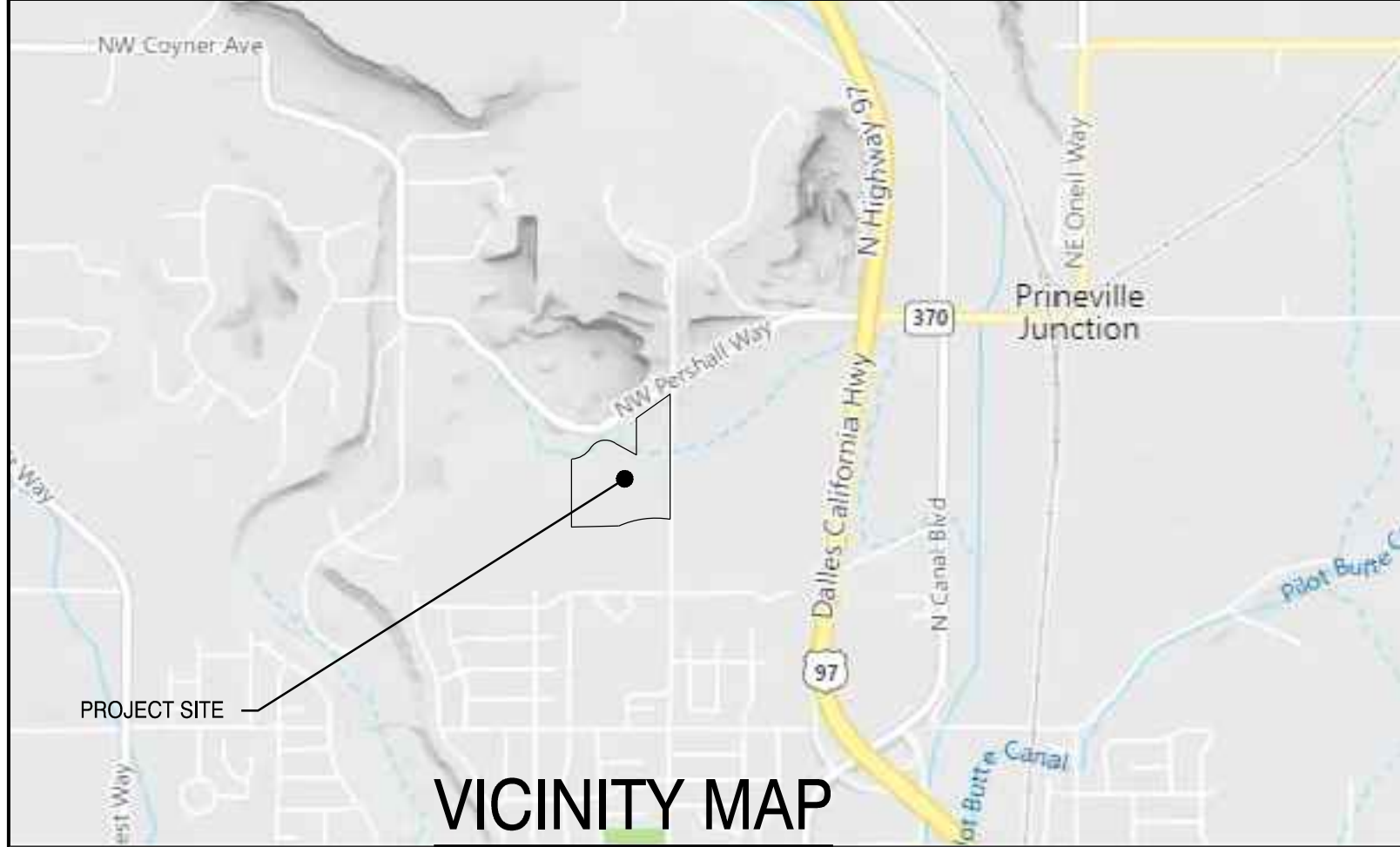
G) Private drywells serving paved areas may not be located within public or community wellhead protection areas or 500 ft. of existing irrigation or drinking water wells. Locate and identify existing water wells and wellhead protection zones that could affect the location of proposed drywells. [CORPWSS Development Provisions 23] [OAR 340-044-0018]

H) Maintenance agreement required for any on-site private storm system.

18. Construction Plans: Upon land use approval, a separate set of construction drawings may be submitted directly to the Engineering Department for design review of all required and/or proposed public improvements, utilities and subdivision site grading. [COR Code 8.2720 & 8.2800] [CORPWSS Development Provisions 04 & 23] [CORPWSS Design Standards]

//////////////////// **END OF CONDITIONS** //////////////////////

Prepared by:  
Kyle Roberts, AICP  
Senior Planner



VICINITY MAP

NTS

| LEGEND |                                 |
|--------|---------------------------------|
|        | EXISTING CABLE                  |
|        | EXISTING GAS                    |
|        | EXISTING IRRIGATION             |
|        | EXISTING OVERHEAD LINES         |
|        | EXISTING POWER                  |
|        | EXISTING SANITARY SEWER         |
|        | EXISTING STORM DRAIN            |
|        | EXISTING TELECOMMUNICATIONS     |
|        | EXISTING WATER                  |
|        | NEW CABLE                       |
|        | NEW GAS                         |
|        | NEW IRRIGATION                  |
|        | NEW POWER                       |
|        | NEW SANITARY SEWER              |
|        | NEW STORM DRAIN                 |
|        | NEW TELECOMMUNICATIONS          |
|        | NEW WATER                       |
|        | FENCE                           |
|        | EXISTING RIGHT-OF-WAY           |
|        | EXISTING EDGE OF GRAVEL         |
|        | EXISTING EDGE OF PAVEMENT       |
|        | EXISTING CURB                   |
|        | NEW RIGHT-OF-WAY                |
|        | NEW EDGE OF GRAVEL              |
|        | NEW EDGE OF PAVEMENT            |
|        | NEW CURB                        |
|        | EXISTING                        |
|        | PROPOSED                        |
|        | SANITARY SEWER MANHOLE          |
|        | STORM DRAIN MANHOLE, DRYWELL    |
|        | WATER VALVE, GAS VALVE          |
|        | AIR RELEASE VALVE               |
|        | BACKFLOW PREVENTER              |
|        | WATER METER, GAS METER          |
|        | FIRE HYDRANT                    |
|        | CATCH BASIN/CURB INLET          |
|        | CLEAN OUT                       |
|        | RAIN DRAIN                      |
|        | STREET LIGHT, PARKING LOT LIGHT |
|        | UTILITY POLE, GUY ANCHOR        |
|        | UTILITY VAULT                   |
|        | ELECTRICAL PEDESTAL             |
|        | CABLE PEDESTAL                  |
|        | TELECOMMUNICATIONS PEDESTAL     |
|        | IRON ROD, IRON PIPE             |
|        | TREES                           |
|        | SIGN                            |
|        | MAILBOX                         |

SITE INFORMATION

ADDRESS: 3627 NW 10TH ST, REDMOND, OR 97756  
TAX ASSESSORS MAP: TAX LOT 300, MAP 141333C  
PROPERTY SIZE: 19.23 ACRES  
ZONING: UH10  
PROPOSED ZONING: R4/COTTAGE DEVELOPMENT  
PROPOSED R4 NET AREA: 10.8 ACRES  
PROPOSED R4 DENSITY: 6.9 UNITS PER ACRE  
MAX ALLOWABLE R4 DENSITY: 10 UNITS PER ACRE  
PROPOSED COTTAGE NET AREA: 2.7 ACRES  
PROPOSED COTTAGE DENSITY: 6.4 UNITS PER ACRE  
ALLOWABLE COTTAGE DENSITY: 5 TO 12 UNITS PER ACRE

PROPOSED USE

MASTER PLAN 92-LOT SUBDIVISION FOR:  
75 SINGLE FAMILY HOMES AND  
17 COTTAGE LOTS

OWNER

NICKO PROPERTIES LLC  
4572 SW BADGER  
REDMOND, OR 97756

VERTICAL DATUM

ELEVATIONS ARE BASED ON TIE TO CITY OF REDMOND BENCHMARK 8-M-2 BEING A 3" BRASS DISK SET IN CONCRETE ABUTMENT OF WING WALL AT THE SW CORNER OF CANAL BRIDGE AT THE INTERSECTION OF NW GREENWOOD AVE AND NW CANAL BLVD.  
ELEVATION = 2990.38' (NGVD29)

SHEET INDEX

|       |                                 |
|-------|---------------------------------|
| MP1.0 | COVER SHEET                     |
| MP1.1 | EXISTING CONDITIONS PLAN        |
| MP1.2 | STREET AND UTILITY PLAN         |
| MP1.3 | TENATIVE SUBDIVISION PLAT       |
| MP1.4 | HOUSING DEVELOPMENT PLAN        |
| MP1.5 | LANDSCAPE AND TREE REMOVAL PLAN |
| MP1.6 | COTTAGE SITE PLAN               |

CIVIL ENGINEER

H.A. M<sup>c</sup>COY ENGINEERING & SURVEYING  
CONTACT: HAYES M<sup>c</sup>COY  
1180 SW LAKE ROAD  
SUITE 201  
REDMOND, OR 97756  
PH: 541-923-7554

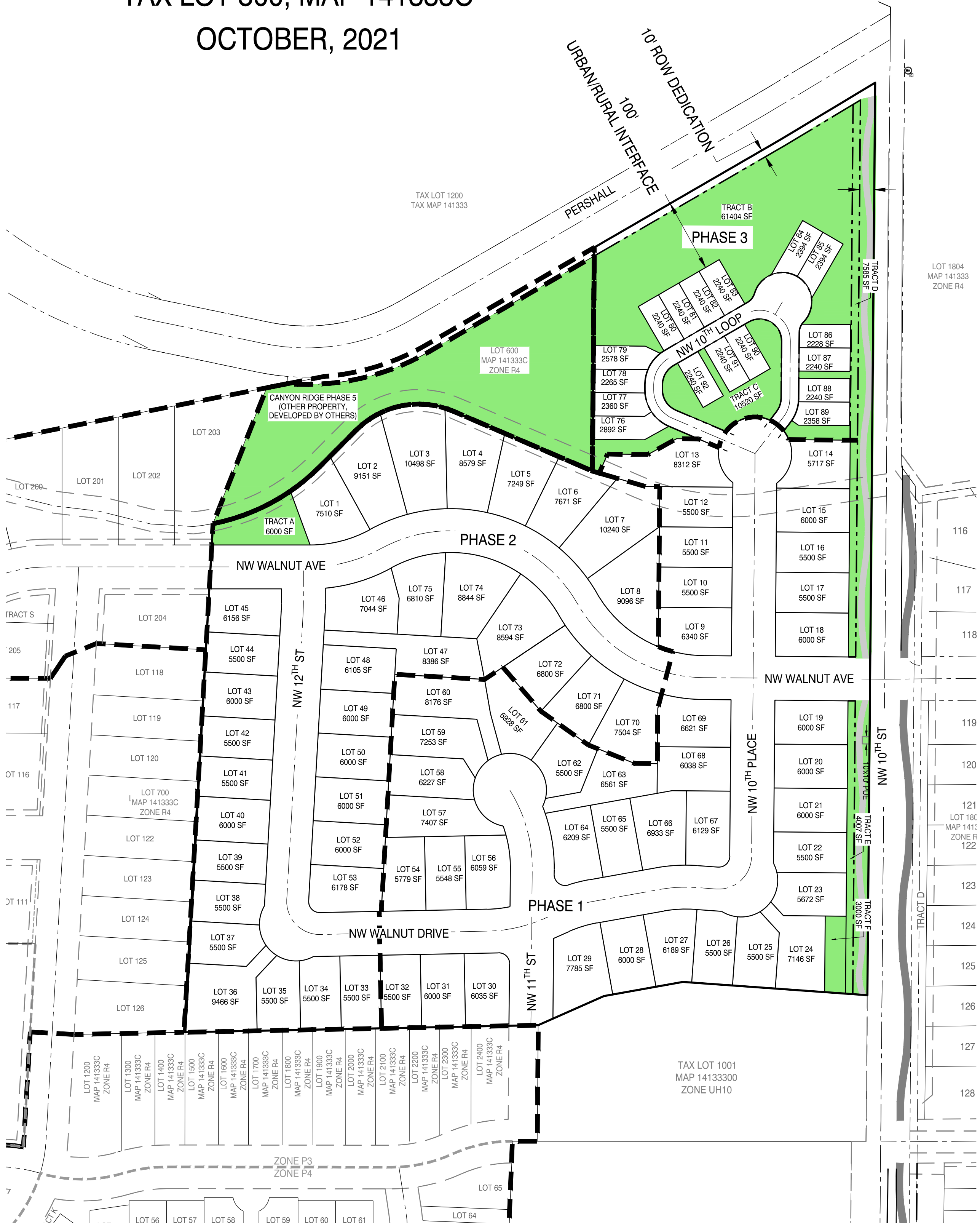
CANYON TRAILS

SUBDIVISION APPLICATION, MASTER PLAN, AND  
COTTAGE DEVELOPMENT

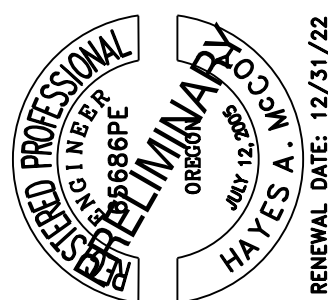
3627 NW 10TH ST, REDMOND, OR 97756

TAX LOT 300, MAP 141333C

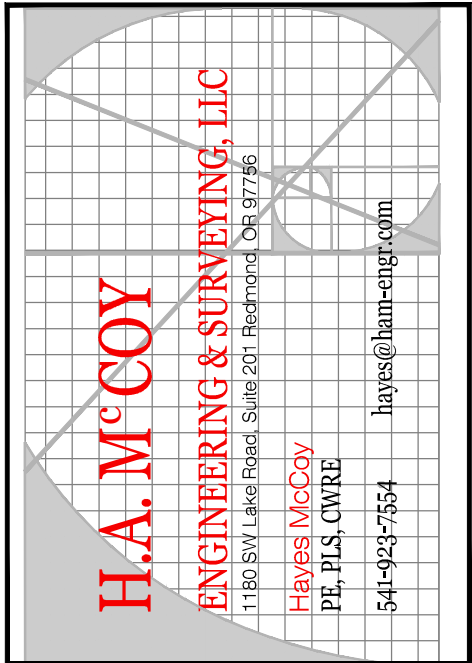
OCTOBER, 2021



ATTACHMENT A



| DRAWING STATUS:                     | MASTER PLAN              | DATE:                    | 12/9/21                  | No. REVISION:            | DATE:                    |
|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



PROJECT: CANYON TRAILS MASTER PLAN  
PROJECT LOCATION: REDMOND, OR  
CLIENT: MONTE VISTA HOMES

SHEET TITLE: COVER SHEET

|           |        |
|-----------|--------|
| JOB NO.   | 20-247 |
| DRAWN BY: | EDN    |
| DRAWING:  | MP1.0  |



| CURVE TABLE |        |        |       |                 |              |
|-------------|--------|--------|-------|-----------------|--------------|
| CURVE#      | LENGTH | RADIUS | DELTA | CHORD DIRECTION | CHORD LENGTH |
| C2          | 143.16 | 120.00 | 68.35 | S79° 05' 24"W   | 134.82       |

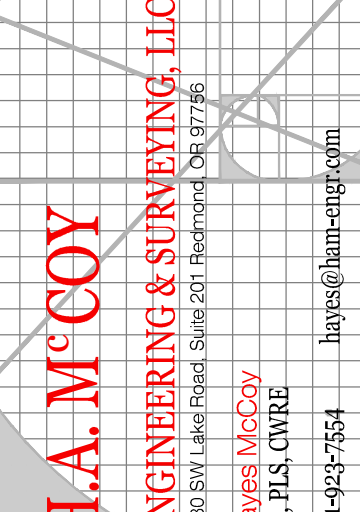
[illegible]

**SCALE: 1" = 75'**  
**FOR 34"x22" SHEETS**



A horizontal scale bar with alternating black and white segments. It is marked with '0' at the left end, '75'' in the middle, and '150' at the right end.

| DRAWING STATUS:                                 | DATE:   | No. | REVISION: | DATE: |
|-------------------------------------------------|---------|-----|-----------|-------|
| <input checked="" type="checkbox"/> MASTER PLAN | 12/9/21 | △   |           |       |
| <input type="checkbox"/>                        |         | △   |           |       |
| <input type="checkbox"/>                        |         | △   |           |       |
| <input type="checkbox"/>                        |         | △   |           |       |
| <input type="checkbox"/>                        |         | △   |           |       |
| <input type="checkbox"/>                        |         | △   |           |       |
|                                                 |         |     |           |       |



**H.A. McCOY**  
**ENGINEERING & SURVEYING, LLC**  
 1180 SW Lake Road, Suite 201, Richmond, OR 97136  
*Hayes McCoy*  
 PE, PLS, CWRRE  
[hayes@han-ctr.com](mailto:hayes@han-ctr.com)  
 541-923-7554

PROJECT: CANYON TRAILS MASTER PLAN

PROJECT LOCATION: REDMOND, OR

CLIENT: MONTE VISTA HOMES

**SHEET TITLE:**

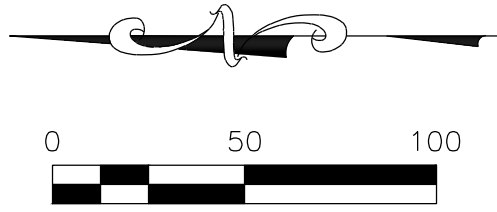
**EXISTING CONDITIONS  
PLAN**

|           |        |
|-----------|--------|
| JOB NO.   | 20-247 |
| DRAWN BY: | EDN    |
| DRAWING:  | MP1.1  |









#### LOT REQUIREMENTS:

##### R4 LOTS:

- MINIMUM LOT AREA OF 5,500 SF
- MAXIMUM GROSS DENSITY OF 10 UNITS PER ACRE
- SETBACKS:
  - FRONT: 10'
  - GARAGE: 20'
  - SIDE: 5/ 10'
  - CORNER: 15'
  - REAR : 20'

##### COTTAGE LOTS:

- NO MINIMUM LOT AREA
- NO WIDTH OR DEPTH REQUIREMENTS
- ALLOWABLE DENSITY OF 5 TO 12 UNITS PER ACRE
- SETBACKS:
  - PERIMETER OF COTTAGE AREA: 20' ABUTTING AN ARTERIAL OR COLLECTOR STREET AND UNDERLYING ZONE IN ALL OTHER CASES
- FRONT: NONE
- BETWEEN BUILDINGS (FRONT OR REAR LOT LINE): 10'
- OPEN SPACE PER DWELLING: 800 S.F.

#### SITE DESIGN:

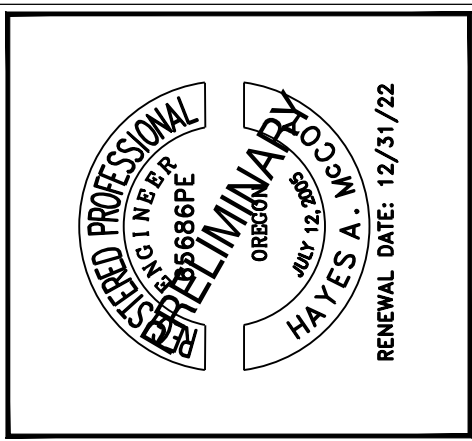
PROPOSED ZONING: R4/COTTAGE DEVELOPMENT  
TOTAL ACRES: 19.23 ACRES  
TOTAL # OF LOTS: 92  
OVERALL DENSITY: 4.8 UNITS PER ACRE  
MAX ALLOWABLE R4 DENSITY: 10 UNITS PER ACRE  
OPEN SPACE AREA: 71,326 SQUARE FEET

PROPOSED R4 LOT NET AREA: 10.8 ACRES  
TOTAL # OF R4 LOTS: 75  
PROPOSED R4 DENSITY: 6.9 UNITS PER ACRE

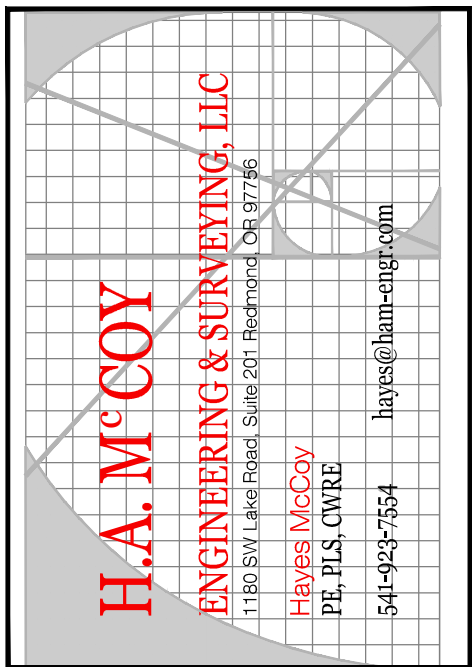
PROPOSED COTTAGE NET AREA: 2.7 ACRES  
TOTAL # OF R4 LOTS: 17  
PROPOSED COTTAGE DENSITY: 6.3 UNITS PER ACRE  
OPEN SPACE PER UNIT: 4,123 S.F.



TAX LOT 1001  
MAP 14133300  
ZONE UH10



| DRAWING STATUS:                                 | DATE:   | No. REVISION:            | DATE: |
|-------------------------------------------------|---------|--------------------------|-------|
| <input checked="" type="checkbox"/> MASTER PLAN | 12/9/21 | <input type="checkbox"/> |       |
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| PROJECT:          | CANYON TRAILS MASTER PLAN |
| PROJECT LOCATION: | REDMOND, OR               |
| CLIENT:           | MONTE VISTA HOMES         |

|              |                               |
|--------------|-------------------------------|
| SHEET TITLE: | TENTATIVE<br>SUBDIVISION PLAT |
|--------------|-------------------------------|

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| JOB NO.   | 20-247 |
| DRAWN BY: | EDN    |
| DRAWING:  | MP1.3  |



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HOUSING TYPE A



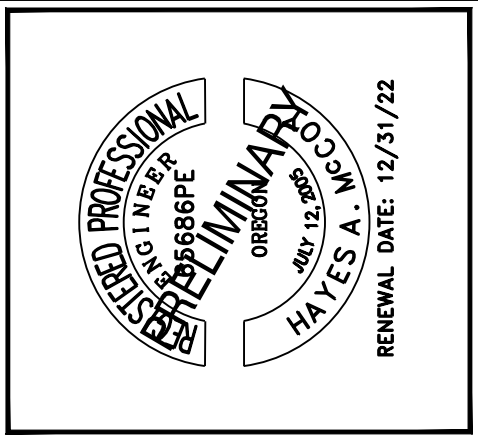
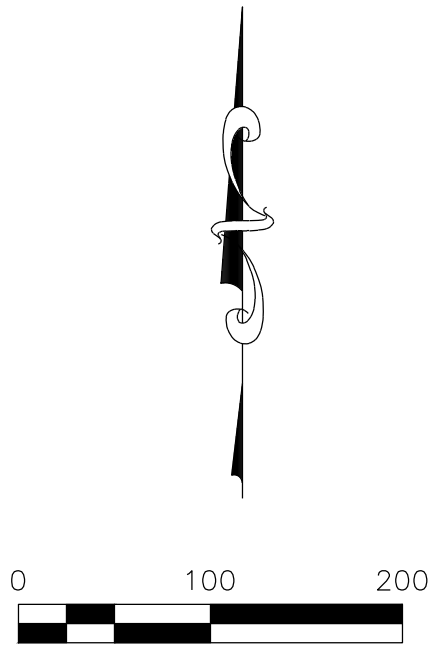
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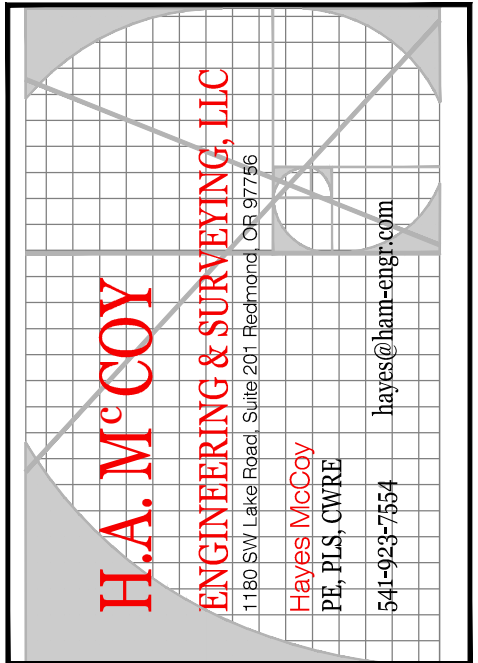
COTTAGE EXAMPLE



| LEGEND |                    |
|--------|--------------------|
|        | SINGLE FAMILY LOTS |
|        | COTTAGE LOTS       |
|        | OPEN SPACE         |



| DRAWING STATUS:                                 | DATE:   | No. REVISION:            | DATE: |
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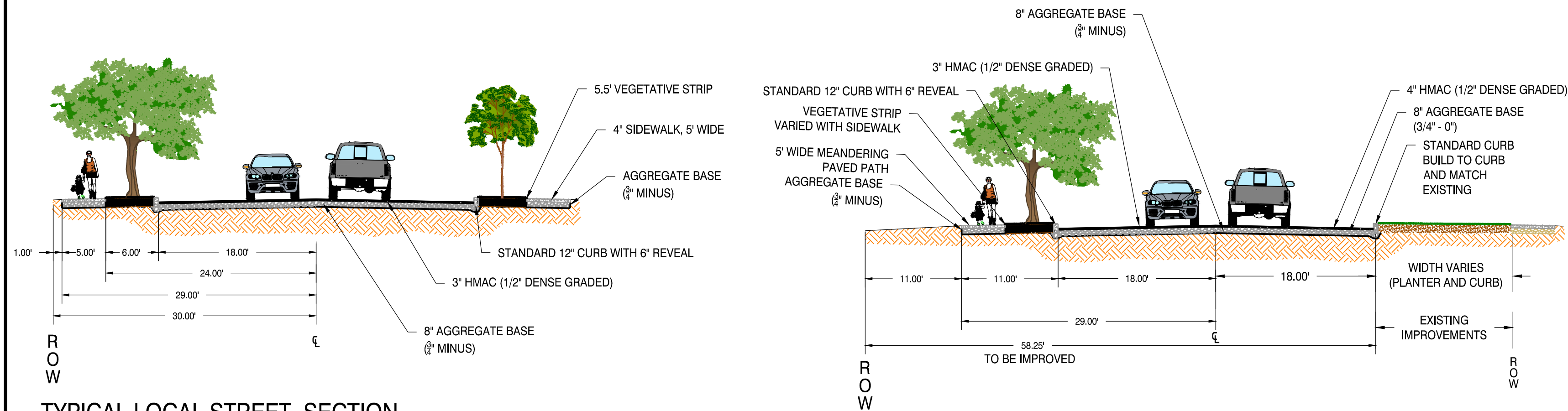
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| PROJECT:          | CANYON TRAILS MASTER PLAN |
| PROJECT LOCATION: | REDMOND, OR               |
| CLIENT:           | MONTE VISTA HOMES         |

|              |                          |
|--------------|--------------------------|
| SHEET TITLE: | HOUSING DEVELOPMENT PLAN |
|--------------|--------------------------|

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| JOB NO.   | 20-247 |
| DRAWN BY: | EDN    |
| DRAWING:  | MP1.4  |

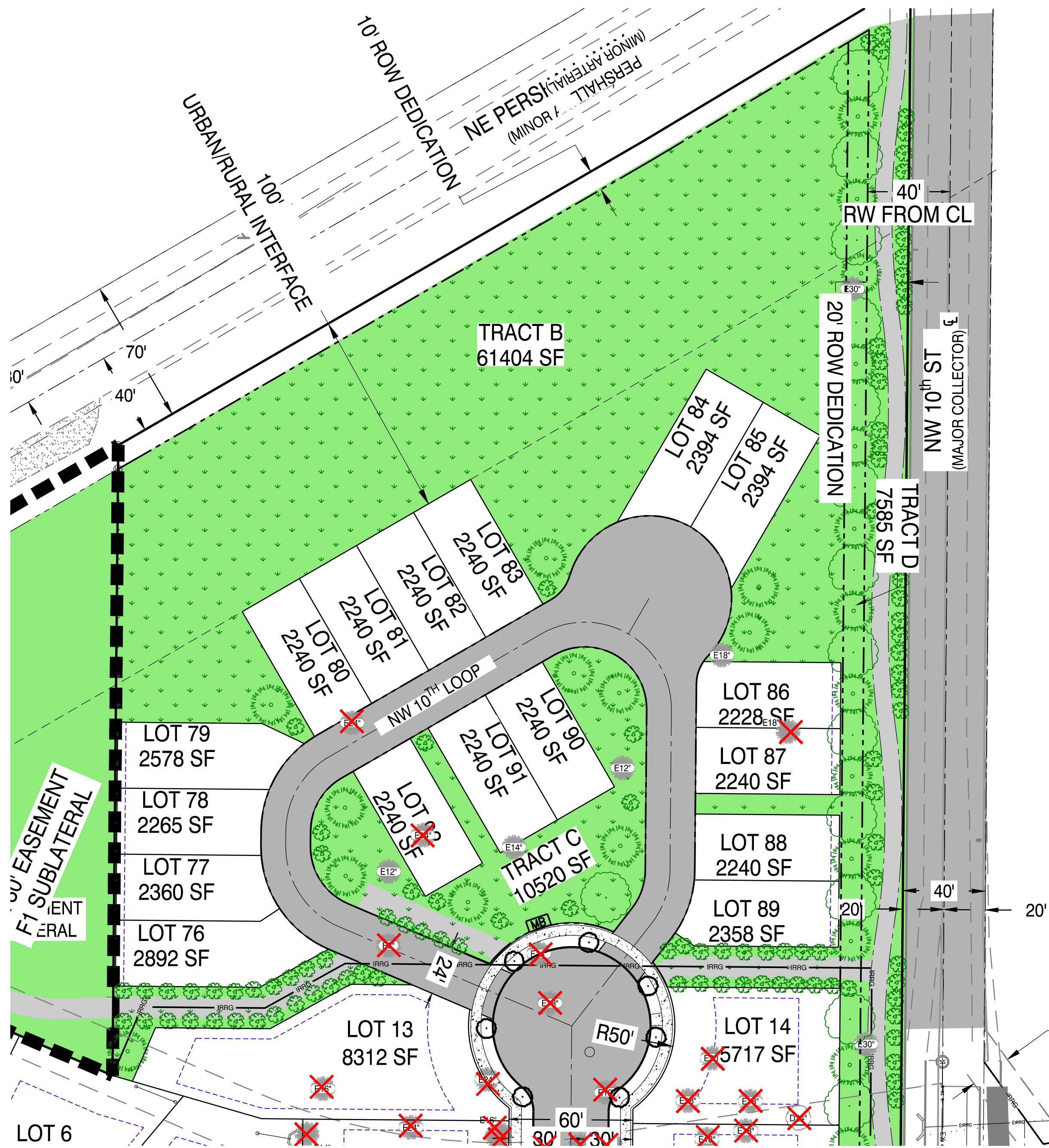


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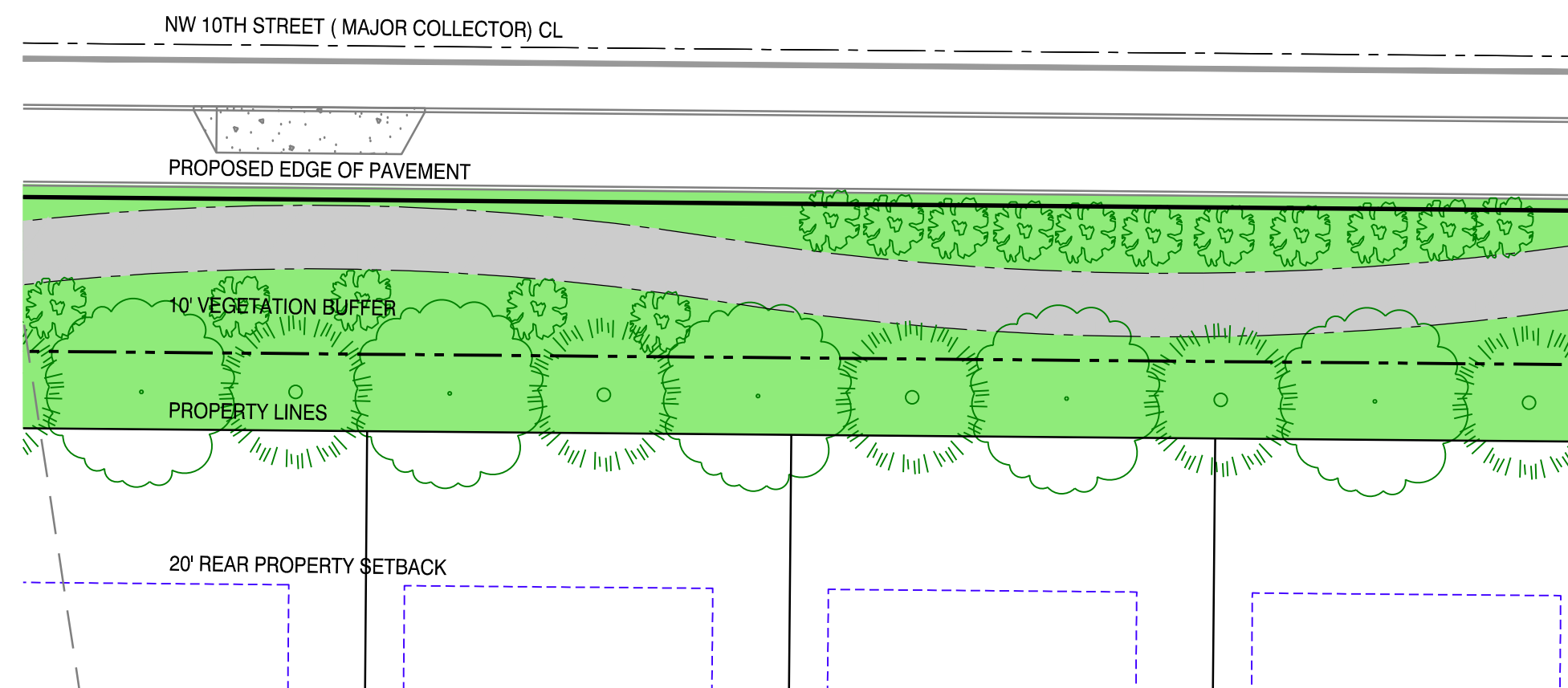
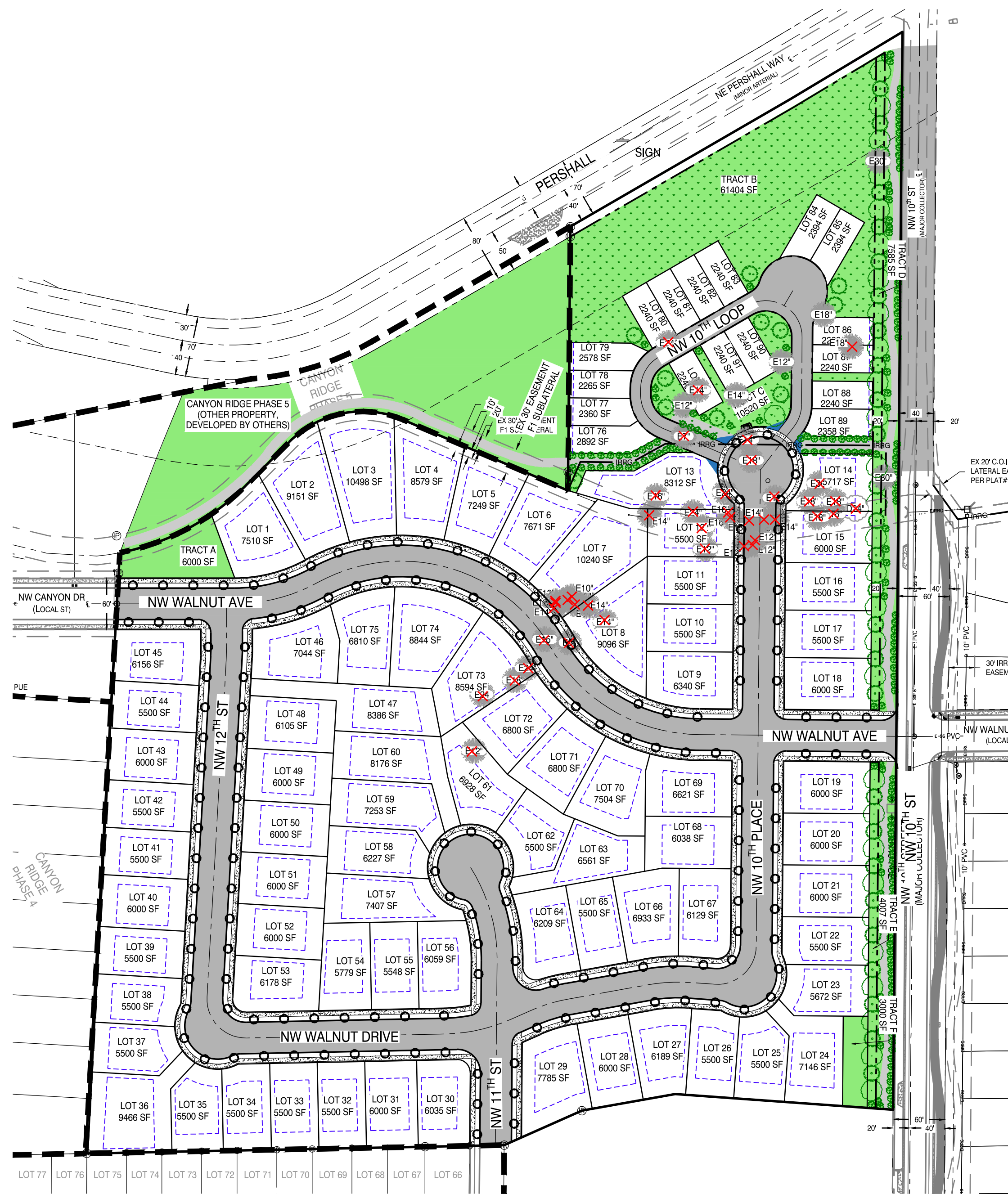
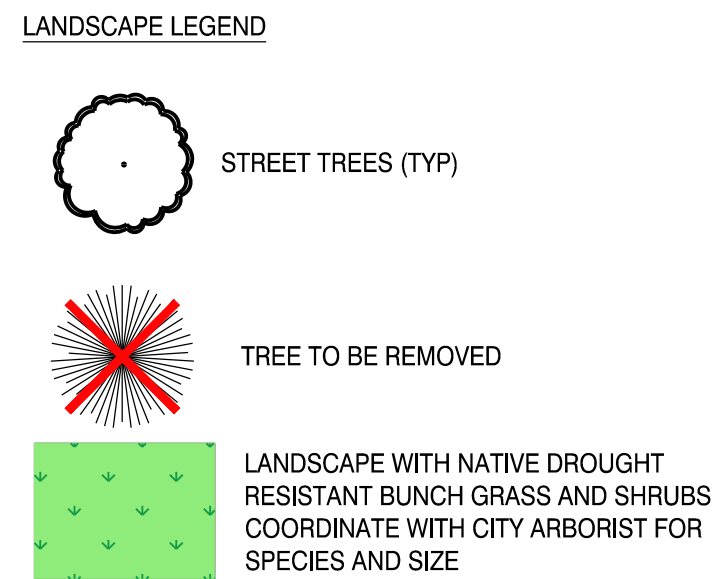


TYPICAL LOCAL STREET SECTION  
NTS  
(NW WALNUT AVE, WALNUT PLACE, WALNUT DRIVE, 12TH STREET, 11TH STREET, AND 10TH PLACE)

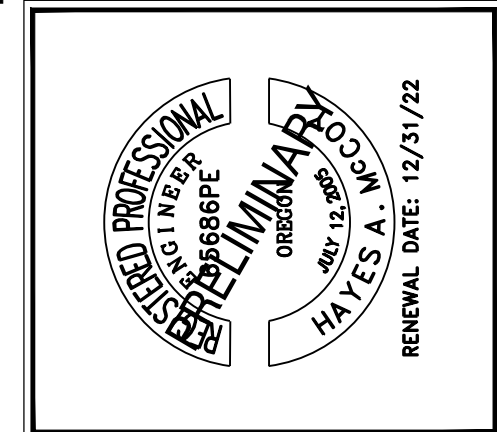
MAJOR COLLECTOR SECTION  
NTS  
(NW 10TH STREET)



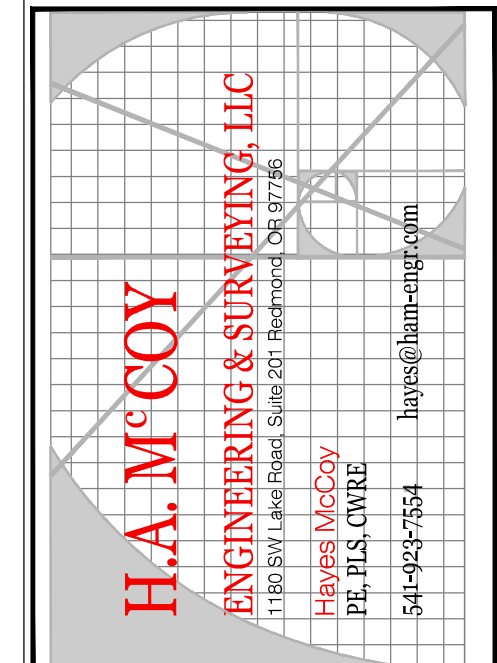
COTTAGE PHASE LANDSCAPING



TYPICAL 10TH STREET VEGETATION BUFFER



| DATE:           |             |
|-----------------|-------------|
| NO. REVISION:   |             |
| DATE:           | 12/9/21     |
| DRAWING STATUS: | MASTER PLAN |



PROJECT: CANYON TRAILS MASTER PLAN  
PROJECT LOCATION: REDMOND, OR  
CLIENT: MONTE VISTA HOMES

SHEET TITLE: LANDSCAPE AND TREE REMOVAL PLAN

JOB NO. 20-247  
DRAWN BY: EDN  
DRAWING: MP1.5



SITE PLAN NOTES

- 1

26' PRIVATE STREET
- 2

5' WIDE SIDEWALK
- 3

15'X15' CLEAR VISION TRIANGLE
- 4

PUBLIC SEWER SYSTEM
- 5

PROPOSED WATER METER
- 6

PROPOSED WATER CONNECTION FOR PRIVATE WATER SYSTEM, FINAL CONNECTION POINT TO BE DETERMINED IN FINAL ENGINEERING
- 7

BACKFLOW PREVENTER
- 8

EXISTING OVERHEAD POWER LINES
- 9

PROPOSED PEDESTRIAN TRAIL
- 10

PROPOSED MAILBOX BANK, FINAL LOCATION TO BE DETERMINED BY USPS
- 11

PROPOSED FIRE HYDRANT, FINAL LOCATION TO BE DETERMINED IN FINAL ENGINEERING

COTTAGE DEVELOPMENT STANDARDS

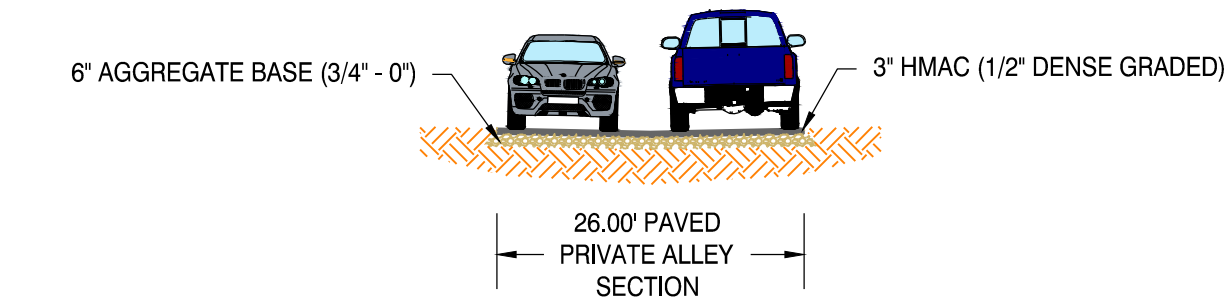
|                  |                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BUILDING HEIGHT: | 25 FT                                                                                                                                                                                                                                                                                                                                                                                            |
| MIN. LOT AREA:   | NO MINIMUM                                                                                                                                                                                                                                                                                                                                                                                       |
| MIN LOT WIDTH:   | NO MINIMUM                                                                                                                                                                                                                                                                                                                                                                                       |
| MIN LOT DEPTH:   | NO MINIMUM                                                                                                                                                                                                                                                                                                                                                                                       |
| FLOOR AREA:      | AVERAGE OF 1000 SF NOT TO EXCEED 1250 SF PER UNIT EXCLUDING GARAGE. 400 SF CAR GARAGES ONLY, NO RV GARAGES                                                                                                                                                                                                                                                                                       |
| OPEN SPACE:      | 800 SF PER EACH DWELLING UNIT                                                                                                                                                                                                                                                                                                                                                                    |
| SETBACKS:        | PERIMETER: 20' WHEN ABUTTING AN ARTERIAL OR COLLECTOR STREET (ALONG PERIMETER), UNDERLYING ZONE IN ALL OTHER CASES; SETBACKS TO COMMON AREAS DETERMINED AT THE DISCRETION OF THE HEARINGS BODY<br>FRONT: NO MINIMUM<br>SIDE (CORNER): NO MINIMUM, BUT 10' REQUIRED BETWEEN BLDGS<br>SIDE (OTHER): NO MINIMUM, BUT 10' REQUIRED BETWEEN BLDGS<br>REAR: NO MINIMUM, BUT 10' REQUIRED BETWEEN BLDGS |
| PARKING:         | 2 SPACES PER COTTAGE                                                                                                                                                                                                                                                                                                                                                                             |
| COVERAGE:        | 60% MAX (45% PROPOSED)                                                                                                                                                                                                                                                                                                                                                                           |

IRRIGATION NOTE

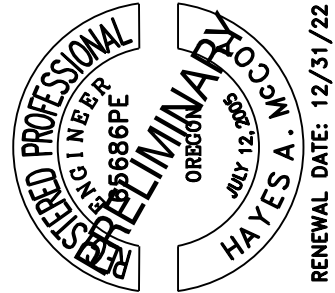
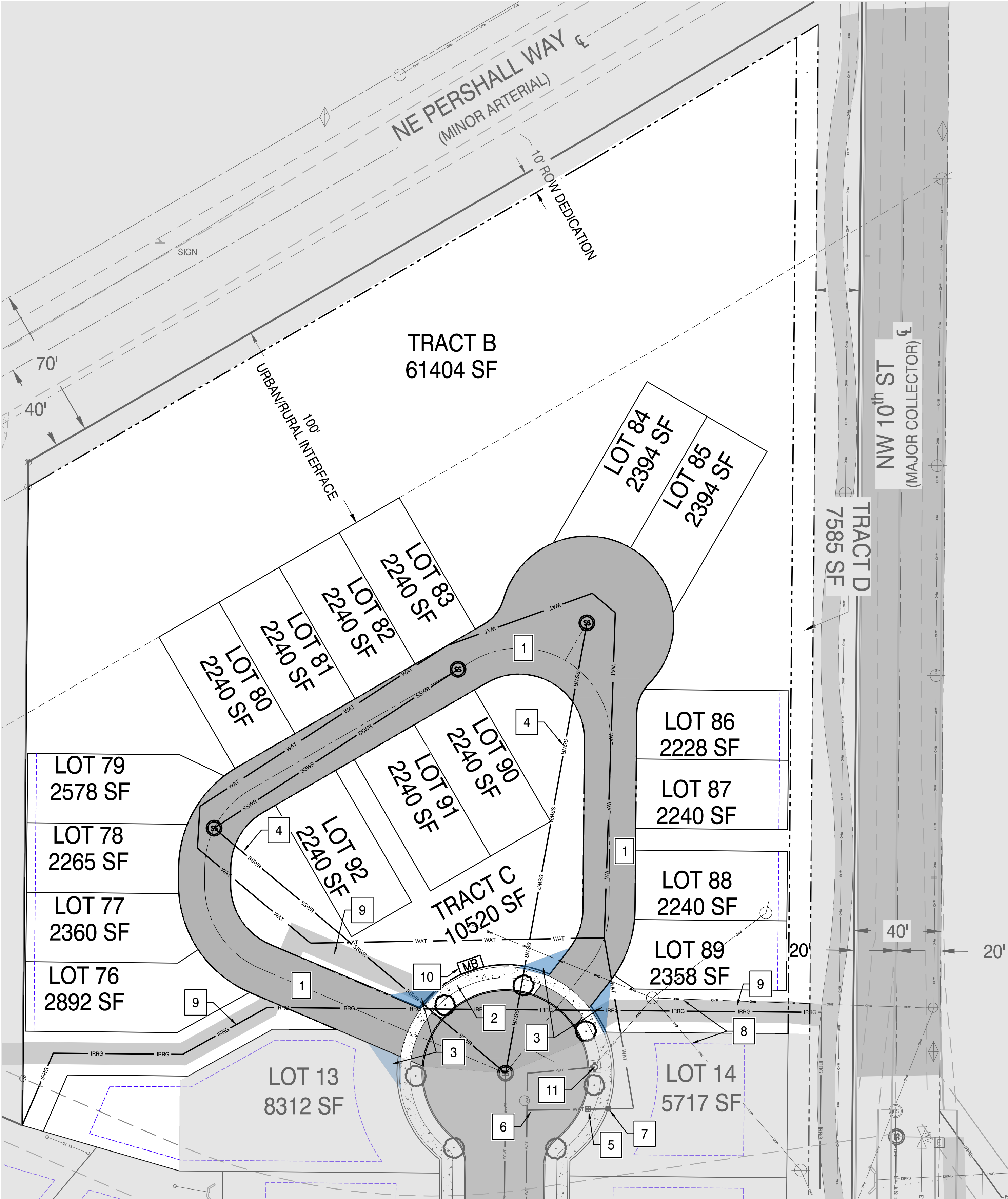
ALL PROPOSED OPEN SPACES TO BE IRRIGATED SHALL BE DESIGNED DURING LANDSCAPE CONSTRUCTION.

MECHANICAL NOTE

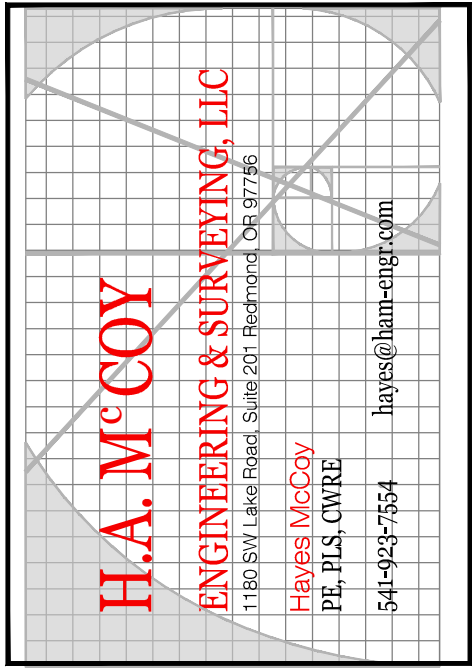
MECHANICAL EQUIPMENT SHALL BE SCREENED FROM PUBLIC VIEW.



PRIVATE STREET SECTION  
NTS



| DRAWING STATUS:                                 | DATE:   | No. REVISION:            | DATE: |
|-------------------------------------------------|---------|--------------------------|-------|
| <input checked="" type="checkbox"/> MASTER PLAN | 12/9/21 | <input type="checkbox"/> |       |
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PROJECT: CANYON TRAILS MASTER PLAN

PROJECT LOCATION: REDMOND, OR

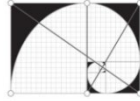
CLIENT: MONTE VISTA HOMES

SHEET TITLE: COTTAGE DEVELOPMENT SITE PLAN

JOB NO. 20-247

DRAWN BY: EDN

DRAWING: MP1.6



**H.A. McCOY**  
ENGINEERING & SURVEYING, LLC

PO Box 533 Redmond, OR 97756 · 541-923-7554 · www.ham-engr.com

**BURDEN OF PROOF FOR CITY OF REDMOND  
APPLICATION FOR MASTER PLAN AND SUBDIVISION WITH COTTAGE DEVELOPMENT**

**APPLICANT/** Canyon Trails LLC  
62958 Layton Ave., Ste 5  
Bend, OR 97701

**OWNER:** Nicko Properties LLC  
4572 SW Badger  
Redmond, OR 97756

**SURVEYOR/  
ENGINEER:** H.A. McCoy Engineering & Surveying, LLC  
1180 SW Lake Road  
Suite 201  
Redmond, OR 97756  
(541) 923-7554

**LOCATION:** The property is located at 3627 NW 10<sup>th</sup> and is further identified as Tax Lot 300 on Deschutes County Tax Assessors Map 141333C

**REQUEST:** Master Development Plan and Tentative Subdivision Plat for a 92 lot single family subdivision, including cottage development on an undeveloped, 19.23 acre property zoned R-4 in the Redmond Urban Growth Boundary.

**APPLICABLE CRITERIA:**

The following are the applicable sections from The City of Redmond Urban Area Comprehensive Plan, the and the Redmond Development Code, Chapter 8 of the Redmond Development Code:

- The City of Redmond Urban Area 2020 Comprehensive Plan.
- The City of Redmond Framework Plan
- City of Redmond Transportation System Plan
- City of Redmond Public Facility Master Plans (Water, Wastewater)
- City of Redmond Park Master Plan
- Oregon Revised Statutes (ORS) – ORS 197.250
- The City of Redmond Development Code, Chapter 8;
  - Sections 8.0135-8.041 Residential use zone
  - Section 8.0285 Cottage Development
  - Section 8.0300, Master Development Plans
  - Article III Land Divisions

*\*Because many of the criteria are redundant in the overlap between the Statewide Planning Goals, the City of Redmond Comprehensive Plan and the Redmond Development Code, there are references to*



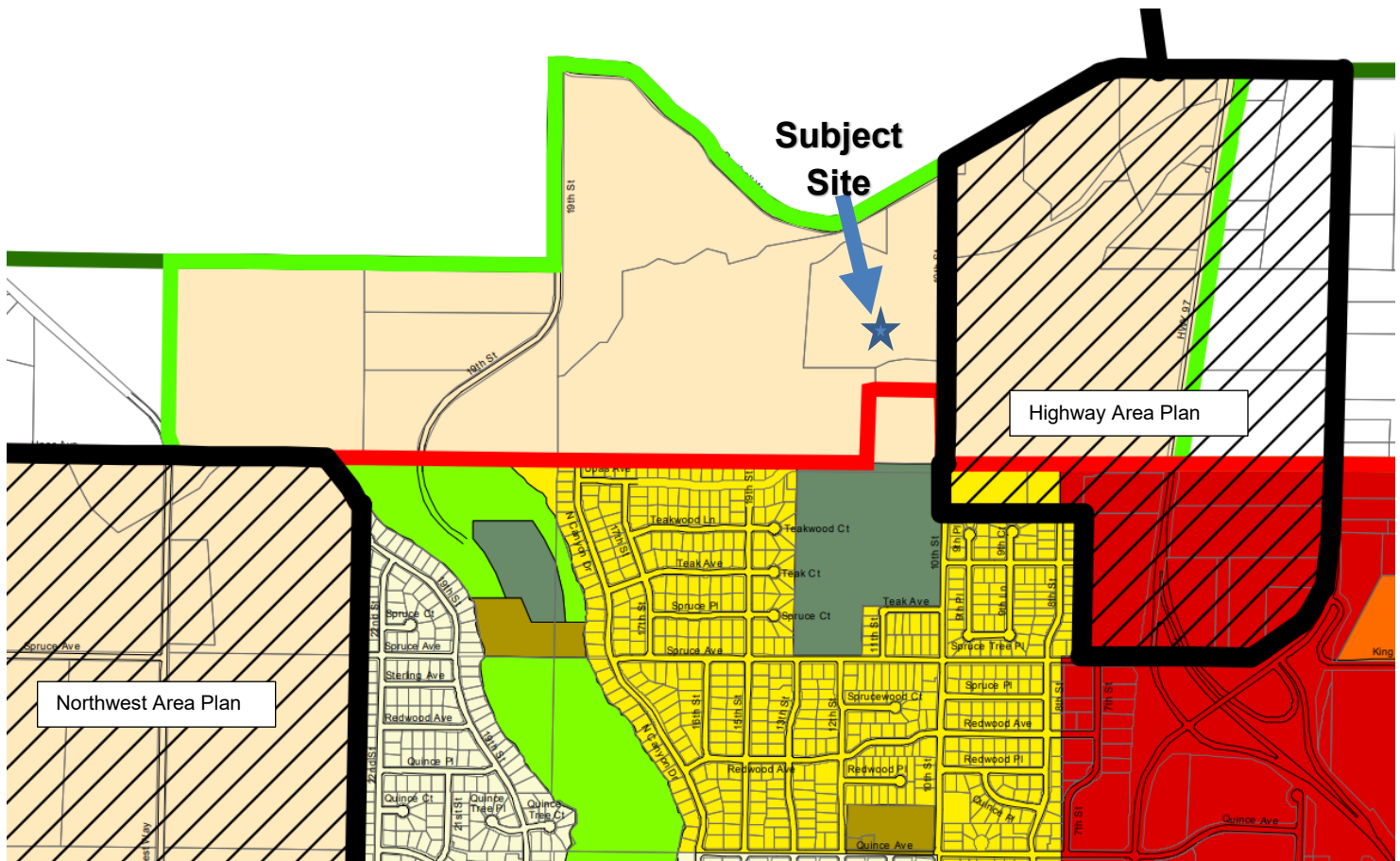
*the reader within this document to the applicable section where the similar criteria has already been addressed by the proposed findings. Additionally, some of the plans and documents listed above (Transportation System Plan, Public Facility Master Plans, and Park Master Plan) are not addressed directly in this document, but are addressed as per their inclusion in and applicability to the other elements listed above.*

## II. BACKGROUND & HISTORY:

### UGB and Special Area Plans:

In 2006, the City of Redmond added more than 2,300 acres of "urbanizable" land along the City's western boundary to its Urban Growth Boundary (UGB), including the subject parcel. At the same time, a Framework Plan was adopted by the City as part of the expanded UGB to provide general guidance for future land uses, densities, neighborhood amenities and the necessary public facilities and services to serve the 2,300 acres.

The Framework Plan envisioned a number of neighborhood centers spaced throughout the newly urbanized lands with high density residential surrounding it, then transitioning to medium and lower density residential on the periphery. Areas of mixed use employment were also proposed around Highland Avenue on the western edge of the City and in the northern and eastern parts of the City. School and park sites were also contemplated to help make the areas as self-sufficient as possible. While this site has no association to one of the special area plans, this site will be served by nearby area plans.





### **Annexation:**

An application for an annexation has been filed with the City of Redmond and City Council recently acknowledged approval of the annexation with conditions on March 23, 2021 (Annexation agreement included as an exhibit). The agreement stipulates that the following must be completed prior to obtaining the annexation and applying the Comprehensive Plan and Zoning designations. In order to obtain annexation and the acknowledged zoning, a master plan is being submitted for approval by the City of Redmond.

#### *Annexation Agreement:*

***“3. COMPREHENSIVE PLAN/ZONING:*** Prior to development and annexation of the property, the Owner is required to receive master plan approval for the property in compliance with the Redmond Comprehensive Plan and Redmond Development Code. The master plan will identify Comprehensive Plan and Zoning designations, subject to City Council review and approval .Upon adoption of the master plan, successful annexation, and a Comprehensive Plan Map/Zone Map adoption, the City will apply the Comprehensive Plan and Zoning designations identified in the Master Plan.”

- IV. SITE DESCRIPTION:** The subject property is 19.23 acres and is primarily level and has been used for pasture land in the past. An existing house, along with several out buildings, exists in the in northwest section of the property. A COID canal runs east west through the center of the property.

The surrounding area is a mix of new residential development with Canyon Ridge to the west and south and Cinder Butte Village to the east. Large tracts of pasture land remain throughout the area. 10<sup>th</sup> Street, a Major Collector, abuts the property to the east, while Pershall Way, a minor arterial, abuts the property to the north. Across Pershall Way is the northern edge of the UGB and the City limits.



**Vicinity Map**

- V. PROPOSAL:** The Canyon Trails Master Plan and Tentative Subdivision Plat submitted by the applicant proposes to provide a variety of houses in the R-4 zone. The tentative plan includes 92 lots in total, 75 single family lots, and 17 cottage housing lots.



Per the Development Code, all public streets are required to be designed, constructed, dedicated and extended to current City of Redmond Standards & Specifications, Transportation System Plan (TSP). Street signage, lane striping, street lights and postal box installation are required and shown in project plans. The following are required improvements to existing and proposed streets:

- A) 10<sup>th</sup> Street-** This is a Major Collector street. A paved road and forty (40) to sixty (60) ft. right-of-way exist, no curb or sidewalk, along property frontage. A portion of 10<sup>th</sup> St along property frontage is currently under construction as a major collector street per neighboring Cinder Butte Subdivision Phase 2. Street frontage improvements conforming to full width City major collector street standards will be required and/or completed by neighboring development per COR Standard Drawing 2-1 with new pavement section, turn lanes if warranted, curbs on both sides, sidewalk on the west side and storm drainage along property frontage. A public right-of-way dedication which provides a minimum width of forty (40) ft. west of centerline will be required along property frontage.
- B) Pershall Way-T** Minor arterial street. A paved county road and seventy (70) ft. right-of-way exists, no curb or sidewalks, along property frontage. NW Pershall Way is planned for reconstruction and re-alignment as

a 3 to 5 lane City minor arterial street along property frontage per the current TSP. Upon annexation, public right-of-way dedication which provides a minimum width of fifty (50) ft. south of street centerline will be required to accommodate future construction of this minor arterial street along property frontage. The SDC's paid are will be used to complete capital improvement projects, such as the one identified for this section of roadway. The SDC will be considered the Applicant's proportional share related to the roadway improvement.

- C) **NW Canyon Dr.** - Local grid street. Street improvements conforming to City local grid street standards shall be required per COR Standard Drawing 2-1 with new pavement, curb, sidewalk, storm drainage and sixty (60) ft. minimum right-of-way dedication. Street and right-of-way centerline will match that of City approved Canyon Ridge Subdivision to the west.
- D) **NW 11<sup>th</sup> St.** - Local grid/cul-de-sac street. Street improvements conforming to City local street standards shall be required per COR Standard Drawing 2-1 and 2-4 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication. Street and right-of-way centerline will match existing at the south property boundary.
- E) **NW 12<sup>th</sup> St., Walnut Place & Walnut Dr.** - local/cul-de-sac street. Street improvements conforming to City local/cul-de-sac street standards will be required per COR Standard Drawing 2-1, 2-4 and 2-5 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication. Street and right-of-way centerline for Walnut Pl. will match that of City approved Cinder Butte Village to the east .
- F) **NW 10<sup>th</sup> Place** - Local/cul-de-sac street. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1, 2-4 and 2-5 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication.
- G) **NW 10<sup>th</sup> Loop (Private)** – 10<sup>th</sup> Loop shall be privately owned and maintained. Improvements conforming to City alley standards with minimum twenty (20) ft. wide pavement are recommended. Private street driveway connections to 11<sup>th</sup> St./Ct. shall be constructed to City standards.

## VI. **PROPOSED FINDINGS:**

The findings proposed herein are intended to provide the City Planning Staff with an adequate textual description of the project so that such findings can be adopted as part of the official findings and decision

### A. **CONFORMANCE WITH STATEWIDE PLANNING GOALS, CITY OF REDMOND URBAN AREA 2020 COMPREHENSIVE PLAN (Comprehensive Plan) AND, CITY OF REDMOND FRAMEWORK PLAN (Framework Plan)**

**FINDING:** The City of Redmond has an adopted and acknowledged (by LCDC) Comprehensive Plan, including a Transportation System Plan, Public Facilities Plans, and a Parks Plan as elements thereof. Together, these provide the policy basis required by State Law and the Statewide Planning Goals for necessary land use planning in the City of Redmond.

The City has adopted development requirements (the Redmond Development Code - RDC) which implement the broad goals and policies of the acknowledged Comprehensive Plan.

The RDC requirements include the specific design and development elements that must be included in all development plans proposed in the City. Additionally, the City has adopted Area Plans which provide greater specificity for land within the expanded UGB that will be annexed upon completion of a Master Development Plan and Zone change approval as specified in Policy #11 of the Comprehensive Plan and Section 8.0300 of the RDC.

## B. CITY OF REDMOND DEVELOPMENT CODE (RDC)

**FINDING:** As a condition of approval for the annexation a master plan is required to be reviewed by the City and approved by City Council. The Master Development Plan sections are addressed separately below.

### C. 8.0115 Limited Residential R-4 Zone.

**8.0140 Table B, Minimum Standards.** The following minimum standards apply in each of the Residential zones as follows:

| Zone:                                                                        |           |           |           |           |       |
|------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-------|
| Standard:                                                                    | R-1       | R-2       | R-3       | R-4       | R-5   |
| <b>Minimum Lot size - Square Feet</b>                                        |           |           |           |           |       |
| Single Family                                                                | 9,000     | 9,000     | 7,500     | 5,500     | 5,500 |
| Duplex                                                                       | NA        | 10,000    | 8,000     | 7,500     | 7,500 |
| Duplex Lot                                                                   |           |           | 4,250     | 3,750     | 3,750 |
| Townhouse                                                                    |           |           | E         | E         | E     |
| Multi-family Dwelling                                                        | NA        | NA        | NA        | F         | F     |
| Multi-family Complex                                                         | NA        | NA        |           | F         | F     |
| <b>Maximum Density/Gross Acre</b>                                            | 4         | 4         | 5         | 10        | 15    |
| <b>Minimum Setback Distance</b><br>—<br>See C, F, and H below                |           |           |           |           |       |
| Front Façade, excluding garage which must be 20 feet back from property line | 15        | 15        | 15        | 10        | 10    |
| Interior Side                                                                | B<br>5/10 | B<br>5/10 | B<br>5/10 | B<br>5/10 | 5     |
| Street Side                                                                  | 15        | 15        | 15        | 15        | 15    |
| Rear                                                                         | 20        | 20        | 20        | 20        | 5     |
| Garage                                                                       | 20        | 20        | 20        | 20        | 20    |
| <b>Maximum Building Height <sub>F</sub></b>                                  | 32        | 32        | 32        | 40,E      | 40,E  |
| <b>Minimum Street Frontage</b>                                               |           |           |           |           |       |
| Standard Street                                                              | 50        | 50        | 50        | 50        | 50    |
| Cul-de-sac                                                                   | 30        | 30        | 30        | 30        | 30    |



|                                     |     |     |    |    |    |
|-------------------------------------|-----|-----|----|----|----|
| Flag Lot                            | 20  | 20  | 20 | 20 | 20 |
| Duplex lot (non flag or cul de sac) | N/A | N/A | 25 | 25 | 25 |
| Townhouse                           |     |     |    | E  | E  |

**FINDING:** The subdivision is proposed to have a total of 92 lots, (17 cottage lots and 75 standard residential lots). The standard residential lots range in size from 5,500-9,967 square feet, while the cottage lots are smaller in size and are designed in accordance with the section 8.0285 of the code. The standards are addressed later on in the document. The overall density for the proposed development is 4.8 units per acre which is below the 10 units per acre maximum established above. The lots as a proposed are large enough to allow development of each lot while adhering the required setbacks and height requirements for the zone.

Based on the subdivision as proposed, this criterion is satisfied.

### **8.0285 Cottage Developments.**

**Table 8c. Uses Permitted.** The following uses are permitted in Cottage Developments:

| <b>Land Use</b>                    | <b>Comments &amp; References</b>                           |
|------------------------------------|------------------------------------------------------------|
|                                    |                                                            |
| Accessory Structure                | Includes ADU's, sheds, storage bldgs., residential garages |
| Dwelling, Single Family            |                                                            |
| Park (public or private)           | e.g., playgrounds, recreation centers, pools, etc.         |
| Parking Garage (public or private) | Private only; common area maintained by HOA                |

1. **The following exceptions to City standards may be allowed through the COD approval process without a variance:**
  - A. **Minimum lot sizes.**
  - B. **Yard setbacks, except perimeter yard requirements.**
  - C. **Permitted land uses.**
  - D. **Grid street spacing standards.**
  - E. **Street frontage requirements on public roads.**
  - F. **Connection to public utilities, subject to review and acceptance by City Engineering.**
  - G. **Landscaping requirements, as stated herein.**
  - H. **Solar setback standards (only on lots that are not along the northern border of the development).**
  - I. **Street and right of way widths on non-grid streets.**
  - J. **Sidewalk placement and size standards.**
  - K. **Changes to an approved Plan, when the requested change is so minor that the CDD Director or designate determines that it would be appropriate for an administrative decision. Examples of minor changes include, but are not limited to: (1) a reduction in the overall number of lots, (2) minor architectural changes to approved buildings, (3) changes to phases that do not impact public facilities or change the number of approved phases, (4) changes that result in a reduction**

of impacts (i.e. reduced traffic flows), or (5) changes that are required to protect or increase public safety.

2. **Development Standards.** CODs shall meet the following Standards unless otherwise specified. In the case that these standards conflict with other standards within Article I, III, or IV of the Redmond Development Code, these standards shall take precedence:

- A. Cottage Developments (CODs) have no minimum site size but must include a minimum of 4 cottage units per development.
- B. Densities.

| Zone | Densities (per net acre)          |
|------|-----------------------------------|
|      |                                   |
| R-1  | Not applicable (CODs not allowed) |
| R-2  | 4 to 9 units / acre               |
| R-3  | 4 to 10 units /acre               |
| R-4  | 5 to 12 units / acre              |
| R-5  | 8 or more units / acre            |

C. **Design Requirements**

| Feature                           | Standard                                                                                                                                                                                    |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   |                                                                                                                                                                                             |
| <b>Building Height</b>            | <b>25 feet</b>                                                                                                                                                                              |
| <b>Lot area</b>                   | <b>No minimum</b>                                                                                                                                                                           |
| <b>Lot width</b>                  | <b>No minimum</b>                                                                                                                                                                           |
| <b>Lot depth</b>                  | <b>No minimum</b>                                                                                                                                                                           |
| <b>Floor area</b>                 | <b>Average of 1000 s.f. not to exceed 1250 s.f. per unit excluding garage. 400 s.f. car garages only, no RV garages.</b>                                                                    |
| <b>Open space:</b>                | <b>800 s.f. per each dwelling unit</b>                                                                                                                                                      |
| <b>Setbacks:<sup>6</sup></b>      |                                                                                                                                                                                             |
| <b>Perimeter:</b>                 | <b>20' when abutting an arterial or collector street (along perimeter), underlying zone in all other cases; Setbacks to common areas determined at the discretion of the Hearings Body.</b> |
| <b>Front:</b>                     | <b>No minimum</b>                                                                                                                                                                           |
| <b>Side (corner lot)</b>          | <b>No minimum, but 10' required between bldgs</b>                                                                                                                                           |
| <b>Side (non corner lot)</b>      | <b>No minimum, but 10' required between bldgs</b>                                                                                                                                           |
| <b>Rear</b>                       | <b>No minimum, but 10' required between bldgs</b>                                                                                                                                           |
| <b>Solar</b>                      | <b>Northern perimeter only</b>                                                                                                                                                              |
| <b>Non permeable surface area</b> | <b>60% of parent property (maximum)</b>                                                                                                                                                     |
| <b>Bldg coverage</b>              | <b>50% of parent property (maximum)</b>                                                                                                                                                     |
| <b>Parking:</b>                   |                                                                                                                                                                                             |
| <b>Residential</b>                | <b>1.75 spaces / cottage d.u.</b>                                                                                                                                                           |

<sup>6</sup> Setbacks listed are the minimum required. Setbacks are measured from foundation of any building requiring a building permit to the nearest property line. Foundation includes anchors for posts/supports where structurally related.

**D. Open Space, Park, and Common Area.**

1. “Open space” means land area which can be physically accessed and used by occupants and users of the COD for scenic, landscaping, or open recreational purposes within the development.

**2. Open Space Land Area Requirements:**

For all CODs, the required land area<sup>7</sup> used as open space or common area shall:

- a. Be a minimum of 800 square feet per cottage.
- b. Have at least one centrally located open space or common area at least 60 feet wide, within the development.
- c. At least 60% of the cottages must abut on at least two sides of open space or common area.
- d. In addition to the centrally located open space, a series of interconnected open spaces are also allowed, but the connections between open spaces shall not contribute toward meeting the open space area and be a minimum of 20 feet wide.

**FINDING:** The proposed cottage development includes 17 lots and includes open space throughout the development to serve each of the lots. Based on the proposed 17 units, the development would require 13,600 square feet of open space. The proposed open space area totals 65,326 square feet, exceeding the open space requirement from a square footage and configuration perspective. In addition, the design is such that 60% of the units have frontage on two sides.

Therefore, it can be found that the criterion has been satisfied.

**3. Cottage Orientation Requirements:**

- a. Cottages abutting the common open space shall be oriented around and have the main entry taken from the common open space.
- b. Cottages not abutting the common open space shall be within 60 feet walking distance from the common open space and served with paths.
- c. The open space shall be distinguished from the private outdoor areas with a walkway, fencing (not to exceed four feet in height), landscaping, berm, or similar method to provide a visual boundary around the perimeter of the common area.

**FINDING:** In order to create an orderly layout that results a cottage feeling, the buildings are proposed to be situated so they are all facing in on one another. As a result, the cottages will each face the common roadway area which is adjacent to and part of the common open spaces. The placement of the frontages will provide continuity with a small cluster of cottages scattered amongst the open space. All units will be within 60 feet of the open space and will have direct and easy access. A determined method of separation between private outdoor area and open space will be determined at the time of building construction.

Based on the findings this criterion has been satisfied.

#### **4. Open Space – General Requirements.**

- a. Public and private roads shall not be considered as open space.**

**FINDING:** The private roadway has not been included in the open space calculation.

- b. Development plans shall assure that natural features of the land are preserved and landscaping is provided, or a finding shall be made by the Hearings Body that the preservation of significant natural feature(s) is not feasible.**

**FINDING:** The existing trees are located in the areas that is proposed for development and will be need to be removed to facilitate the infrastructure needed to serve the cottage development. However, new landscaping is proposed as part of the development. The landscape will contain trees, shrubs and natural area. The installation of the landscaping will mitigate the removal of the existing trees.

- c. Parking areas shall not exceed four spaces and shall be separated from other parking areas by a distance of 20 feet.**

**FINDING:** No parking areas are proposed for the cottage development. The required parking will be provided on each of the lots. Therefore, this criterion does not apply.

- d. Up to 10% of the required open space / common area / landscaped areas may be left in a natural and non-irrigated state at the discretion of the Hearings Body; however this shall not apply to any required landscaped screening or landscaped strips abutting public or private roads. If the development has a significant natural feature in excess of the 10% allowance, the Hearings Body may allow additional natural feature open space credit.**

**FINDING:** The Applicant is proposing to landscape the open space area as there is no substantial natural features to maintain.

- e. Open space, common areas, and common structures shall be financially assured of continued maintenance. A legal mechanism shall be provided which guarantees the continued maintenance of such areas and structures.**

**FINDING:** The Applicant understands that the open space areas must be maintained and will create an HOA for the purpose of structuring a financial mechanism that can be used for the purposes of maintenance. The draft documents will be prepared and submitted for review prior to final plat.

#### **5. General Development Design Requirements.**

- a. All Development parking lots shall be screened from view from public or private streets (excluding driveways of 20' width or less), and from all residences by a screen of no**



less than 3' in height. Screening shall not exceed a height of 4'.

- b. Parking lot screening shall be achieved by either landscaping or fencing, or a combination of each.
- c. All parking spaces shall be paved, and shall meet the parking space standards within sections 8.0500 -.0515 of the RDC, and all applicable code standards.
- d. If detached parking structures are proposed, the following shall apply:
  - 1. Pitched roofs are required on all parking structures, and shall be no less than a 4:12 pitch.
  - 2. Paint color and building materials shall be consistent with the design of the dwelling closest to the structure.

**FINDING:** All parking is proposed to be met through parking on the individual lots, therefore, no parking structures or additional parking spaces are being proposed.

- e. **Usable Open Space.** All required open space within any planned development shall be 'usable' as passive or active recreational land without sharing the space as a combined use with non recreational uses, including (but not limited to) drainage retention.

**FINDING:** All open space will be usable and accessible by the residents of the subdivision and indicated as such on the final plat

- f. **Yards.** Private open space shall be a minimum of 300 s.f. of private, contiguous, usable open space adjacent to each dwelling unit, for the exclusive use of the cottage resident.

**FINDING:** Each units will provide the required private open space. The space will be delineated as required by the code.

- g. **Porches/Patios:** Cottages shall have a minimum of 10% of floor area S.F. as a roofed porch or patio combination. Porches are not included within floor area calculations.

**FINDING:** The Applicant understand the standard and will apply the porch element to the proposed cottages.

- h. **Required Parking Distance from Cottages.** All required parking for Cottage Developments shall be located within 100 feet of the cottage that it serves.

**FINDING:** Parking will be accounted for on the individual lots; therefore, this criterion has been met.

- i. **Accessory structures in cottage developments** are limited to storage buildings that may be up to 80% of the smallest cottage, and to parking structures or garages that may contain up to 6 parking spaces on the interior. All accessory structures in cottage developments shall have an

architectural theme that matches the theme of the cottages.

**FINDING:** No accessory structures are proposed as part of the cottage development. Therefore this criterion does not apply

6. **Trash Enclosures.** Centralized Trash Enclosures may be required at the discretion of city staff. If required, Trash Enclosures shall be architecturally compatible in terms of color and materials with the cottage units. Trash collection bins or carts shall be as approved by the collection company.

**FINDING:** All trash cans are proposed to be kept on the individual sites; therefore, no enclosures are proposed.

#### M. MASTER DEVELOPMENT PLANS

**8.0300 Master Development Plans.** A Master Development Plan is required prior to annexation as a condition of annexation, or after annexation but prior to or concurrent with rezoning from Urban Holding-10 to other City zoning districts. The Master Development Plan shall not create excessive demand on public facilities and services required to serve the development area, and shall not conflict with existing public access easements within or adjacent to the development area. The specific requirements for a Master Development Plan are as follows:

1. **Applicability.** This section applies to all properties proposed for annexation and/or rezoning from Urban Holding-10 on or after the date of the adoption of this ordinance.
2. **Purpose.** The purpose of Master Development Plan is to provide:
  - A. Orderly and efficient development of the City consistent with Urban Framework Plans and an adopted Area Plan.
  - B. Compatibility and/or transitions with adjacent developments and the character of the area.
  - C. A compatible mix of uses and activities.
  - D. An interconnected transportation network - grid streets, bicycle routes, and pedestrian trails - within the master plan area and to existing and planned City streets, routes and trails.
  - E. A range of housing choices for areas planned to have residential components.
  - F. A range of open spaces and recreation facilities, as needed to facilitate the Framework Plan and an adopted Area Plan.
  - G. Public and semi-public facilities and services.
  - H. Preservation of historic buildings, scenic views, and natural resources to the greatest extent possible.
  - I. Transitions or buffers between urban development and rural areas.
  - J. Implementation of Redmond's Comprehensive Plan, including adopted Area Plans the Great Neighborhood Planning Principles in described below in 3 (C)(13) below:
3. **Procedures for Review.**
  - A. **General.**  
Master Development Plans (MOP or PMDP) shall be approved through a

quasi-judicial review process. Application procedures and related fees for approval may be streamlined in order to promote timely development of urban planning for land zoned UH-10. The Community Development Director shall inform the applicant during the mandatory pre-application stage if the proposed Master Development Plan area appropriately includes all contiguous UH-10 zoned properties in the plan area. The Community Development Director shall base the determination for the proposed plan area utilizing the following factors:

- (i) whether there are UH-10 properties that abut or are surrounded by the plan boundary that would reasonably fit within the zoning concept for the area plan;
- (ii) whether the extension of public services and infrastructure would be enhanced by the inclusion of abutting UH-10 properties;
- (iii) whether the total acreage of abutting or enclave UH-10 zoned properties is less than the acreage in the proposed plan area; and
- (iv) there is a community interest that would be served by including additional properties in the plan area.

**B. Review and approval criteria for Master Development Plans or Partial Master Development Plans**

**1. General.** In the review of any application for a Development Plan, the Planning Commission and City Council, if required, shall consider the following:

**a. Whether the proposed Plan is generally consistent with the Framework Plan and is consistent with an adopted Area Plan and Comprehensive Plan in terms of land use, density, transportation systems and networks, adequacy of infrastructure and open space.**

**FINDING:** The plan takes into consideration the necessary facilities that are needed to support the development pattern established within the Comprehensive plan and Framework Plan. The plan as proposed incorporates necessary design elements, along with improvements needed to maintain the functional character of the services that are needed to serve the contemplated densities.

**b. Whether the proposed Plan is generally suitable for the area in which it is proposed, considering existing and planned neighborhoods, shopping and employment areas; and natural resources and hazards.**

**FINDING:** The plan takes into consideration the property zoning and proposes a plan that compliments the surrounding area. The proposed development will contribute to carrying out the intended land use patterns for the area. As a result infrastructure will be extended in an orderly and efficient manner to serve the future development as contemplated for the area. Therefore, it can be found that the proposal is consistent with the Comprehensive Plan and Framework Plan for the area (including the subject property).

**c. Whether the proposed Plan is functionally integrated with developed or planned areas.**

**FINDING:** The proposal has been designed to extend elements that contribute to the functional environment for the area, allowing for the creation of a functional transportation system to serve pedestrians and vehicular traffic. Further,

improvements will be made to the area providing access to essential services that will foster the anticipated future development. Therefore, it can be determined that the proposal is functionally integrated with the developed and planned areas.

**d. The proposed plan meets the applicable Great Neighborhood Principles in Section 8.3050.**

**FINDING:** Each element of the Great Neighborhood Principles is addressed below. The proposed findings are included by reference herein. Based on the satisfactory compliance with the Principles as discussed therein, this policy is satisfied

**C. Master Development Plan (MOP) or Partial Master Development Plan (PMDP) Submittal Requirements and Approval Process.**

An application for approval shall include the submittal requirements set forth in the City's Land Use Review application form as well as the elements described below.

1. **Narrative.** A narrative shall set forth the goals and objectives of the plan and describe the urban characteristics of the planned area.
2. **Development Plan Map.** A map of the plan area and surrounding vicinity shall indicate planned land uses for each land parcel in the area, including plans for park and open space and community facilities, if known. The plan shall show proposed comprehensive plan map designations and zoning. The plan shall include a list of all affected properties with tax lot numbers, current ownership, parcel size, and other information that is pertinent to the plan.
3. **Land Use Diagram.** The land use diagram shall generally indicate the distribution and location of planned land uses for the master plan area, including plans for park and open space and community facilities, if known. The plan shall show proposed comprehensive plan designations, zoning, and density.
4. **Significant Resources Inventory.** An inventory of significant natural resources, scenic and historic resources, and open space areas including those identified on the City's adopted inventory and those that have the potential to qualify for protection under Redmond's Goal 5 resource protection program. When significant resources are present, the proposed plan shall include a management plan to protect resource sites;
5. **Parks and Open Space.** Identify land suitable for park and recreation use in accordance with the needs analysis in the City of Redmond Park Master Plan (Park Plan) and an adopted Area Plan. In particular, where the Park Plan indicates there is a need for neighborhood or community park, the master plan shall identify sites that may be suitable for park development using the design and location criteria from the Park Plan or an adopted Area Plan. Density transfers, SOC credits, dedication, and other value consideration may be identified in the planning process to compensate property owners for land dedicated to public use;
6. **Air, Noise, and Water Resources.** Review air, noise and water resources that may be impacted by planned development and address how



adverse impacts will be avoided or mitigated in compliance with applicable local, state, and federal regulations. The analysis may use City public facility plans, technical studies, and policies to meet this requirement when those plans address how urban development in the plan area can be served. In these instances, the Master Development Plan must show that the envisioned land uses in the plan area are consistent with the land use assumptions in the public facility plans. This requirement is particularly important for storm water management.

7. **Natural Hazard Areas.** Inventory areas subject to natural hazards, particularly steep slopes, and program urban development that is suitable for the identified hazard areas;
8. **Residential Uses.** Identify areas planned for housing development, if any, and the proposed zoning districts to be applied. The housing plan must identify a mix of housing types and densities so that the overall density in the area meets or exceeds the housing density objectives for the area that are identified in the Redmond Urban Framework Plan, adopted Area Plans, and the Comprehensive Plan. The Framework Plan and adopted Area Plans provide general guidance on housing densities that need to be achieved in order to meet future housing needs.-Where proposed residential land uses differ from those shown in the Redmond Urban Framework Plan or adopted Area Plans, the master plan shall demonstrate how it meets the overall housing objectives of the Redmond Urban Framework Plan or adopted Area Plans. Applicants may propose new zoning districts when the proposed district(s) in total achieve the housing densities envisioned in the Redmond Urban Framework Plan or adopted Area Plans.
9. **Employment Uses.** Identify areas planned for employment use and/or mixed uses and the proposed zoning for these areas. Applicants may propose new zoning districts in cases where existing districts are not suitable for the planned development provided the proposed district(s) achieve similar land improvement values and/or employment densities envisioned in the Redmond Urban Framework Plan or adopted Area Plans.
10. **Transportation Analysis and Diagram.** Prepare a transportation impact analysis including a grid street plan that is consistent with street spacing and connectivity guidelines in the *Redmond Transportation System Plan* (TSP) and adopted Area Plans. Show the proposed classification for all streets down to collector roadways. Show the location of approved TSP improvement projects and any capital improvements that may need to be added to the TSP in order to serve the plan area. Show proposed bicycle pedestrian, and trail routes. Show how planned transportation facilities will connect to transportation facilities in adjacent urban areas.
11. **Public Facilities Analysis and Diagram.** The plan shall include a conceptual layout of public facilities, including sanitary sewer, water, and storm drainage, needed to support the planned uses. The Public Facilities Analysis must be consistent with the city's adopted *Public Facility Plan* (PFP) and related facility master plans, including improvements related to the adopted Area Plan that may require amending the PFP.
12. **North Redmond US 97 Interchange Area Management Plan (IAMP)**

**Compliance.** The master plan shall comply with the following policies, if applicable:

- a. Any property newly annexed within the IAMP area shall have:
  - 1) Direct Access to a local public street other than a state highway consistent with the Local Street Connectivity Plan; and,
  - 2) Any property to be annexed to the City shall relinquish all direct access rights to a state highway as a condition of development approval (when a legal alternative access exists).

**FINDING:** The application materials submitted in support of the proposed Master Development Plan include applicable elements listed above.

- 13. Great Neighborhood Principles. Master Development Plans shall address applicable Redmond Great Neighborhood Principles described below.**

***In instances where the property proposed for a Master Development Plan is located within the boundary of an adopted Area Plan, the Master Development Plan shall also address the Great Neighborhood Principles according to the specificity provided in the Area Plan.***

**FINDING:** Per the specific direction of this subsection 13 (see bold, italicized text above), the Great Neighborhood principles listed below are addressed individually. The subject property is not located within an adopted area, therefore, the principles listed below are the only principles that need to be addressed with this application.

- a. **Transportation. Connect people and places through a complete grid street network and trail system that invites walking and bicycling and provides convenient access to parks, schools, neighborhood service centers, and possible future transit stops.**

**FINDING:** Local streets provide access for bikes and pedestrians to conveniently access the nearby areas. Additionally, a trail will follow the current trail alignment that follows the canal, allowing pedestrians to continue to the major street networks, shopping area and future trails. The proposed trails and sidewalks are accessible to all those in the neighborhood. The proposed pedestrian elements will contribute to the orderly development of the area allowing for a connection of people and places through a permanent and safe means.

- b. **Housing. A mix of housing types and densities should be integrated into the design of new neighborhoods.**

**FINDING:** The subject property is 19 acres and proposed to be developed with a mixture of lots housing on lots ranging from 5,500-9,967, along a cottage development that will contain lots that average 2,300 square feet. Housing options and mixtures have been included as part of the submittal, demonstrating compliance with the criterion by providing a mixture of housing types and density of housing.

- c. **Open spaces, greenways, recreation.** All new neighborhoods shall provide useable open spaces with recreation amenities that are integrated to the larger community. Central parks and plazas shall be used to create public gathering places. Incorporate significant geological features such as rock outcroppings, stands of clustered native trees, etc. into the design of new neighborhoods. Neighborhood and community parks shall be shown in appropriate locations consistent with policies in Redmond's Parks Master Plan.

**FINDING:** The property has not been identified as an area for a public park on the parks Master Plan. However, it shall be noted 100 foot wide open space buffer area which is adjacent to open space areas that surround the proposed cottages will provide recreational opportunities for those within the subdivision and beyond. In addition, the proposal includes a tot lot that was strategically placed next to the future open spaces that were approved as part of the adjacent subdivision allowing an integrated design that will take advantage of interaction between two open spaces. The proposal includes open spaces that are useable and will serve the residents of the subdivision and beyond.

- d. **Integrated design elements.** Streets, civic spaces, signage, and architecture shall be coordinated to establish a coherent and distinct character for the Master Development Plan. Plans may integrate design themes with adjacent developed or planned areas.

**FINDING:** The project will have single family homes, with sloped roofs in a varied Pacific Northwest style common in other areas of Redmond. Earth tones and either single story or multiple story options are available. All designs will require residential design review follow City standards before a building permit will be issued. All homes within the development will be constructed by one builder with the architecture the same or very similar to the illustrations shown on the submitted plans. The individual home plans vary to avoid a monotonous feel, but relate in theme, color and external fixtures in order to give the neighborhood a distinct character. The infrastructure (streets, sidewalks, street trees, street lights) will all be developed according to City standards and specifications which will provide continuity throughout the development.

- e. **Diverse mix of activities.** A variety of uses is encouraged in order to create vitality and bring many activities of daily living within walking and biking distance or a short drive of homes.

**FINDING:** This criterion is best suited to larger more complex developments, primarily developments with recreational centers or town centers. The Applicant has designed a master plan that makes the most out of what they have. The design includes trails connections that integrate into the open spaces that abut the property. The design elements will encourage various modes of transportation to the existing and future surrounding schools, parks and commercial centers. Reasonable access the uses will ensure that a source of activities will be provided encouraging and contributing to the vitality of the area as it continues to develop.

- f. **Public art.** Public art is encouraged at the gateways to neighborhoods

**and/or in and around the center of neighborhoods to provide focal points.**

**FINDING:** Open space areas are proposed to be landscaped in a design that will draw visual interest. While no public art is proposed at this time open space areas provide an opportunity for public art as the developer continues evaluate finishing design for Mater Plan.

- g. Scenic views. Identify and preserve scenic views and corridors of the Cascade Range, Ochoco Mountains, and Smith Rock. Streets and common or public open spaces should be located and oriented to capture and preserve scenic views for the public. Minimize visual clutter within scenic corridors.**

**FINDING:** Connection to existing approved roadways, along with open placement requirements has limited the street and lot orientation, causing lots to be oriented away from the views to the west. However, the proposed public street does provide an opportunity for shared view during commuting, walking, and bicycling. Varied housing types and upper story development may also offer view opportunities. Based on the development factors it can be founds that the development takes advantage of the views to the greatest degree practical.

- h. Urban - rural interface. Urban development shall interface with rural areas through open space buffers at least 100 feet wide and the length of the urban development, excluding public streets, or shall be transitioned from higher density development to lower density development at the urban - rural interface, or utilize other appropriate and equivalent transitional elements.**

**FINDING:** An urban-rural buffer of 100' is shown on the submitted plans. The rural area is buffered by a large open space area adjacent to SW Pershall Way.

**... Criterion "I" is a duplicate of "d" above.**

- j. Canal trails. If canals or laterals are present, multi-use trails at least 10 feet wide shall be provided, subject to the Central Oregon Irrigation District's review and approval. Pedestrian amenities such as benches and trash receptacles shall be provided at appropriate locations.**

**FINDING:** A COID Sub-Lateral flows through the property to the west and continues east through the subject property before continuing further east. This sub-lateral will be piped consistent with COID standards. As indicated on the tentative plan, a pedestrian access easement will continue over the pipe, allowing for the future development of the trail. Therefore, this criterion has been met.

- k. Green Design. Environmentally friendly and energy efficient design is encouraged for public and private infrastructure, architecture and building orientation, open spaces and natural areas and**



**transportation facilities. In addition, the planting of native, drought-resistant trees is encouraged to provide shade and to minimize water usage.**

**FINDING:** The existing property's configuration allows for improved solar access which is intended to minimize energy use. The proposed open space is intended to be planted with drought tolerant species, shrubs, trees, and ground covers thus reducing water use. A full species list will be prepared and submitted to the City for review prior to approval of the final plat.

## **N. Tentative Subdivision Plat**

### **8.2235 Required Findings for Tentative Subdivision Approval.**

- 1. The Hearings Body shall approve no application for a subdivision unless the following requirements are met:**

- A. Proposal is in compliance with ORS Chapter 92, the Comprehensive Plan, the Transportation System Plan (TSP) and applicable zoning.**

**FINDING:** The proposed subdivision complies with ORS Chapter 92, meets the standards in the comprehensive plan, and is consistent with the City's TSP and zoning for this property.

- B. Proposal does not conflict with acquired public access easements within or adjacent to the subdivision.**

**FINDING:** There are no public access easements on the property that will conflict existing easements that will be located on adjacent property. All public access easements as required will be established in a manner that will allow continuity with adjacent easements.

- C. Each lot is suited for the use intended or offered.**

**FINDING:** The minimum lot size requirement for the R-4 zone is 5,500 square feet. Each lot is adequately sized for R-4 development with lots ranging in size from 5,500-9,900 square feet. No conditions exists that would constitute the need for larger lots. Therefore, lots as proposed are suitable for the intended uses.

- D. The subdivision will not exceed the operational capacity of public facilities and services as identified in the city's Water and Wastewater Master Plan and the Transportation System Plan, which are required to serve the development, or a determination that sufficient capacity can be provided.**

**FINDING:** The subdivision will require the extension of public streets and public utilities for connection purposes. The Applicant has met with the City of Redmond and obtained a sewer allocation letter that states that capacity exists for the proposed subdivision. In addition, the City has not raised any concern over water capacity. The proposed improvements will be made to ensure service can be provided and capacity will be maintained for the area. Based on the fact the proposal follows City of Redmond standards, it can be found that adequate

sewer and water is available to serve this property.

**E. A water rights division plan has been approved by the applicable irrigation district.**

**FINDING:** Water rights exist on the property and the Applicant understands that it will be made a condition of approval that the water rights be transferred prior to recordation of the final plat to ensure that all irrigation district requirements are met. Based on meeting the requirements, this criterion can be considered satisfied.

**F. The subdivision contributes to orderly development and land use patterns in the area, and provides for the preservation of natural features and resources such as streams, lakes, natural vegetation, special terrain features.**

**FINDING:** Much of the surrounding area has been previously approved for subdivision development. The proposed subdivision includes the extension of previously approved streets from the Canyon Ridge subdivision. Streets will be extended from the south and west, contributing to the gridded street network in the area. The proposed right of way extensions will allow for the logical continuation of utilities to the surrounding properties. Further, the improvements associated with the subdivision will allow for the extension of the transportation system, facilitating the various modes of transportation that come from the proposed neighborhood.

Due to the existing site's agricultural uses, natural features are not existent. There are no unique natural features on the property.

Based on the findings, the Applicant finds that the subdivision will contribute to orderly development of the area.

**2. Access Management proposals comply with the standards set forth in Section 8.2820 and all other applicable standards.**

**FINDING:** The proposed access to the property is via the proposed local streets. No direct access onto SW 10<sup>th</sup> St. or Pershall Way is proposed.

**8.2236 Subdivisions may be created following two tracks: Track 1 (General Criteria) and Track 2 (Clear and Objective Standards)**

**1. Track 1 – General Criteria. Subdivision Tentative Plans (No Needed Housing). The City shall approve, approve with conditions, or deny a proposed subdivision. Approval, or approval with conditions shall be based on compliance with the following criteria:**

**A. The proposed subdivision will:**

- 1. Not create risk of fire, flood, geological hazards, or other public health and safety concerns;**
- 2. Provide adequate transportation systems, water supply sewage disposal, drainage, and other public utilities consistent with City Standards and Specification;**
- 3. The proposed subdivision provides direct bicycle and pedestrian access to any adjacent residential areas, transit stops, neighborhood activity centers, commercial areas, and employment areas.**

**FINDING:** Based on the findings below, it has been demonstrated that the subdivision has been designed in manner that will avoid the risk of flood, fire geological , or other public health and safety concerns. Further, improvements to the transportation system, along with all other public facilities and services, will ensure that the subdivision contributes to the orderly development of surrounding area and the City of Redmond.

- B. Approval does not impede the future best use of the remainder of the property under the same ownership or adversely affect the development of the remainder or any adjoining land or access thereto, based on the provisions of this land use code.**

**FINDING:** The subdivision design includes the development of the entire property, while taking into consideration the development pattern on adjacent lands. The proposed subdivision will allow for the orderly extension of services as other properties develop. Therefore, it can be found that the subdivision proposal does not adversely affect the development of the remainder or any adjoining land or access thereto.

- C. Any existing improvements on the proposed lots are consistent with the provisions of this land use code.**

**FINDING:** The subdivision has been designed in accordance with the requirements of the provision of the applicable land use codes and will provide for the construction of dwelling units in accordance with the RDC.

- D. The proposed subdivision will be consistent with the property's designation in the comprehensive plan map.**

**FINDING:** The property is zoned R-4 and all aspects of the subdivision have been designed to meet both the zone and plan designations

- E. Show compliance with the Great Neighborhood Principles.**

**FINDING:** The proposed subdivision and off-site improvements were designed to ensure that the Great Neighborhood principles can be complied with to the greatest extent practical. Based on the findings included within, it can be found that the applicable criterion has been satisfied.

- F. The proposed subdivision provides safe, convenient, and direct bicycle and pedestrian access to nearby and adjacent residential areas, transit stops, neighborhood activity centers, commercial areas, and employment and industrial areas, and provides safe, convenient, and direct transit circulation, provided the city makes findings to demonstrate consistency with constitutional requirements. "Nearby" means uses within ¼ mile that can reasonably be expected to be used by pedestrians and uses within 2 miles that can reasonably be expected to be used by bicyclists.**

**FINDING:** The proposed subdivision includes off site improvements that will enhance facilities for use by pedestrians and bicyclist to access the nearby commercial centers, schools, parks and surrounding residential areas. The proposed improvements include sidewalks and trails, along with roadway connection to other subdivisions that have existing or proposed local streets that provide alternative access for pedestrians and bicyclist, via local streets and sidewalks.

- G. The proposed subdivision is designed and sited such that roads, infrastructure, utilities, and future development of proposed lots will minimize impacts to the natural environment by addressing the following:**
- 1. Protection of Natural Features.**
    - a. For areas not included on the city's acknowledged Goal 5 inventory, the preservation of significant natural features to the greatest degree attainable or feasibly, including:**
      - i. Significant on-site vegetation, including rare plants (those that are proposed for listing or are listed under state or federal law), and native plant communities.**
      - ii. Prominent topographic features, such as ridgelines and rock outcrops.**
      - iii. Natural resource areas designated in the comprehensive plan diagram as "Natural Resource" and areas identified in any city-adopted natural resource inventory.**
    - b. For areas included on the city's acknowledged Goal 5 inventory, the preservation of natural features shall be consistent with the acknowledged level of preservation provided for the area.**
  - 2. Tree Preservation. The proposed project shall be designed and sited to preserve significant trees to the greatest degree attainable or feasible, with trees having the following characteristics given the highest priority for preservation.**
    - a. Healthy trees that have a reasonable chance of survival considering the base zone or special area zone designation and other applicable approval criteria;**
    - b. Trees located within vegetated corridors and stands rather than individual isolated trees subject to windthrow;**
    - c. Trees that fulfill a screening function, provide relief from glare, or shade expansive areas of pavement;**
    - d. Trees that provide a buffer between potentially incompatible land uses;**
    - e. Trees located along the perimeter of the lot(s) and within building setback areas;**
    - f. Trees and stands of trees located along ridgelines and within view corridors;**
    - g. Trees with significant habitat value;**
    - h. Trees adjacent to public parks, open space and streets;**
    - i. Trees along water features;**
    - j. Heritage Trees.**
  - 3. Restoration or Replacement.**
    - a. For areas not included on the city's acknowledged Goal 5 inventory, the proposal mitigates, to the greatest degree attainable or feasible, the loss of significant natural features described in criteria (1) and (2) above, though the restoration or replacement of natural features such as:**
      - i. Planting of replacement trees within common areas; or**
      - ii. Re-vegetation of slopes, ridgelines, and street corridors; or**
    - b. Restoration of native plant habitat. Street Trees. If the proposal includes removal of any street tree(s), removal of those street tree(s) has been approved or approved with conditions imposed by the City.**



**FINDING:** The subject property does not contain any goal 5 resources, but contains some mature trees though out the site, mainly in the northern portion around the existing home. The applicant will work to preserve the trees, however, the need to provide needed housing, along with the need to installed City infrastructure will result in the removal of trees. Coordination related to preservation will part pf the Engineering plan submittal for the infrastructure. Therefore, it can be found that the Applicant is trying to preserve trees to the greatest extent practical, meeting the criterion

- H. On R-1 zoned property, if the subdivision results in a lot greater than 13,500 square feet in size the application shall indicate the location of lot lines and other details of layout that show future division of the lot may be made without violating the requirements of this land use code and without interfering with the orderly extension of adjacent streets, bicycle paths, and accessways. If the City deems it necessary for the purpose of future land division, any restriction of buildings within future street, bicycle path, and accessway locations shall be made a matter of record in the tentative plan approval.**

**FINDING:** The property zoned R-4, therefore this criterion does not apply.

- I. As far as is practicable, lot side lines shall run at right angles to the street upon which the lots face, except that on curved streets they shall be radial to the curve.**
- J. The proposed subdivision supplies all of the following:**
- 1. Geological and Geotechnical Analysis.**
  - 2. Pedestrian Circulation On-Site.**
  - 3. Public Access Required.**
  - 4. Special Setback Standards.**
  - 5. Underground Utilities.**
  - 6. Vision Clearance Areas.**
  - 7. Stormwater flood control, quality, oil and pollution control, source control, easements, and operation and maintenance.**
  - 8. The proposed subdivision complies with other applicable development standards for features explicitly included in the application.**

**FINDING:** As outlined in the findings below, this criterion has been met.

- K. The proposal complies with the Traffic Impact Analysis Review provisions.**

**FINDING:** As outlined in the findings below, this criterion has been met.

- L. Urban – rural interface. Urban development shall interface with rural areas (rural areas are those that lie within areas outside of the UBG or UAR) through landscaped open space buffers at least 100 feet wide and the length of the urban development, excluding public streets, or shall be transitioned from higher density development to lower density development at the urban – rural interface, or utilize other appropriate and equivalent transitional elements.**

**FINDING:** The property is located along the northern edge of the UGB. I recognition of the interface the subdivision has been designed with an interface buffer of 100 feet. The buffer is a continuance of the buffer that was proposed as part of the Canyon Ridge subdivision. The buffer as proposed will provide for the necessary transition between Urban and Rural.

Therefore, it can be found that the subdivision has been designed to appropriately interface with areas that are located outside the UGB, meeting the criterion.

- M. Fully developed “pocket parks” or “tot lots” shall be incorporated into medium and high density zoned residential subdivisions and site plans. These areas shall be developed for every twenty-five lots/units, a minimum of 3,000 square feet and privately maintained. Park amenities shall, at a minimum, include turf areas for at least 50% of the lot, benches, trees, shrubs, and other landscape features.**

**FINDING:** The property is zoned R-4, qualifying this subdivision for the requirements to install pocket parks. Based on the proposed 92 lots the subdivision is required to have a minimum of 9,000 square feet of open space/park space. The proposal includes a dedicated 6,000 square foot open space tract at the south end of the property and a 1.4 acre open space tract at the northeast portion of the site. The proposed open space will exceed the requirements and provide open space to be used by the residents of the subdivision.

- N. No site grading of the site shall occur until the City has approved the subdivision application.**

**FINDING:** No grading is being proposed at this time. The applicant understands that all future grading will require a grading and drainage plan to be submitted to the City for review and approval.

#### **8.2305 Submission of Final Plats for Phased Development.**

- 1. If a tentative plat is approved for phased development, the final plat for the first phase shall be filed within two (2) years of the approval date for the tentative plat. However, the Community Development Director or Hearings Body may allow extensions as provided in Section 8.2300, above.**
- 2. The final plat for a subsequent phase shall be filed in sequential order within three (3) years of the date the final plat for the first phase is filed. If the phased development is a Planned Unit Development, Cluster Development, or Cottage Development as described in RDC 8.0286, the final plat for the final phase shall be filed within eight (8) years of the date the development is approved, as provided in RDC 8.1605.**

3. ***If the applicant fails to file a final plat within the timeframe established herein, the tentative plan for that phase and all subsequent phases shall become null and void.***

**FINDING:** The Applicant is proposing to build the project out in 3 phases. Acknowledging the duration of approval above the request would be to in line with the criteria, allowing phase 1 to be filed within 2 years of the approval and all subsequent phases to be filed within 3 years of the date of the final plat for 1 phase being filed.

## **DESIGN STANDARDS AND IMPROVEMENTS**

### **8.2705 Blocks, Lots and Parcels.**

1. ***Blocks. The resulting or proposed length, width and shape of blocks shall take into account the requirements for adequate building lot sizes, street widths, access needs and topographical limitations.***
  - a. ***No block shall be more than 660 feet in length between street center lines unless it is adjacent to an arterial street, or unless topography or the location of adjoining streets justifies an exception, and is so approved by the reviewing authority. In MUN, MUE and MULW zones, block lengths shall be an average of 330 feet, except where required to meet grid street or access management requirements.***

**FINDING:** All block lengths within the proposed development conform with these standards as shown on the submitted plans.

- b. ***The recommended minimum length of a block along an arterial street is 1,320 feet, except that along such blocks, a public right-of-way for pedestrian and bicycle access shall be dedicated at or nearest the mid-point of the block length as is practical. The right-of-way shall be a minimum of 10 feet wide, with an all weather surface a minimum of 5 feet wide, constructed and centered within the right-of-way.***

**FINDING:** Pershall Way, an Arterial Street, abuts the entire northern boundary of the property. Based on the spacing from the intersection with 10<sup>th</sup> St., a roadway connection is impractical. A connection to Pershall in that location would create a situation where the roadway access is too close to the intersection, creating a safety concern. The subdivision connections to the other roadways will result in an alternative routes, allowing for the orderly development of the transportation system in the area by provide reasonable safe access.

- c. ***A block shall have sufficient width to provide for 2 tiers of lots unless topography, the location of adjoining streets, or adjacency to an arterial street justifies an exception.***

**FINDING:** Of the 75 standard lots, excluding the cottage lots, 36 of the lots are part of a two tier pattern, notably between Walnut Avenue, Walnut Place and Walnut Drive. Due to the fact that the remaining lots either abuts a major roadway or adjacent property, they are precluded from being part of a block that could create two rows of lots.

Therefore, based on the design constraints, it can be found that the subdivision is in substantial conformance with the criterion.

- d. ***Where appropriate at approved cul-de-sacs, dead-end streets, or along blocks approved at***

***more than the maximum block length standard, pedestrian and bicycle access corridors shall be required to be constructed between lots to minimize travel distance between subdivisions, parks, school, and collector or arterial streets. Access corridors shall be located to provide a reasonably direct connection between likely pedestrian destinations, and shall be consistent with the City of Redmond Bicycle Refinement Plan where applicable. A reasonably direct connection is a route which minimizes out of direction travel for people likely to use the connection considering terrain, safety and likely destination. The Community Development Director or Hearings Body may determine based on evidence in the record that construction of a separate access corridor is inappropriate or impractical. Such evidence may include but is not limited to:***

- 1. When the nature of abutting existing development makes construction of an access corridor impractical.***
- 2. When the access corridor would cross a natural area with significant natural habitat and construction would be incompatible with protection of natural values.***
- 3. When the access corridor would cross topography where slopes exceed 30% or where path grade would exceed 12% slope; or***
- 4. When a cul-de-sac or dead-end street abuts rural resource land at the urban growth boundary. In industrial zones, this standard may be waived at the discretion of the Community Development Director or Hearings Body when it is determined that the City's grid street standards should not be applied to the industrial development.***

**FINDING:** The project does include one cul-de-sac with private loop road in the northern portion of the site. As noted earlier, access to the north is precluded by the existing intersection of Pershall Way and 10<sup>th</sup> Street. In order to mitigate the impact the cul-de-sac has on pedestrians, the design includes an accessway to the 10<sup>th</sup> Street. The accessway is meant to reduce travel distance and provide direct access to the sidewalk system that located along the major roadways, providing access to nearby schools, parks and shopping centers. The Applicant finds that the design as proposed satisfies the criterion.

- 2. Lots and Parcels.** The size, width, and orientation of newly created lots and parcels shall be appropriate for the location of the land division and for the type of development and use contemplated. Lots and parcels shall be generally rectangular in shape, and shall be consistent with the lot size provisions of the zoning standards and the density requirements as established in the City of Redmond Comprehensive Plan.

Notwithstanding these requirements, the following exceptions may apply:

- A. In areas beyond the City Limits where public sewer is not currently available, minimum lot and parcel sizes shall permit compliance with the requirements of the Department of Environmental Quality and County sanitarian, and shall be sufficient to permit adequate sewage disposal. Any problems posed by soil structure and water table as related to sewage disposal by septic tank shall be addressed and resolved in the applicant's initial plan.***
- B. Where property is zoned and planned for business or industrial use, other widths and areas may be permitted by the Community Development Director or Hearings Body. Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street service and parking facilities required by the type of use and development contemplated.***
- C. In steep terrain, increased lot or parcel sizes may be required to avoid excessive cuts, fills, and steep driveways.***



**FINDING:** Based on the properties existing shape and topography, the lots as proposed are adequate in size and design for the use contemplated. The submitted plans demonstrate compliance with above criteria

- 3. Frontage.** *Each newly created lot and parcel shall abut upon a public street other than an alley for at least 50 feet, except for lots fronting on the bulb of a cul-de-sac, then the minimum frontage shall be 30 feet. Flag lots shall have no less than 20' of street frontage measured at the property line. Lots created as part of a Planned Unit Development shall meet the same frontage requirements listed herein, except such frontage may be allowed along private streets. Vehicular access shall be provided as specified in Section 8.2820, Access Management Standards, of this Chapter, or as specified in Section 8.2705(6) below, for residential lots and parcels abutting collector and arterial streets. All lot and parcels shall be addressed from the primary public street frontage, not including alleys.*

**FINDING:** The submitted plans demonstrate compliance with above criteria as each of the lots have at least 50 feet of frontage.

- 4. Side Lot or Parcel Lines.** *All side lot lines shall be at right angles to street lines or radial to curved streets wherever practical except as provided for in subsection (10) of this section.*

**FINDING:** The submitted plans demonstrate compliance with the above provisions to the greatest degree as all side lot lines are right angle and radial.

- 5. Through/Double Frontage Lots and Parcels.** *Through lots or parcels, and lots or parcels with double frontage shall be avoided whenever possible, including lots or parcels created adjacent to Collector and Arterial Streets, but not including alley frontage as described in Section 8.2705(6) below, except when they are necessary due to an irregular parent lot or parcel configuration, or are necessitated by topography or other unique circumstance.*

**FINDING:** The lots that run along the eastern and norther boundary do not abut upon the adjacent right a way, and rather abut upon a buffer tract. The lots along 10<sup>th</sup> Street are separated by a 10 foot landscape buffer as shown on the plan, while the cottage lots are separated from Pershall Way by common open space and Urban/Rural interface buffer. Therefore, there are no double frontage lots as part of the subdivision, As proposed, the entire development meets this criterion to the greatest degree practicable.

- 6. Residential Lots and Parcels Abutting Collector and Arterial Streets.** *Lots and parcels created adjacent to Collector and Arterial streets shall be oriented so that the front elevation of the residential development faces the Collector or Arterial Street. Vehicular access shall be provided pursuant to Section 8.2820, Access Management Standards, of this Chapter. In instances where direct vehicular driveway access to lot or parcel from the Collector or Arterial street is not permissible, alley access shall be provided to the rear of the lot or parcel in accordance with the design standards included in Section 8.2710(3) of this Chapter.*

**FINDING:** The intent of this provision when adopted was to provide a degree of active development adjacent to the street, and to prevent a continuous line of fences and degraded landscaping in the right of way. An additional intended result of this design includes traffic calming along the corridor. As stated above, there are lots that indirectly abut 10<sup>th</sup> Street as there is a landscape buffer strip that is located between the lots and ROW. It is applicant contention that the inclusion of the landscape buffer strip, as shown on the plan, allows for a separation between the lots and ROW, eliminating the potential for a double frontage lot and mitigating the impacts noted above. However, in the instance the City does not agree,

it can be found that by meeting all other requirements of the RDC, including the Master Development Plan criteria and Great Neighborhood Principles, the basis of the overall design was to provide a project that satisfies the intent of all such overarching criteria in a combined manner (with the intent to create a cohesive, well thought out neighborhood) while taking into account the physical features that limit the ability to practically meet all the standards of the RDC (such as this requirement). Based on the design, which includes the buffer, it can be found that the lots as proposed meet the criteria.

- 7. Corner Lots and Parcels.** *Corner lots and parcels shall be 5 feet more in width than other lots and parcels and also shall have sufficient extra width to meet the additional side yard requirements of the zoning district in which they are located.*

**FINDING:** All such lots will conform with these standards, with lots ranging from 60 to 73 feet in width.

- 8. Special Building Setback Lines.** *If special building setback lines, in addition to those required by the applicable zoning, are to be established in a development, they shall be shown on the final plat of the development and included in the deed restrictions.*

**FINDING:** No special building setback lines are proposed. The applicant is proposing a buffer that will be placed in a separate tract that is proposed to be landscaped.

- 9. Large Building Lots; Re-division.** *In the case where lots or parcels are of a size and shape that future re-division is possible, the Community Development Director or Hearings Body may require that the blocks be of a size and shape so that they may be re-divided into building sites, and the development approval and site restrictions may require provision for the extension and opening of streets at intervals which will permit a subsequent redivision of any tract of land into lots or parcels of smaller sizes than originally platted, and in conformance with the density provisions established in the City of Redmond Comprehensive Plan for the existing or intended Zone. A plan indicating the ability for re-division according to these standards may be required as part of the initial land division process.*

**FINDING:** No such lots exist as part of this proposal. Thus, this criterion is not applicable.

- 10. Solar Access.** *As much solar access as feasible shall be provided each lot and parcel in every new subdivision or partition considering topography, development pattern, and existing vegetation. The boundary lines of lots and parcels, as far as feasible, shall be oriented to provide solar access at ground level at the southern building line of the adjoining lot to the north two hours before and after the solar zenith from September 22 to March 21. If it is not feasible to provide solar access to the southern building line the solar access, if feasible, shall be provided at 10 feet above ground level at the southern boundary line two hours before and after the solar zenith from September 22 to March 21, and three hours before and after the solar zenith from March 22 to September 21. This solar access shall be protected by solar height restrictions on burdened properties for the benefit of lots receiving the solar access pursuant to Section 8.0370, of the City of Redmond Development Code, Solar Access Standards. If the solar access for any lot, either at the southern building line or at 10 feet above the southern building line, is not feasible, supporting information may be required with the application.*

**FINDING:** The submitted plans demonstrate compliance with this criterion. The vast majority of the proposed single family residential lots are oriented in a north-south solar access favorable setting. Those that are not, are constrained by adjacent roadways and the property's configuration.

- 11. Curvilinear Street and Block Design.** *Although a basic grid street design with minimum and*

**maximum block lengths are requirements of this section, a curvilinear street/block design is encouraged for the purpose of adding interest to new subdivision development.**

**FINDING:** The blocks are laid out in a grid pattern to the greatest degree practical given that Pershall Way and 10<sup>th</sup> Street restricts direct access, limiting design. However, each of the west/east streets provide a slight curve, providing visual interest within the subdivision.

**12. Flag Lots. A flag lot shall be considered as a “flag lot” if the pole of the flag lot is less than half the width of the average lot width. For flag lots, the following shall be required:**

- A. Flag poles shall be no less than 20’ wide.**
- B. Flag lot development, if allowed by the zone, is limited to one duplex or single family dwelling per lot. All zone regulations apply, including the minimum required lot size and setbacks unless setback reductions are allowed as described in (E).**
- C. Each flag lot shall contain a minimum 16’ wide paved driveway.**
- D. A flag lot is exempt from the 50 foot street frontage requirement; however a minimum of 20 feet of street frontage is required.**
- E. Front and/or rear yard setbacks may be reduced to no less than 10’ subject to review and approval by the Community Development Director. The orientation of any structure (determination of front) may be suggested by the property owner, and is subject to the review and approval of the Community Development Director or designate. The location(s) of all structures immediately adjacent to any flag lot shall be shown on a site plan (1) during planning review and during the act of creating any new flag lot, and (2) during a building permit review for any structure built on a flag lot.**
- F. No flag lot shall be partitioned or further divided.**
- G. The “pole” of the flag lot shall be no longer than 150’ measured from the street intersection to the beginning of the base of the flag.**
- H. The “pole” of the flag shall not be included in the minimum lot size calculation.**
- I. Flag lots shall be exempt from street tree requirements unless the street frontage portion of the flag lot is 30’ or greater.**
- J. Flag lots are prohibited along or abutting the Dry Canyon Rim.**
- K. Two off-street parking spaces shall be provided for each dwelling unit on a flag lot.**

**FINDING:** The proposal does not include any flag lots. Thus, this criterion is not applicable.

## **8.2710 Streets.**

**1. General. Streets shall be in conformance with the City of Redmond Transportation System Plan as specified herein.**

- A. Except along Arterial Street, public streets shall be spaced a maximum of 660 feet between centerlines. The purpose is to provide a street grid pattern of through streets to facilitate traffic movement. Street designs shall conform to topography and other existing natural and man-made conditions. Illustrative examples of other conditions include the dry canyon, main COI canal, Highway 97, and the Burlington Northern Railroad tracks.**

**FINDING:** The submitted Plans demonstrate compliance with the above criterion – no internal streets exceed a 660 foot block length between centerlines.

- B. All proposed streets, sidewalks, bike lanes and pedestrian pathways shall connect to other streets, sidewalks bike lanes and pedestrian pathways within a development and to existing and planned streets, sidewalks, bike lanes and pedestrian pathways outside the development.**

***Such facilities shall serve existing and planned parks, schools or other public lands within a neighborhood.***

**FINDING:** The submitted Plans demonstrate compliance with all the above listed criteria. Previous findings included in this document address these standards in detail and are incorporated by reference herein.

- C. To the maximum extent possible, new local streets shall align and connect with existing local streets and collectors, and in certain special cases arterial streets. Cul-de-sac streets shall be permitted only where no feasible connection with an adjacent street exists, or if the local street connection would be to an arterial street and the function of the arterial street may be diminished as determined through the land use review process, or the block length would be less than that which is permitted by Section 8.2705(1)(B).***

**FINDING:** The submitted Plans demonstrate compliance with all the above criteria by proposing street extensions for streets that have been previously approved as part of the Canyon Ridge subdivision.

- D. Consideration should be given to alternative street designs other than required herein in the City's non-residential land use zones to allow for more effective developments. Such designs may be considered and approved during the subdivision or partition process without need for variance.***

**FINDING:** There are no non-residential zoned areas, therefore, this criterion does not apply.

- E. All proposed or required streets and alleys shall comply with Section 8.2820 Access Management Standards, the Transportation System Plan, and with Local Street Connectivity Plans adopted as part of the transportation element of the Comprehensive Plan.***

**FINDING:** The submitted Plans demonstrate compliance with all the above criteria. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting.

- 2. Existing Streets. Whenever existing streets, adjacent to or within a tract, are of inadequate width to accommodate the increase in traffic expected from the land division or by the City's transportation policies as determined through a transportation impact analysis, additional right-of-way shall be provided at the time of the land division by the applicant. During consideration of the tentative plat for the subdivision or partition, the Hearings Body shall determine whether the improvements to existing streets, adjacent to or within the tract, are required. If so determined, such improvements shall be required as a condition of approval of the tentative plat. Improvements to adjacent streets shall be required where traffic on said streets shall be directly affected by the proposed subdivision. Notwithstanding these provisions, off-site improvements to streets not within or adjacent to the development may be required when impacts resulting from the development necessitate such improvements as demonstrated through a transportation impact analysis.***

**FINDING:** The project intends to construct planned grid streets and improve the Collector Roadway (10<sup>th</sup> Street) adjacent to the property. Such construction includes the dedication of the necessary right of way as required by the City and a half street improvements including sidewalks.

The submitted Plans demonstrate proposed street widening and improvements on the adjacent existing streets to meet the improvement standards specified elsewhere in the RDC.



**3. Minimum Right-of-Way and Roadway Width. The street right-of-way and roadway surfacing widths shall be in conformance with the standards as specified in Table 1 below:**

**Table 1 - City of Redmond Right of Way and Roadway Design and Cross-Section Standards**

| Functional Class        | Width (ft)        |                    | Right-of-Way | Travel Lanes | Sidewalks | Bike Lanes** | Parking**              |
|-------------------------|-------------------|--------------------|--------------|--------------|-----------|--------------|------------------------|
|                         | Pavement Standard | Pavement (minimum) |              |              |           |              |                        |
| Residential Alley       | 16 ft             |                    | 20 ft        | n/a          | none      | shared       | none                   |
| Commercial Alley        | 20 ft             |                    | 20 ft        | n/a          | none      | shared       | none                   |
| Local Residential*****  | 36 ft             |                    | 60 ft        | 2***         | 5 ft      | shared       | both sides (unstriped) |
|                         | 28 ft*            |                    | 60 ft        | 2***         | 5 ft      | shared       | one side (unstriped)   |
|                         | 24 ft*            |                    | 60 ft        | 2***         | 5 ft      | shared       | none                   |
|                         | 40 ft             | 38 ft              | 60 ft        | 2***         | 5 ft      | shared       | optional (unstriped)   |
| Local Industrial        | 40 ft             | 38 ft              | 80 ft        | 2            | 5 ft      | 6 ft         | none                   |
| Industrial Collector    | 40 ft             | 36 ft****          | 60 ft        | 2            | 5 ft      | shared       | both sides (8 ft)      |
| Minor Collector         | 36-50 ft          | 36 ft****          | 80 ft        | 2            | 5 ft      | 6 ft         | none                   |
| Major Collector         | 50 ft             | 48 ft              | 100 ft       | 3            | 7 ft      | 6 ft         | none                   |
| Minor Arterial (3-lane) | 74 ft             | 72 ft              | 100 ft       | 5            | 7 ft      | 6 ft         | none                   |
| Minor Arterial (5-lane) |                   |                    |              |              |           |              |                        |

**Notes:**

\*May be constructed only in conjunction with the creation of covenants, conditions and restrictions (CCR's) and the establishment of a homeowners association (HOA) for the development. The CCR's shall provide that the primary responsibility for parking enforcement shall be the HOA, with the City of Redmond also being acknowledged in the CCR's as a beneficiary for such parking enforcement as a violation of the land use decision and/or city code.

\*\*In certain cases, bike lanes may be reduced to 5 ft, parking may be reduced to 7 ft, and travel lanes to 11 ft at the discretion of the City Engineer.

\*\*\*Unstriped travel lanes

\*\*\*\*36 ft in existing built-out areas

\*\*\*\*\*All streets less than 28 feet wide shall be no longer than 300 feet in length, unless such streets include at least one (1) parking bay per lot, located along each lot frontage for the entire length of such street, up to the maximum block length. Streets 300 feet or less in length shall not have any direct driveway access. In no case shall any street less than 28 feet wide intersect with any other street less than 28 feet wide.

**FINDING:** The streets will be dedicated to the public and all streets will be constructed to the required minimum standards. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting.

**4. Future Extension of Streets. When necessary to give access to or permit a satisfactory future division of adjoining land, streets shall be extended to the boundary of the subdivision or partition and the resulting dead-end streets may be approved without a permanent turn around if they are 150 feet or less in length, although, an adequate temporary turn around to ensure emergency vehicle access must be provided if such streets are greater than 150 feet in length.**

**FINDING:** As noted above, the majority of the streets are an extension of streets that were approved as a part of the Canyon Ridge subdivision. The only street that stubs to a property that was not approved for development, is 10<sup>th</sup> Place, which is stubbed to the south. The street will permit for the extension of the grid pattern, while allowing for the orderly future division of the adjoining property. The stub street is only 98 feet from the proposed Walnut Drive. Therefore, a turnaround is not required.

**5. Collector and Arterial Street Access. Notwithstanding the provisions of Section 8.2705 of this Chapter, if a land division abuts or contains an existing or proposed collector or arterial street, the Community Development Director or Hearings Body may require other treatments, including but not limited to frontage roads, necessary for adequate protection of residential properties and to afford separation of through and local traffic. Provision may be made for emergency access. All frontage roads shall comply with the City of Redmond Transportation System Plan.**

**FINDING:** The project does not propose any direct lot access to any Collector or Arterial Street. The submitted plans demonstrate a significant proposed buffer abutting the Arterial Streets adjacent the subject property., providing adequate separation.

- 6. Streets Adjacent to Railroads, Freeways and Parkways.** *When the area to be subdivided or partitioned is residentially zoned and abuts a railroad, freeway, or parkway, a provision may be required for a street approximately parallel to and on each side of such right-ofway at a distance suitable for use of the land between the street and railroad, freeway or parkway. In the case of a railroad, there shall be a land strip of not less than 25 feet in width adjacent and along the railroad right-of-way for screen planting between the railroad right-of-way and residential property. If the intervening property between such parallel streets and a freeway or a parkway is less than 80 feet in width, such intervening property shall be dedicated to park or thoroughfare use. The intersections of such parallel streets, where they intersect with streets that cross a railroad, shall be determined with due consideration as cross streets of a minimum distance required for approach grades to a future grade separation and right-of-way widths of the cross street.*

**FINDING:** The subject property does not abut any railroad alignments this criterion is not applicable.

- 7. Continuation of Streets.** *Subdivision or partition streets which constitute the continuation of streets in contiguous territory shall be aligned so that their center lines coincide. Where straight line continuations are not possible, such center lines shall be continued as curves. These streets or the continuation of streets in contiguous territory may be required by the Community Development Director or Hearings Body where such continuation is necessary to maintain the function of the street or desirable in the surrounding area. Where solar orientation would not be possible if the street area continued, a new pattern may be started that is solar oriented.*

**FINDING:** The proposed designs align with general location of the of the approved streets in the Canyon Ridge subdivision. In cases where the proposed streets will be constructed prior to the approved streets being constructed on the adjacent lots, the Applicant understands that the streets will need to be located in general alignment with the approved streets. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting.

- 8. Lot Layout.** *Local residential streets should be oriented on an east/west axis to the greatest possible extent to insure solar access for lots within the subdivision or partition.*

**FINDING:** As discussed herein under other sections, the internal local residential streets are oriented on an east-west axis to the greatest extent practical. Existing development and roadways preclude all roads from being on a east west axis.

- 9. Street Names.** *Except for extensions of existing streets, no street name shall be used which will duplicate or be confused with the name of an existing street in a nearby city or in the county. Street names and numbers shall conform to the established pattern in the City, including the continuation of street names across intersecting streets, and shall be subject to the approval of the Fire Department or the responsible agency.*

**FINDING:** The applicant will designate street names with the final plat. The applicant agrees to comply with this criterion as part of the final plat approval process.

- 10. Sidewalks.** *Sidewalks are required to be installed on both sides of a public street and in any special pedestrian way within the subdivision or partition except that in the case of collectors, arterials, special*

***industrial districts or in steep terrain, the Hearings Body may approve a subdivision or partition without sidewalk if alternative pedestrian routes are available or provided by the developer. Sidewalks shall be required along routes to existing or future school and park sites.***

**FINDING:** Sidewalks will be installed on both sides of all new streets as proposed herein and along the 10<sup>th</sup> Street frontage as required by the City of Redmond. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting of each phase.

***11. Bicycle Routes. If appropriate to the extension of a system of bicycle routes, existing or planned pursuant to the City of Redmond Bicycle Refinement Plan, the Community Development Director or the Hearings Body may require the installation of separate bicycle lanes within streets and/or separate bicycle paths.***

**FINDING:** 10<sup>th</sup> Street is proposed to be improved with a half street improvement along the property frontage. The improvement will include the installation of a 6 foot bicycle lane along the property frontage per City standards. The proposed bicycle lane will ensure that the proposed facilities are constructed, thus meeting this criterion. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting.

***12. Intersection Angles. Street intersections shall be as near right angles as possible except where topography or existing conditions requires a lesser angle, but in no case shall the acute angle be less than as permitted by the adopted City of Redmond Public Works Standards and Specifications.***

**FINDING:** The submitted plans demonstrate conformance with this criterion. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and the platting.

***13. Alignment. Staggered street alignment shall whenever possible leave a minimum of 200 feet distance between the center line of the streets, but in no case be less than as permitted by Standards and Specifications.***

**FINDING:** The submitted plans demonstrate conformance with this criterion. All staggered street are designed in a manner wthat will satisfy the criterion. The location of the streets are such that they are over 200 feet in separation.

***14. Narrow Streets. Local residential grid streets designed at widths less than 36 feet as described in Section 8.2710(3)(Table 1), shall be permitted when the subdivision design is found to be in compliance with the following:***

- A. Narrow streets may only be permitted for continuous full length blocks internal to a Subdivision or Planned Unit Development with street connections at both ends.***
- B. Lots adjoining the narrow streets shall be a minimum of 5000 square feet and have a street minimum 50 feet of frontage.***
- C. Sidewalks shall be separated from the curb by a landscape strip with street trees conforming with Public Works Standards and Specifications.***
- D. Curb cuts along the narrow street shall not be less than the minimum width required within the adopted City of Redmond Public Works Standards and Specifications.***

**FINDING:** As shown on the submitted Plans all proposed Local residential grid streets have proposed paved widths of 36 feet, so none would be considered “narrow streets” per this

criterion.

#### **8.2715 Fundamental Design Elements.**

- 1. Lighting.** *The subdivider or partitioner shall provide underground wiring to the City standards and a base for any proposed ornamental street lights at locations approved by the affected utility company.*

**FINDING:** The applicant will provide wiring and bases for street lights as required herein. No ornamental lights are proposed at this time.

- 2. Multiple Access Points.** *Whenever possible, a minimum of two points of access to the subdivision or partition shall be provided to provide assured access for emergency vehicles and ease resident evacuation.*

**FINDING:** The submitted plans indicate that the subdivision will have 3 points of access, satisfying the criterion.

- 3. Water/Sewer.** *All subdivisions and partitions shall provide water and sewer lines constructed to City standards and specifications approved by the City Engineer. All lots or parcels shall be served from the City of Redmond water and sewer systems or by water and sewer systems acceptable to the City. Water and sewer mains and service lines shall be installed prior to the curbing and paving of new streets in all new subdivisions or partitions.*

**FINDING:** The submitted plans demonstrate anticipated water and sanitary sewer mains to be constructed within the proposed Tentative Plan. All lots will be provided with water and sewer service. The applicant is aware that engineered plans for all infrastructure will be required to be submitted to the City of Redmond Engineering Department for review and approval prior to any construction and platting.

- 4. Underground Utilities.** *All permanent utility service and minor power transmission lines that are within or immediately adjacent to lots in a subdivision or parcels in a partition shall be provided from underground facilities unless otherwise approved by the CDD Director or Hearings Body. The subdivider or partitioner or developer shall be responsible for complying with requirements of this section and shall:*

- A. Obtain a permit from the Public Works Director or designee for placement for all underground utilities within the public right-of-way.*
- B. Make all necessary arrangements with the utility companies and other persons or corporations affected by the installation of such underground utilities and facilities in accordance with rules and regulations of the Public Utility Commission of the State of Oregon.*
- C. All underground utilities, water lines, sanitary sewer lines and storm drains installed in streets shall be constructed prior to the surfacing of such streets to the extent practicable, and water and sanitary sewer service lines shall be placed to such lengths as will negate the necessity for disturbing the street improvements when service connections are made.*

**FINDING:** The applicant will underground new utility services and new minor power transmission lines to serve the development.

- 5. Preservation of Natural Features.** *Existing trees, vegetation and natural features (i.e. rock outcrops) add character to the development and shall be preserved to the greatest extent practicable. All trees over 8 inches d.b.h. shall be noted and shown on the tentative plat.*

**FINDING:** There are no significant natural features inherent to the site. The property was previously utilized for agricultural purposes and has been cleared and planted with pasture



grasses. A few trees are scattered around the property and around the existing home. The trees will be retained to the greatest extent practical.

- 6. Scenic Views.** *Significant views shall be taken into consideration during subdivision design. The establishment of view corridors, building envelopes, building height restrictions or similar methods shall be employed for the retention and protection of views from individual lots and from public spaces to the greatest degree practicable as determined through the land use review process. Such measures shall be shown on the final plat and included in deed restrictions.*

**FINDING:** This criterion was addressed under the Great Neighborhood Principles above – those proposed findings are incorporated by reference herein.

**7. Land for Public Purposes.**

- A.** *If the City has an interest in acquiring a portion of a proposed development for a public purpose, it shall notify the property owner as soon as the City Council authorizes the transaction to proceed.*
- B.** *Within a development, or adjacent to a development in contiguous property owned by the developer, a parcel of land of not more than 5% of the gross area of the development may be required to be set aside and dedicated to the public for parks and recreation purposes by the developer. The parcel of land, if required, shall be determined to be suitable for the park and/or recreation purpose(s) intended, and the city may require the development of the land for the park or recreation use intended or identified as a need within the community.*
- C.** *In the event no such area is available that is found to be suitable for parks and/or recreation uses, the developer may be required, in lieu of setting aside land to pay to the appropriate parks and recreation agency a sum of money equal to the market value of the area required for dedication, plus the additional funds necessary for the development thereof if so required; if such is required, the money may only be utilized for capital improvements by the appropriate parks and recreation agency.*
- D.** *The foregoing land and development or money dedication (if require) may be provided for in lieu of an equal value of systems development charge assessment for parks if so approved by the collecting agency in accordance with the applicable provisions of the system development charge ordinance. If the collecting agency will not permit the land or money dedication in lieu of an applicable systems development charge, then the land and development or money dedication shall not be required.*
- E.** *If the nature and design, or approval, of a development is such that over 30% of the tract of land to be developed is dedicated to public uses such as streets, water or sewer system facilities and the like, then the requirements of this subsection shall be reduced so that the total obligation of the developer to the public does not exceed 30%.*

**FINDING:** As noted above the property is not identified as a property for park use in the parks Master Plan. Therefore, the development of a park at this location is not being requested as part of this application.

**8. Easements.**

- A. Utility Easements.** *Easements shall be provided along property lines when necessary for the placement of underground utilities and to provide the subdivision or partition with electric power, communication facilities, street lighting, sewer lines, water lines, gas lines, or drainage. Such easements shall be labeled "Public Utility Easement" on the tentative and final plat; they shall be at least 12 feet in width and centered on lot lines where possible, unless determined otherwise by the City Engineer or designate. Excepting utility pole guylines easements along the rear of lots adjacent to unsubdivided land may be reduced to 10 feet in width, unless determined otherwise by the City Engineer or designate.*
- B. Drainage.** *If a tract is traversed by a water course, such as a drainage way, channel or*

***stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of the water course or in such further width as will be adequate for the purpose. Streets or parkways parallel to major water courses and drainage ways may be required.***

**FINDING:** Any utility easement needs for the development are anticipated to be accommodated in the street rights-of-way. The subject property is not subject to any drainage course or drainage way that would necessitate any drainage easement under these criteria. Notwithstanding, a COID canal crosses the property and that canal will be piped applicant will piped as proposed.

***8.2720 Grading of Building Sites. Grading of building sites shall conform to the following standards unless physical conditions demonstrate the propriety of other standards:***

- 1. Cut slope ratios shall not exceed one foot vertically to one and one-half feet horizontally.***
- 2. Fill slope ratios shall not exceed one foot vertically to two feet horizontally.***
- 3. The composition of soil for fill and the characteristics of lots and parcels made useable by fill shall be suitable for the purpose intended.***
- 4. When filling or grading is contemplated by the subdivider or partitioner, they shall submit plans showing existing and finished grades for the approval of the City Engineer. In reviewing these plans, the City Engineer shall consider the need for drainage and effect of filling an adjacent property. Grading shall be finished in such a manner as not to create steep banks or unsightly areas to adjacent property.***
- 5. Any land that requires engineered fill shall be so noted on the plat. Design and placement of engineered fill shall be under the direction of a licensed professional engineer.***

**FINDING:** The applicant is agreeable to conditions of approval regarding the above criteria. The applicant suggests the appropriate time for submittal and review of any such grading plans is at construction plan review, in conjunction with detailed infrastructure design and construction plan preparation. The submitted Preliminary Grading and Drainage Plan for all phases demonstrates that anticipated grades for the project are relatively mild, and given the relatively mild natural grade of the site, any grading of building sites will likely be mild and relatively benign as well.

***8.2815 Transportation Impact Analysis. It shall be the burden of the developer to evaluate transportation system impacts through studies prepared by a qualified registered professional engineer. When a transportation impact analysis is required it must demonstrate that the following standards are met:***

- 1. The standard of measurement that will determine the acceptability of traffic flow on City streets will be a delay-based level of service as defined by the Highway Capacity Manual, Special Report 209, third Edition (2000 update or subsequent document updates) published by the Transportation Research Board. The determination of LOS shall be calculated by a methodology that is approved by the City Engineer. The acceptable standard of LOS for City streets shall be LOS E during the peak 15 minutes of the peak hours of the average weekday. A lesser standard shall be acceptable at unsignalized intersections with low volume minor street approaches if the volume-to-capacity ratio is less than 0.90 and the 95<sup>th</sup> percentile vehicle queue is less than four vehicles during the peak hour.***
- 2. The Average Daily Traffic (ADT) volume of Local Street roadways within the City of Redmond shall be less than 1,200 vehicles per day (VPD). Developments which add vehicle trips to Local Streets with an ADT greater than 1,200 VPD may be asked to provide mitigation in the form of additional access to the site, when in the opinion of the City Engineer, the residential livability is degraded by excessive local street traffic volume.***
- 3. New development that will cause degradation below those levels shall be required to provide mitigating transportation system improvements that will restore the LOS to the accepted standard, as is practical,***

as determined by the City Engineer and pursuant to the adopted City of Redmond Transportation System Plan. Where there are impacts to the State Highways, the City and ODOT shall work cooperatively to determine appropriate courses of action based on ODOT and City standards.

4. The following vehicle trip generation thresholds shall determine the level and scope of transportation analysis required for a new or expanded development. Trip ends shall be calculated as per the Institute of Transportation Engineers manual, Trip Generation, 8<sup>th</sup> edition (or subsequent document updates), or local trip generation studies prepared by a qualified registered professional engineer and approved by the City Engineer. The City Engineer shall determine when a TIA has satisfied the requirements of the development's impact analysis. The TIA shall bear the stamp and signature of a qualified registered professional Engineer with a license valid in the State of Oregon.
  - A. If a proposed development will generate 200 or more daily trip ends, or 20 or more p.m. peak hour trip ends, then a Transportation Impact Analysis (TIA) shall be required.
  - B. Projects that generate less than 200 daily or 20 p.m. peak hour trip ends may also be required to provide a Transportation Impact Analysis (TIA) when, in the opinion of the City Engineer or his/her designee, significant capacity and/or safety problem is caused, or adversely impacted by the development. The City Engineer or designee, shall determine the scope of this analysis.
  - C. A development may be required to provide a Trip Generation Report for developments which generate less than 200 daily or 20 p.m. peak hour vehicle trips.
5. The impact analysis area shall include at a minimum, the following intersections:
  - A. All site access intersections
  - B. Nearest intersecting collector or arterial street upstream and downstream of the development.
  - C. Any other collector or arterial street intersection that would experience an increase of 25 additional peak hour trips.
  - D. Additional intersections requested by staff in the basis of anticipated impacts resulting from the development.
6. The analysis shall include the following study time frames:
  - A. Existing conditions.
  - B. Completion year of each significant phase of development.
  - C. Five year forecast beyond final phase
7. The following Tables are required in the TIA:
  - A. Trip Generation (including phase breakdown if applicable)
  - B. LOS Table (LOS for every analysis scenario at every study area intersection. Report LOS, delay, V/C ratio, 95% vehicle queue, and any additional pertinent analysis results)
8. The following Figures are required in the TIA:
  - A. Vicinity Map
  - B. Site or Tentative Plan Map
  - C. Background Traffic Volumes (all study intersections, all analysis years)
  - D. Trip Distribution and Assignment
  - E. Background + Site Generated Traffic Volumes (all study intersections, all analysis years)
9. Other Analysis Standards (as required by the study)
  - A. Signal Warrants shall be performed where applicable per the Manual on Uniform Traffic Control Devices, current edition.
  - B. Left Turn Lane Warrants shall be provided where applicable per ODOT criteria based on the Texas Transportation Institute (TTI) curves.
  - C. Right Turn Lane Warrants shall be provided where applicable per ODOT criteria.
  - D. The acceptability of sight distance at all study area intersections shall be determined per AASHTO (current edition) standards.
  - E. Traffic signal progression analysis may be required if a new signal is proposed. The City Engineer shall approve the method of traffic signal progression analysis.
  - F. Roadway improvements are to be based on the City of Redmond Standards and Specifications and ODOT design standards.

**FINDING:** The applicant has submitted a Transportation Impact Analysis prepared by Transight Consulting which includes and addresses all the requirements of this criterion. The submitted analysis includes a scope and study area that was approved by the City of Redmond Engineering Division. As pointed out in the analysis, the surrounding streets, when built to City of Redmond standards and specifications have adequate capacity to accommodate the anticipated trips from the development. This is also predicated upon the future improvements anticipated by the City of Redmond TSP to serve the area as development of surrounding lands occurs. The findings and recommendations of the traffic analysis are included by reference herein as support for conformance with these criteria.

**8.2820 Access Management Standards. All land divisions shall be in compliance with the following standards.**

**1. Driveway spacing and corner clearance as follows:**

| <u>Roadway Classification</u> | <u>Minimum Access Driveway Spacing</u> | <u>Minimum Access Clearance to Corner</u> | <u>Intersection Spacing (Min.)</u> |
|-------------------------------|----------------------------------------|-------------------------------------------|------------------------------------|
| Local Street                  | No restrictions                        | 30 feet                                   | 165 feet                           |
| Minor Collector               | 50 feet                                | 80 feet                                   | 330 feet                           |
| Major Collector               | 165 feet                               | 165 feet                                  | 330 feet                           |
| Minor Arterial                | 330 feet                               | 330 feet                                  | ¼ mile                             |
| Major Arterial                | ODOTStd                                | ODOTStd                                   | ODOTStd                            |

1. *In all instances, access near an intersection shall be located beyond the influence of standing queues and opposing left turns sharing a continuous two-way left turn lane. This requirement may result in greater corner clearance or access spacing than the minimum distance indicated.*
3. *Every lot or parcel shall be permitted an access. In the event that the access management standards cannot be achieved, shared access with adjacent property shall be explored and provided where available.*
4. *Access shall be taken from the lower order street or alley unless otherwise approved by Public Works and/or ODOT through the land use process.*
5. *Unless adequate demonstration of site necessity, intersection safety and functionality is provided, through the land use review process, new lots and/or parcels will be limited to a single vehicular access.*
6. *The access management standards apply to new development, redevelopment, subdivision and partitioning of land.*
7. *Corner clearance is measured from the edge of right-of-way to the nearest edge of access. Spacing is measured from centerline of access/intersection to centerline of access/intersection.*
8. *Adequate intersection sight distance and clear zone shall be maintained at all access/driveway locations per AASHTO standards (American Association of State Highway and Transportation Officials).*
9. *Public Works may require supporting information, including but not limited to traffic count data, trip generation, trip distribution, Transportation Impact Analysis study, etc., in order to make a proper determination of access/driveway location.*

**FINDING:** The submitted Plans and materials demonstrate compliance with the above criteria. Additionally, the findings and recommendations of the traffic analysis are included by reference herein as support for conformance with these criteria.

**CONCLUSION:** Based upon the submitted Master Development Plan, Tentative Subdivision Plan Cottage Development, Transportation Impact Analysis, and the proposed findings included herein, the applicant believes that all requirements have been fulfilled. The applicant respectfully requests approval of the project.



**From:** [Leslie, Brent C \(BPA\) - TERR-REDMOND](#)  
**To:** [Kyle Roberts](#)  
**Cc:** [Sarah Vowell](#)  
**Subject:** RE: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails  
**Date:** Friday, September 24, 2021 8:02:09 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)

[EXTERNAL]: This email originated from outside of the city. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Thank you for reaching out to the U.S. Department of Energy, Bonneville Power Administration (BPA). Based on the attached plans it does not appear that there will be an encroachment on a BPA right-of-way.

Please be aware that applications must be submitted for any proposed use within a BPA right-of-way. The application can be found at the following link:  
[https://www.bpa.gov/PublicInvolvement/LandsCommunity/RealProperty/Application\\_for\\_use\\_of\\_BPA\\_Right\\_of\\_Way.pdf](https://www.bpa.gov/PublicInvolvement/LandsCommunity/RealProperty/Application_for_use_of_BPA_Right_of_Way.pdf)

Kind Regards,

*Brent Leslie*

Realty Specialist  
 Bonneville Power Administration | Department of Energy  
 Real Property Field Services | TERR-REDMOND  
 3655 SW Highland Ave  
 Redmond, OR 97756  
 Office: 541-516-3257  
 Mobile: 541-316-9731  
[bcleslie@bpa.gov](mailto:bcleslie@bpa.gov)  
[Landowner Use and Safety Information](#)  
<https://www.bpa.gov/PublicInvolvement/LandsCommunity/Pages/default.aspx>



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**From:** Sarah Vowell <sarah.vowell@redmondoregon.gov>  
**Sent:** Thursday, September 23, 2021 10:20 AM  
**To:** David Pilling <David.Pilling@redmondoregon.gov>; Bill Duerden <Bill.Duerden@redmondoregon.gov>; Wade Gibson <Wade.gibson@redmondfireandrescue.org>; Travis Robbins <travis.robbs@redmondoregon.gov>; Andrea Breault <abreault@coic.org>; Kelley O'Rourke <landuse@coic.org>; Rohde, Kevin <krohde@cec.coop>; Shoemaker, Deanna L (CONTR) - TERR-REDMOND <dshoemaker@bpa.gov>; Leslie, Brent C (BPA) - TERR-REDMOND <bcleslie@bpa.gov>; Fleming, Keven (PacifiCorp) <Keven.Fleming@PacifiCorp.com>; Treadway, Ian (PacifiCorp) <Ian.Treadway@pacificorp.com>; donna.herman@cngc.com; Burkus, Albert <ABurkus@republicservices.com>; robert.watters@centurylink.com; credelings@lsnetworks.net; sosanna.mchugh@tdstelecom.com; Harsh, Scott D - Redmond, OR <scott.d.harsh@usps.gov>; Dave Tarbet <Dave.Tarbet@redmondoregon.gov>; Katharine Colvin <katharine.colvin@redmondoregon.gov>; Valerie Taylor <valerie.taylor@redmondoregon.gov>; anthony.pupo@redmondschools.org  
**Cc:** Kyle Roberts <kyle.roberts@redmondoregon.gov>  
**Subject:** [EXTERNAL] REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails

Dear Reviewer(s),

The Redmond Planning Division has received an application that is ready for your review. Please see the routing letter and attachments for the project below:

|                             |                                                                                                                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Number/Name:</b> | 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) / Canyon Trails                                                                                                                               |
| <b>Applicant/Owner:</b>     | Canyon Trails LLC / Nicko Properties LLC                                                                                                                                                                                  |
| <b>Request:</b>             | Master Development Plan for tentative 92-lot subdivision consisting of 75 single family dwellings and 17 cottage lots                                                                                                     |
| <b>Location:</b>            | West of NW 10 <sup>th</sup> St and South of NW Pershall Way. 3627 NW 10 <sup>th</sup> St. Redmond, OR 97756                                                                                                               |
| <b>Tax Lot Number(s):</b>   | 141333C000300 & 1413330001002                                                                                                                                                                                             |
| <b>Applicable Criteria:</b> | Redmond Code, Chapter 8 Developmental Regulations, Article I – Zoning Standards, Master Development Plans, Cottage Developments; Article II – Land Use Procedures; and Article III – Land Division Standards, Subdivision |
| <b>Staff Contact:</b>       | Kyle Roberts – 541.923.7758 or <a href="mailto:kyle.roberts@redmondoregon.gov">kyle.roberts@redmondoregon.gov</a>                                                                                                         |

Please email comments by **October 7<sup>th</sup>, 2021** and any questions to the Senior Planner, Kyle Roberts (cc'd in email).

We look forward to your comments.

Thank you,

Sarah

**Contact Information & Resources:**

**From:** [Rachel Zakem](#)  
**To:** [Kyle Roberts](#)  
**Subject:** Canyon Trails Comments  
**Date:** Thursday, September 23, 2021 4:28:39 PM

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[EXTERNAL]: This email originated from outside of the city. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Kyle,

My name is Rachel Zakem and I am the Transit Planning Specialist with Cascades East Transit. I have reviewed the documents that were sent by Sarah Vowell regarding the planned Canyon Trails development. This is very exciting and it looks like that whole area is really about to take off! One thing that I wanted to note is that CET is currently in the process of designing stops throughout Redmond for our deviated fixed-routes that will begin operation next year. This is the first phase of a larger fixed-route system that is being planned for the City of Redmond.

I noticed that there were no findings related to public transportation. CET would like to request that the construction of a 8' x 5' concrete pad for a bus stop be included in the plans for this project to be utilized for future transit connections. With the abundance of new housing and employment opportunities in the area, public transportation is a necessity to allow equitable access for all community members.

Please let me know if we can discuss this further.

Thank you,

Rachel Zakem

--

Rachel Zakem  
Transit Planning Specialist

Central Oregon Intergovernmental Council  
Cascades East Transit  
334 NE Hawthorne Ave  
Bend, OR 97701  
Office: (541) 504-3310 I do not currently have access to this phone, please email

[rzakem@coic.org](mailto:rzakem@coic.org)

**From:** [Kelley O'Rourke](#)  
**To:** [Kyle Roberts](#)  
**Cc:** [KelleyHamby](#); [LeslieClark](#)  
**Subject:** FW: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails  
**Date:** Wednesday, December 29, 2021 2:26:48 PM  
**Attachments:** [image001.png](#)  
**Importance:** High

[EXTERNAL]: This email originated from outside of the city. Do not click links or open attachments unless you recognize the sender and know the content is safe.

December 29, 2021

Sent Via Email Only

Re: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) /  
Canyon Trails  
Canyon Trails LLC / Nicko Properties LLC  
141333C000300 & 1413330001002

Please be advised that Central Oregon Irrigation District (COID) has reviewed the provided revised master plan for the above referenced project. The applicant requests Master Development Plan for tentative 92-lot subdivision consisting of 75 family dwellings and 17 cottage lots. The location is west of NW 10th St and South of NW Pershall Way with the address of 3627 NW 10th St. in Redmond, Oregon (tax lots: 141333C000300 & 1413330001002).

Listed below are COID's initial comments to the provided preliminary plans. All development affecting irrigation facilities shall be in accordance with COID's Development Handbook and/or as otherwise approved by the District.

- Tax Map 141333C0 00300 has 15.80 acres if appurtenant COID water rights that have been quitclaimed to COID. Upon issuance of a final order by OWRD on a water transfer, no water rights will remain within the boundary of this tax map.
- COID's F1 Sublateral has an easement of 20 feet and road easement 10 feet on the east side.
- Irrigation infrastructure and right-of-way are required to be identified on all maps and plans Any irrigation conveyance, District or private, which passes through the subject property shall not be encroached upon without written permission from this office.
- No structures of any kind, including fence, are permitted within COID property/easement/right of way.
- A piping easement will be required; contact COID for information on process, timing, fees and site-specific requirements. Please contact COID regarding the proposed easement location depicted on the plan. COID's easement will remain at 30-feet.
- In reviewing the plans, COID has determined the proposed location does not provide sufficient access for operations and maintenance; COID's easement will remain at 30-feet. No trees or shrubs allowed within COID easement. Please provide COID with the landscaping plans for review and comment.
- COID has concerns regarding the transition from pipe to open ditch at Lot 6. Please provide an irrigation sheet that depicts all COID facilities in plan and profile view that includes any structures, cleanouts, and details for change of direction per the requirements per COID's Development Handbook. COID will require a signature line on construction plans.
- It is unclear when piping is being proposed between Lot 1 to Lot 6. COID's F1 Sublateral has an easement that resides within two separate development projects (Canyon Ridge Phase 5 and Canyon Trails). COID will not release any easement or allow encroachments until final plans have been approved by COID. Please contact COID to discuss the piping plan in this area.
- All crossing shall be in accordance with COID's Development Handbook and must be approved by COID. Provide COID detail plans including profile view for all proposed crossings for review and final approval:
  - Required: Approval and Crossing License for Major and/or Minor Collector.
  - Required: Approval and Crossing License for all proposed sewer and water crossings
  - Required: Approval and Crossing License for all proposed utility crossings (overhead and under).

Our comments are based on the information provided, which we understand to be preliminary in nature at this time. Our comments are subject to change. Additional requirements may be made as site planning progresses or additional information becomes available. Please provide updated documents to COID for review as they become available.

*Central Oregon Irrigation District*



**CITY OF REDMOND**  
**Engineering Department**

243 East Antler Avenue, Suite 100  
Redmond, OR 97756-0100

(541) 504-2002  
Fax: (541) 548-0253  
[www.redmondoregon.gov](http://www.redmondoregon.gov)

TO: KYLE ROBERTS, *Planning Division/Community Development Dept.*

FROM: DAVID PILLING, *Engineering Dept.*

DATE: December 15, 2021 Revised

SUBJECT: **711-21-000192-PLNG-MD, 193-PLNG-COD & 194PLNG-SUB: Canyon Trails Phase 1-3 Master Plan**  
Canyon Trails LLC/Nicko Properties LLC/H.A. McCoy Engineering & Surveying LLC  
Tax Lots 14-13-33C-300

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Subject property located west of NW 10<sup>th</sup> St., south of Pershall Way and north of Upas Avenue. 3627 NW 10<sup>th</sup> Street. The Engineering Department provides the following recommendations based on the revised master plan and tentative subdivision plan dated 12-9-21 per Redmond Development (COR) Code Section 8.0300(3)(C)(10, 11 & 12), 8.0305 and 8.2000-2835 and City of Redmond Public Works Standards and Specifications (CORPWSS):

1. Transportation: All public streets shall be designed, constructed and dedicated to current City of Redmond Standards & Specifications and Transportation System Plan (TSP) standards and extended to the limits of each project phase unless otherwise specified or approved. Five (5) ft. minimum width public utility easement (PUE) shall be dedicated along all street right-of-way per COR Standard Drawing 2-1. Street signage, lane striping, street lights and postal box installation shall be required. All street names shall be approved by Redmond Fire and Rescue and/or Deschutes County. The proposed revised master plan and public street system complies with City grid street and TSP standards subject to the following: [COR Code 8.0300(3)(C)(10)] [COR Code 8.2240(1 & 4) 8.2320(2)(A) & 8.2710(1, 2, 3 & 10)] [CORPWSS Development Provisions 03]

A) **NW Pershall Way** - minor arterial street. A paved county road and seventy (70) ft. right-of-way exists, no curb or sidewalks, along property frontage. NW Pershall Way is planned for reconstruction and re-alignment as a 3 to 5 lane City minor arterial street along property frontage per the current TSP. Upon annexation, public right-of-way dedication which provides a minimum width of fifty (50) ft. south of street centerline shall be required to accommodate future construction of this minor arterial street along property frontage. Upon plat approval and at the discretion of the City Engineer, a cash contribution for the south half of Pershall Way at City local street standards shall be required in lieu of constructing street frontage improvements. Street and right-of-way centerline shall match existing.

B) **NW 10<sup>th</sup> St.** - major collector street. A paved road and forty (40) ft. right-of-way exist, no curb or sidewalk, along the north 550 ft. ± of property frontage. A paved street with curb and sixty (60) ft. right-of-way exists along the south 700 ft. ± of property frontage per Cinder Butte Subdivision Phase 2. Upon annexation, public right-of-way dedication which provides a minimum width of forty (40) ft. west of centerline shall be required along property frontage. Street and right-of-way centerline shall match existing. Street frontage improvements conforming to City major collector street standards per COR Standard Drawing 2-1 shall be required as follows:

1) North 550 ft. ± of property frontage - full width street improvements with new pavement section, turn lanes if warranted, curbs on both sides, sidewalk on the west side, storm drainage, bike lane and striping. Additional right-of-way dedication may be required if turn lane widening or intersection improvements at Pershall Way are warranted.

2) South 700 ft. ± of property frontage - new sidewalk improvements shall be required on the west side along property frontage.

C) **NW Walnut Ave.** - local grid street. Street improvements conforming to City local grid street standards shall be required per COR Standard Drawing 2-1 with new pavement, curb, sidewalk, storm drainage and sixty (60) ft. minimum right-of-way dedication. Street and right-of-way centerline shall match that of City approved Cinder Butte Subdivision to the east and Canyon Ridge Subdivision to the west.

D) **NW 11<sup>th</sup> St.** - local grid street/cul-de-sac. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication. Street and right-of-way centerline shall match existing at the south property boundary.

E) **NW Walnut Dr.** - local/cul-de-sac street. The proposed right-angle eyebrow corners at 10<sup>th</sup> Pl. and 12<sup>th</sup> St. shall have traffic volume estimates of less than five-hundred (500) average daily trips (ADT) for each corner per COR Std Dwg 2-5 as confirmed by the Transportation Impact Analysis (TIA). Otherwise, the City elbow/cul-de-sac standard shall be required per COR Std Dwg 2-4. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 and/or 2-5 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication.

F) **NW 12<sup>th</sup> St.** - local street. Street improvements conforming to City local street standards shall be required per COR Standard Drawing 2-1 with new pavement, curb, sidewalk, storm drainage and sixty (60) ft. right-of-way dedication.

G) **NW 10<sup>th</sup> Place** - local/cul-de-sac street. Street improvements conforming to City local/cul-de-sac street standards shall be required per COR Standard Drawing 2-1 and 2-4 with new pavement, curb, sidewalk, storm drainage, sixty (60) ft. right-of-way dedication and fifty (50) ft. cul-de-sac radius right-of-way dedication.

H) **NW 10<sup>th</sup> Loop (Private)** – 10<sup>th</sup> Loop shall be privately owned and maintained. Improvements conforming to City alley standards with minimum twenty (20) ft. wide pavement are recommended. Private street driveway connections to the public cul-de-sac shall be constructed to City standards.

I) **Street Storm Drainage:**

1) Stormwater drainage systems in the public right-of-way shall be subject to current City design standards. [COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]

2) New drywells shall comply with City/DEQ pretreatment and City testing requirements. Drywell drain rock shall not extend under any street pavement section. [COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]

3) The location of drywells or other UIC's within City streets shall not conflict with existing active private water wells, community water wells or existing/future municipal drinking water wells. Identify all existing water wells that are within 500 ft. or the two-year time of travel zone of subject properties. [COR Code 8.2825(2)] [CORPWSS Design Standards II(B)]

J) **Street Trees:**

1) No street trees within 50 ft. of a street intersection per COR Standard Drawing 2-27.

2) No trees within 10 ft. of domestic water service, fire service or public storm facilities.

3) Trees shall not conflict with street or stop sign/control device and pedestrian crossing/ADA ramp line of sight.

4) No trees within driveway clear vision areas or blocking public street lighting.

5) Street tree species shall be selected from Redmond Parks Division approved tree list.

K) **Lot Access:**

1) Vehicular access to each new lot shall conform to City access management, corner clearance, clear vision and driveway construction standards. [COR Code 3.300, 8.0305 & 8.2820]

2) Direct vehicular access to Pershall Way, a minor arterial street, and 10<sup>th</sup> St., a major collector street, shall not be permitted from any lot or alley except for approved emergency access connections. [COR Code 8.2820(4)]

3) Corner lots and double fronting lots shall take vehicular access from the lower order street, alley or access easement. [COR Code 8.2820(4)]

4) Postal box installation shall be subject to US Postal Service standards and City Engineer approval. [CORPWSS Design Standards II(A)(16)]

L) **Traffic Impacts:** The "Canyon Trails Master Plan Transportation Impact Analysis" (TIA) submitted by Transight Consulting dated 7-13-21 has been reviewed for master plan and subdivision approval per COR Code 8.0300(3)(C)(10) and 8.2815 and the following is recommended:

1) Traffic volume estimates at the proposed right-angle eyebrow corners in NW Walnut Dr. at 10<sup>th</sup> Pl. and 12<sup>th</sup> St. shall be provided.

2) ODOT and Deschutes County shall review and approve. [COR Code 8.2815(3)]

3) NW Pershall Way/US97 (O'Neil Junction) intersection shall be studied per COR Code 8.2815(5)(B); nearest up-downstream collector/arterial.

4) NW Pershall Way/US97 (O'Neil Junction); near-term solutions and/or contribution shall be provided to mitigate impact on existing conditions compounded by proposed development subject to ODOT review/approval. [COR Code 8.2815(3)]

5) No other mitigation will be required beyond Transportation SDC's.

2. **Water:** A twelve (12) inch City water main exists in 10<sup>th</sup> St. along the south 700 ft. ± of subject property per Cinder Butte Subdivision Phase 2. An eight (8) inch City water main exists in Varnish Ave at 11<sup>th</sup> St. south of subject property.

A) Subject property is located within City water pressure zone PZ3-3A per draft City Water System Plan (WSP) update to be served by the future twelve (12) inch water main line identified as P-58 in 10<sup>th</sup> St along property frontage and in Walnut Ave. west of 10<sup>th</sup> Street. [COR Code 8.0300(3)(C)(11), 8.2235(1)(D)] [CORPWSS Development Provisions 03]

B) Connection to the City's public water system shall be required for each new lot. [COR Code 8.2240(5) & 8.2715(3)]

C) Proposed public water system shall be subject to City "to & through" Public Facility Requirement and WSP standards for service to each new lot and adjacent property and the following: [COR Code 8.0300(3)(C)(11) & CORPWSS Development Provisions 03]

1) The twelve (12) inch public water main identified as P-58 per draft WSP update shall be extended in 10<sup>th</sup> St. along property frontage from existing per Cinder Butte Phase 2 north to Pershall Way and also extended in Walnut Ave. west of 10<sup>th</sup> Street. The P-58 water main may be eligible for City Water SDC credits equal to the cost of additional construction required for conformance to WSP standards.

2) Design review of the public improvement construction plans for compliance to City standards.

D) Private Interior Water System - proposed water system located on-site and serving the proposed Cottage lots including any fire hydrants shall be privately owned and maintained due to interior lots with no public right-of-way frontage. A single water master meter and City approved backflow prevention device located at the property/right-of-way line shall be required for the entire cottage complex. The private water system shall also be subject to Oregon Health Authority (OHA) review/approval. [COR Code 4.050(11), 8.2240(5) & 8.2715(3)] [CORPWSS Design Standards II(D)(1)(d)]



E) A separate domestic water service connection conforming to City standards shall be required for each new lot with meter located at the property/right-of-way line. A City approved backflow prevention device shall be required for all non-residential properties, water services larger than one (1) inch, fire sprinkler systems and irrigation systems. [COR Code 4.200, 4.161, 8.2240(5) & 8.2715 (3 & 4(C))]

F) Fire flow, fire hydrant locations and fire code requirements to be determined by Redmond Fire & Rescue (RFR).

1) A water system/fire flow analysis and mitigation plan prepared by a registered professional engineer shall be provided as required by the Redmond Fire Marshal. [CORPWSS Development Provisions 04.2.00] [CORPWSS Design Standards II(D)(1(a) & 3(a))]

2) Public water system improvements may be required as deemed necessary by the fire flow analysis mitigation plan to meet minimum fire code and fire flow requirements for the proposed development. [COR Code 8.2235(1)(D)] [CORPWSS Design Standards II(D)(1(a) & 3(a))]

G) Abandonment of any existing water well, cistern or other private water facility located on subject properties shall be in accordance with Oregon Water Resource Department regulations. [CORPWSS Development Provisions 04.7.00 & 22(13)]

3. Wastewater: Eight (8) inch City gravity sewer main exists in Varnish Ave. at 11<sup>th</sup> St. south of subject property. Eight (8) inch City gravity sewer main exists in 10<sup>th</sup> St. north of Walnut Ave. along Phase 1 property frontage per Cinder Butte Subdivision Phase 2. An inactive/dry section of the twenty-four (24) inch Far East Sewer Interceptor (FESI) City gravity sewer trunk main exists in Varnish Ave. and 15<sup>th</sup> St. south and west of subject property per current City Redmond Wastewater System Master Plan (RWSMP).

A) Subject property is located within a sanitary gravity sewer basin to be served by the future twenty-four (24) inch City gravity sewer trunk main identified as the Far East Sewer Interceptor (FESI) per the current RWSMP. The FESI is currently located in Varnish Ave and 15<sup>th</sup> St, just south and west of the proposed development but is inactive and incomplete until future extension southwest and connection to the City's Water Pollution Control Facility (WPCF) in the Dry Canyon. Based on the City's sewer system model, there is limited excess capacity available within existing City gravity sewer system including the ten (10) inch gravity sewer main in Upas Ave. and downstream to the WPCF. Therefore, in the absence of a complete and active FESI gravity system, the proposed connection to the existing active City gravity sewer system has been approved per Infrastructure Capacity Allocation Review memo by the City Engineer dated 2-19-21 subject to complete gravity sewer service: [COR Code 8.0300(3)(C)(11), 8.2235(D) & 8.2240(6)]

B) Connection to the City's public sewer system shall be required for each new lot. [COR Code 8.2240(5) & 8.2715(3)]

C) Proposed public gravity sewer system complies with City "to & through" Public Facility Requirement and RWSMP standards for service to each new lot and adjacent property subject to: [COR Code 8.0300(3)(C)(11) & CORPWSS Development Provisions 03]

1) The Phase 3 Cottage public sewer system shall be revised to show 20 ft. minimum City sewer easement that also encompasses the private street but with no encroachment or conflict by other utilities or lot/fence lines.

2) All public gravity sewer mains shall be designed and constructed to provide a gravity service to each new lot and neighboring properties unless otherwise approved by the City Engineer.

3) Sewer services shall be located to provide complete gravity service.

4) Sewer manholes shall be located on street centerline whenever possible, at 400 ft. max spacing and at any main line terminus. Manholes shall be added or moved accordingly to match street alignments and to avoid conflicts with public water.

5) Public sanitary sewer facilities located beyond public right-of-way will require dedication of City sewer and/or public utility easements that provide unobstructed City access and turnarounds. [COR Code 8.2215(2(E) & 3(B)), 8.2320(2)(B) & 8.2715(8)(4)] [CORPWSS Development Provisions 07]

6) Design review of the public improvement construction plans for compliance to City standards.

D) A separate sanitary sewer service conforming to City standards shall be required for each new lot with cleanout located at the property/right-of-way or easement line. All sewer services shall be connected at right angles to the sewer mainline, and not to manholes, unless otherwise approved by the City Engineer. [COR Code 8.2240(5) & 8.2715(3 & 4(C))]

E) Any existing sewage drill hole, septic tank or other private sewer facility located on subject property shall be permanently abandoned in accordance with Deschutes County and Oregon Dept. of Environmental Quality (DEQ) regulations. [COR Code 4.304(3)] [CORPWSS Development Provisions 04.7.00 & 22(13)]

4. Subdivision Grading and Drainage: A subdivision site grading and drainage plan with erosion/sediment control plan and drainage report shall be required upon development of each project phase per current City standards and the following: [COR Code 8.2720] [CORPWSS Development Provisions 23] [CORPWSS Design Standards II(B)]

A) Lot and Tract grading shall conform to current COR Development Code 8.2720 and shall not create steep banks, extreme cut/fills or areas unsightly to adjacent properties or lots.

B) All storm water runoff and drainage shall be maintained on each lot or tract and shall not drain onto public streets, neighboring properties or irrigation canals/ditches except as provided for in City standards.

C) Total contributing area to the public storm system shall include all right-of-way surface runoff and 100% of the future developed lots potential contributing areas unless otherwise approved by the City Engineer.

D) The stormwater system shall be designed to pass up-gradient flow through the site without damage to the proposed development, public stormwater facilities or neighboring properties.

E) Storm water runoff from private property shall not impact public right-of-way or easements unless otherwise approved by the Public Works Director or City Engineer.

F) New on-site private drywells and other underground injection control (UIC) systems not part of the public drainage system must be registered and approved or permitted by the Oregon Department of Environmental Quality (DEQ) prior to construction or building permit issuance. Contact DEQ UIC Program Coordinator at 503-229-5945. Send copy of UIC Registration Packet to DEQ and City of Redmond, 3100 NW 19<sup>th</sup> Street, Redmond, OR, 97756.

G) Private drywells serving paved areas may not be located within public or community wellhead protection areas or 500 ft. of existing irrigation or drinking water wells. Locate and identify existing water wells and wellhead protection zones that could affect the location of proposed drywells. *[CORPWSS Development Provisions 23] [OAR 340-044-0018]*

H) Maintenance agreement required for any on-site private storm system.

5. Construction Plans: Upon land use approval, a separate set of construction drawings may be submitted directly to the Engineering Department for design review of all required and/or proposed public improvements, utilities and subdivision site grading. *[COR Code 8.2720 & 8.2800] [CORPWSS Development Provisions 04 & 23] [CORPWSS Design Standards]*



**CITY OF REDMOND**  
**Engineering Department**

243 E. Antler Ave  
Redmond, OR 97756-0100

**(541) 504-2002**  
Fax: (541) 923-4035  
[www.redmondoregon.gov](http://www.redmondoregon.gov)

|                                                  |
|--------------------------------------------------|
| <b>INFRASTRUCTURE CAPACITY ALLOCATION REVIEW</b> |
|--------------------------------------------------|

**DATE:** February 19, 2021  
**PREPARED BY:** Mike Caccavano, City Engineer  
**APPLICANT:** Monte Vista Homes/Nicko Properties

The application for capacity in the 10-inch sanitary sewer in NW Upas Avenue has been reviewed. The request for capacity is for tax lot 141333C0 00300 which covers 19.23 acres. The applicant requests capacity for 72 single family homes and 17 cottages. Calculations included with the capacity allocation application by H.A. McCoy estimated peak flow at 24.3 gallons per minute (gpm). City policy for capacity allocation uses a higher flow rate resulting in a peak flow of 56 gpm for the 89 units.

- Estimated sewer flow calculations are for 72 single family homes and 17 cottages. **Total capacity allocation for this property will be 56 gpm.**
- The Canyon Trails sewers are proposed to connect through the Canyon Ridge sewers with flow to the line in NW Upas Ave. Determination of whether the property can be served by gravity sewer was not provided. **Capacity allocation is conditioned on the ability to provide gravity sewer service.**
- Provision of capacity in the existing NW Upas Avenue sewer does not alleviate the requirement to construct any portion of the Far East Sewer Interceptor that may cross this property.

**Capacity allocation is valid for 2 years from the date of this letter** in accordance with the City of Redmond Excess Capacity Infrastructure Allocation Policy.

**From:** [Sarah Vowell](#)  
**To:** [Kyle Roberts](#)  
**Subject:** FW: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails  
**Date:** Thursday, September 23, 2021 11:01:51 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)

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**From:** Katharine Colvin <katharine.colvin@redmondoregon.gov>  
**Sent:** Thursday, September 23, 2021 10:28 AM  
**To:** Sarah Vowell <sarah.vowell@redmondoregon.gov>  
**Subject:** RE: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails

Finance department: No comment.

Thank you,



**Katharine Colvin** | City of Redmond  
Billing and Collections Specialist  
**Office hours M-F 8AM-4PM**

**phone** 541.923.7716  
**email** [katharine.colvin@redmondoregon.gov](mailto:katharine.colvin@redmondoregon.gov)

411 SW 9<sup>TH</sup> Street Redmond, Oregon 97756



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**From:** Sarah Vowell <[sarah.vowell@redmondoregon.gov](mailto:sarah.vowell@redmondoregon.gov)>  
**Sent:** Thursday, September 23, 2021 10:20 AM  
**To:** David Pilling <[David.Pilling@redmondoregon.gov](mailto:David.Pilling@redmondoregon.gov)>; Bill Duerden



## Redmond Fire & Rescue

341 NW Dogwood Ave

Redmond, OR 97756

541-504-5000

Fax: 541-548-5512

[www.redmondfireandrescue.org](http://www.redmondfireandrescue.org)

### Redmond Fire and Rescue Residential Comments

Date: October 1, 2021

Location: NW 10<sup>th</sup> and NW Pershall Way, 141333C000300, 1002

Subject: MD 711-21-000192, COD 193, SUB 194, Canyon Trails, Create 74 lot subdivision with 17 cottage lots

From: Wade Gibson, Deputy Fire Marshal

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If there are questions regarding Fire Code issues, please contact the Redmond Fire and Rescue Deputy Fire Marshal at 541-504-5016 or email at [wade.gibson@redmondfireandrescue.org](mailto:wade.gibson@redmondfireandrescue.org).

***Findings: A fire flow analysis is required, No Parking signs are required, all other fire code requirements must be met, street names must meet the grid requirement. No parking both sides of the cottage loop access.***

#### **WATER:**

- **Fire Safety during Construction – 2019 OFC 501.4**

- Approved fire department access roads, required water supply, fire hydrants, and safety precautions shall be installed and serviceable prior to and during the time of construction. The requirements of NFPA 241 shall be followed until project is complete.

#### **Area with Fire Hydrants:**

- **Water Supply – 2019 OFC B105.1**

- The minimum fire-flow requirements for one- and two- family dwellings having a fire-flow calculation area which does not exceed 3,600 sq ft (including the garage) shall be 1,000 gpm at 20 psi residual flow. Dwellings exceeding 3,600 sq ft shall use Table B105.4
- Exception:
  - A reduction in required fire flow of up to 50 %, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.3 (NFPA 13D) of the OFC.

- **Fire Hydrant – 2019 OFC 507.5.1**

- Where a portion of the building is more than 400 ft from a hydrant on a fire apparatus access road as measured by an approved route around the exterior of the building, on-site hydrants and mains shall be provided where required.
  - Exception: For Group R3 occupancies, the distance requirement shall be 600 ft.

- **Private Fire Hydrants** – If on site hydrates are required, these hydrates will be private hydrants. Per the City of Redmond water department, the hydrant system must be isolated by a DCDV. **The DCDV brand, size and specification sheet must be included with the to-scale plans. The hydrant system will be designed and installed to the NFPA 24 (2016) standard. The site plans**





**Redmond Fire & Rescue**  
341 NW Dogwood Ave  
Redmond, OR 97756  
541-504-5000  
Fax: 541-548-5512  
[www.redmondfireandrescue.org](http://www.redmondfireandrescue.org)

**submitted will clearly show details for the private fire service mains and the hydrants per NFPA 24 (2016) section 4.1.3. Site plans per the above requirements shall be submitted along with an engineered fire flow analysis. These systems will be inspected, tested and functional prior to combustible construction.**

- **Area Separation – 2019 OFC B104.2**
  - Portions of buildings which are separated by fire walls without openings constructed in accordance with the International Building Code are allowed to be considered as separate fire flow calculation areas.
- **Obstruction & Protection of Fire Hydrants – 2019 OFC 507.5.4 – 507.5.6**
  - A 3 foot clear space shall be maintained around the circumference of fire hydrant. When exposed to vehicular damage, concrete curbing, sidewalks, or 4 inch concrete filled bollards placed 3 feet from hydrant shall suitably protect fire hydrants.
- **Note: Before the application can be deemed complete a stamped engineered fire flow analysis will be required for all hydrants within the project.**

**ACCESS:**

- **Premises Identification – 2019 OFC 505.1**
  - Approved numbers or addresses shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street fronting the property. Said numbers shall contrast with their background and visible at night. Number/letter shall be a minimum of 4” high and a .5 “stroke width.
  - **Note:** The **street names** shall follow the City of Redmond or Deschutes County grid names and numbers.
- **Required Access – 2019 OFC 504.1**
  - Exterior doors and openings shall be made readily accessible for emergency access by the fire department. An approved access walkway leading from fire apparatus access roads to exterior openings shall be provided.
- **Fire Apparatus Access Roads – 2019 OFC 503 & Appendix D**
  - Fire apparatus access **roads shall extend to within 150 ft of all portions of the building** as measured by an approved route around the exterior of the building.
  - Fire apparatus access roads shall have an unobstructed width of **not less than 20 feet** and an unobstructed vertical clearance of not less than 13 feet 6 inches.
  - Fire apparatus roads shall be designed and maintained to support the imposed loads of **70,000 lbs** and shall be surfaced so as to provide **all-weather driving** capabilities.
  - The required **turning radius** of a fire apparatus access road shall be 30 feet inside and 50 feet outside.
  - The **grade** of the fire apparatus access roads shall be within the limits established by the fire code official (10%).



## Redmond Fire & Rescue

341 NW Dogwood Ave

Redmond, OR 97756

541-504-5000

Fax: 541-548-5512

[www.redmondfireandrescue.org](http://www.redmondfireandrescue.org)

- **Fire Lanes – 2014 OFC 503.3 & D103.6**

- Approved signs or other approved notices shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Such signs or notices shall be kept in legible conditions at all times. The stroke shall be 1 inch with letters 6 inches high and read **“No Parking Fire Lane”**. Spacing for signage shall be every 50 feet.
  - Recommended to also (in addition to Fire lane signs) paint fire lane curbs in bright red paint with white letters.
- **D103.6.1 Roads 20-26 Ft. Wide:** Shall have Fire Lane signs posted on both sides of a fire lane.
- **D103.6.2 Roads more than 26 Ft. Wide:** Roads 26-32 ft wide shall have a Fire Lane signs posted on one side of the road as a fire lane.

*The above requirement must be met.*

- **One and Two Family Residential Developments – 2019 OFC D107**

- Developments where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads and shall meet the requirements of Section D 104.3. Unless, all dwellings are equipped with and approved automatic sprinkler system.
- **Remoteness – 2019 OFC D107.2** Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal of the property or area to be served, measured in a straight line between accesses.

*The above requirement has been met.*

**From:** [Sarah Vowell](#)  
**To:** [Kyle Roberts](#)  
**Subject:** FW: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails  
**Date:** Tuesday, September 28, 2021 10:33:42 AM  
**Attachments:** [image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.png](#)

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**From:** Dave Tarbet <Dave.Tarbet@redmondoregon.gov>  
**Sent:** Tuesday, September 28, 2021 9:18 AM  
**To:** Sarah Vowell <sarah.vowell@redmondoregon.gov>  
**Subject:** RE: REVIEW: 711-21-000192-PLNG (MD), 711-21-000193-PLNG (COD), 711-21-000194-PLNG (SUB) | Canyon Trails

No comment from PD.

**Dave Tarbet**

Chief of Police | *Redmond Police Department*

**phone** 541.504.3419

**dispatch** 541.693.6911

777 SW Deschutes Redmond, Oregon 97756



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**From:** Sarah Vowell <[sarah.vowell@redmondoregon.gov](mailto:sarah.vowell@redmondoregon.gov)>  
**Sent:** Thursday, September 23, 2021 10:20 AM  
**To:** David Pilling <[David.Pilling@redmondoregon.gov](mailto:David.Pilling@redmondoregon.gov)>; Bill Duerden <[Bill.Duerden@redmondoregon.gov](mailto:Bill.Duerden@redmondoregon.gov)>; Wade Gibson <[Wade.gibson@redmondfireandrescue.org](mailto:Wade.gibson@redmondfireandrescue.org)>;

## **ATTACHMENT D**

No public comments were received during review of this application.



|                        |                                     |
|------------------------|-------------------------------------|
| Date:                  | July 13, 2021                       |
| To:                    | Mike Caccavano, PE, City of Redmond |
| From:                  | Joe Bessman, PE                     |
| Project Reference No.: | 1588                                |
| Project Name:          | Canyon Trails Master Plan           |



This memorandum provides a Transportation Impact Analysis (TIA) for the proposed Canyon Trails Master Plan in Redmond, Oregon in accordance with Redmond Development Code 8.2815.

## PROJECT OVERVIEW

The site of the proposed residential subdivision is a 19.23-acre parcel, taxlot 141333C00300 (property address is 3627 NW 10<sup>th</sup> Street), which is currently zoned *General Residential* (R4). The site is located in northern Redmond and will be provided access from the frontage along NW 10<sup>th</sup> Street and from a connection through Canyon Ridge Subdivision on NW 11<sup>th</sup> Street. The location and vicinity of the site is shown in Figure 1 for context.



Figure 1. Site Vicinity Map. Source: Deschutes County DIAL.

Although an area plan has not been completed by the City for the lands containing the Canyon Trails site, the property is located adjacent to the US Highway 97 Area Plan boundary, which will provide future



commercial retail and employment opportunities. Figure 2 shows the site location with respect to the US Highway 97 Area Plan,



Figure 2. US Highway 97 Area Plan.

## PROPOSED DEVELOPMENT PLAN

Development plans for this parcel include subdivision into 92 lots for residential use. Of these lots, 75 are designated for single family homes and 17 are for cottage lots. The single-family home lots range in size from approximately 5,000 square feet to 11,000 square-feet, whereas the cottage lots range from 2,240 square-feet to nearly 3,000 square-feet. Interior local streets will be constructed to provide access to the individual parcels conforming to local street standards within a 60' right-of-way. Primary access to the

subdivision will be provided by a new street connection onto NW 10<sup>th</sup> Street, which is classified as a *Major Collector*. Access will also be provided through the Canyon Ridge Subdivision to the south via a stubbed connection at NW 11<sup>th</sup> Street. Street stubs are planned on the south and west ends of the site for future local street connections to adjacent developments. Figure 3 depicts the preliminary site plan overlaid on an aerial for context.

No access is proposed onto NW Pershall Way as part of this development. This is intended to avoid additional traffic impacts to the US 97/O'Neil Highway intersection toward the east, instead funneling traffic through the City's roadway system and towards the improved Canal Boulevard interchange.

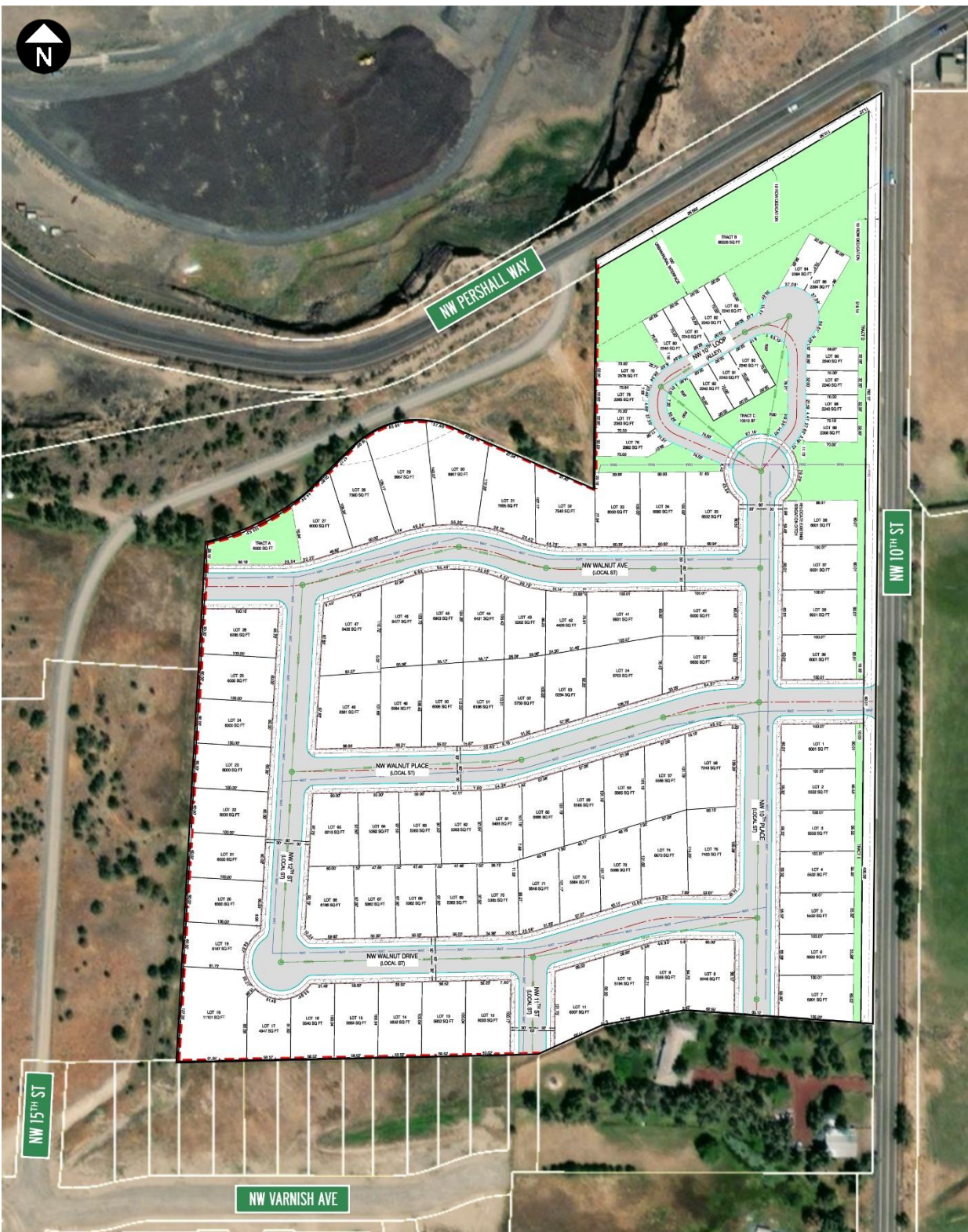


Figure 3. Preliminary Site Plan. (Source: H.A. McCoy Engineering & Surveying, LLC. Dated 12/23/20)



## EXISTING TRANSPORTATION FACILITIES

The primary transportation corridors in the site vicinity include NW Pershall Way, O'Neil Highway, US 97, NW 10<sup>th</sup> Street, NW Quince Avenue, NW 6<sup>th</sup> Street, and NW Upas Avenue. The functional classification of the surrounding transportation corridors is illustrated in Figure 4, and Figure 5 summarizes the City's cross-section standards as contained within the adopted Transportation System Plan.

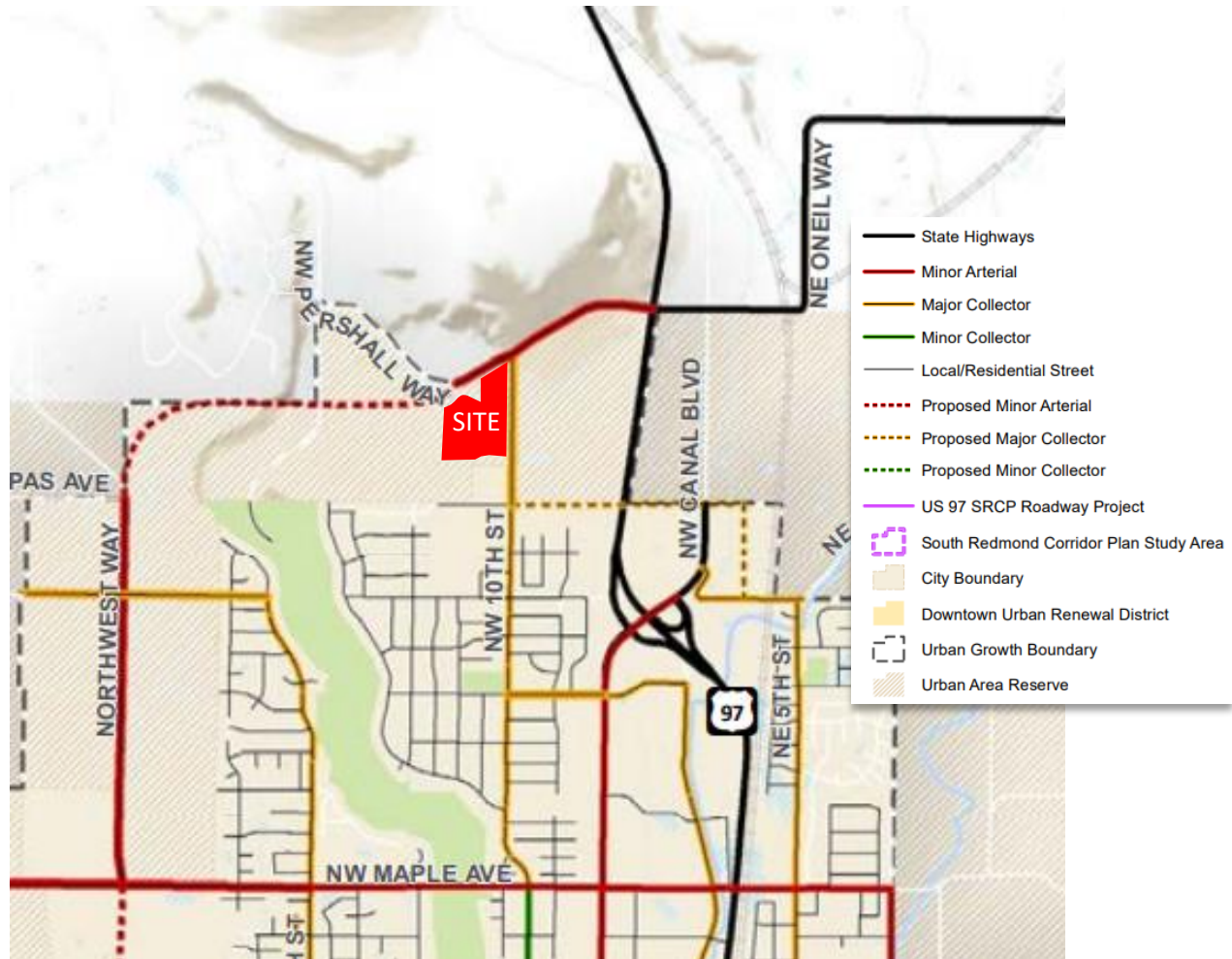


Figure 4. Functional Classification Map.

Source: Draft Redmond Transportation System Plan Dated: December 2020

Further descriptions of the characteristics of the roadways supporting the proposed development are included below:

- NW Pershall Way is a *Minor Arterial* providing an east-west route on the north side of the City that connects to the O'Neil Highway on the east side of US 97. The draft Transportation System Plan shows the realignment and extension of NW Pershall Way to the west in the future. In addition, the Interchange Area Management Plan for US 97 at the O'Neil Highway identified the need for a future grade separated overcrossing connecting the O'Neil Highway and NW Pershall Way. Interim plans may limit this intersection to right-in/right-out. The existing cross-section is characterized by two travel lanes and narrow paved shoulders with 70-feet of right-of-way along the site frontage. There is no speed posting within the vicinity of the site.

- The O'Neil Highway (Highway 370) is a *State Highway* connecting Redmond to Prineville. ODOT classifies this highway as a *District Highway*. It is a two-lane roadway with gravel shoulders and a posted speed of 35 miles per hour near its intersection with US 97.
- US 97 is classified as a *State Highway* in the City of Redmond Transportation System Plan and a *Statewide Expressway* within the Oregon Highway Plan. It provides the major north-south regional route in Central Oregon. North of NW Pershall Way, US 97 is a four-lane rural highway with paved shoulders. South of NW Pershall Way the highway transitions to a four-lane divided highway with bicycle lanes and curbs. US 97 has a posted speed of 55 miles per hour within the study area.
- NW 10<sup>th</sup> Avenue is classified as a *Major Collector* and is oriented north-south adjacent to the site. It is a two-lane roadway with gravel shoulders and a posted speed of 35 miles per hour adjacent to the site. No pedestrian or bicyclist facilities are provided within the site vicinity. South of NW Upas Avenue, bicycle lanes and sidewalks are provided adjacent to Tom McCall Elementary School and continue adjacent to the residential areas to the south. The right-of-way varies along the frontage between 40- and 60-feet.
- NW Quince Avenue, an east-west *Major Collector*, will provide an important connection on the primary route between the site and US 97. It connects NW 10<sup>th</sup> Street and NW 6<sup>th</sup> Street, which connects to US 97 to the north and commercial areas to the south. The section of NW Quince Avenue east of NW 10<sup>th</sup> Street has complete sidewalks and a posted speed of 25 mph. NW Quince Avenue is a two-lane roadway except for the section east of NW 6<sup>th</sup> Street, where it widens to three lanes.
- NW 6<sup>th</sup> Street is classified as a *Minor Arterial* and is signalized at its connection to NW Quince Avenue and the US 97 ramps. It provides one of the main north-south routes through the City and serves commercial land uses throughout. NW 6<sup>th</sup> Street has a five-lane cross-section in the study area with bicycle lanes and sidewalks. The posted speed ranges between 40 and 45 miles per hour in the study area.
- NW Upas Avenue, a *Local Street*, is anticipated to serve a small number of trips from the site through the adjacent residential development. It is a two-lane roadway with fairly complete sidewalks that are being built with adjacent development.

As summarized, both NW Pershall Way and NW 10<sup>th</sup> Street contain a narrower right-of-way than is standard for *Minor Arterials* and *Major Collectors*, respectively. Additionally, both roadways do not have the required pedestrian and bicycle facilities along the site frontage.



**Table 9-1: City of Redmond Roadway Cross-Section Standards**

| Functional Class        | Width (ft)          |                     |               | Travel Lanes | Sidewalks | Bike Lanes** | Parking**              |
|-------------------------|---------------------|---------------------|---------------|--------------|-----------|--------------|------------------------|
|                         | Pavement (standard) | Pavement (minimum)* | Right of Way* |              |           |              |                        |
| Local Residential Grid  | 36 ft               | 28/32 ft            | 60 ft         | 2***         | 5 ft.     | shared       | both sides (unstriped) |
| Local Industrial        | 40 ft               | 38 ft               | 60 ft         | 2***         | 5 ft.     | shared       | optional (unstriped)   |
| Industrial Collector    | 40 ft               | 38 ft               | 80 ft         | 2            | 5 ft.     | 6 ft.        | none                   |
| Minor Collector         | 40 ft               | 36 ft****           | 60 ft         | 2            | 5 ft.     | shared       | both sides (8 ft)      |
| Major Collector         | 36-50 ft            | 36 ft****           | 80 ft         | 2            | 5 ft.     | 6 ft.        | none                   |
| Minor Arterial (3-lane) | 50 ft               | 48 ft               | 100 ft        | 3            | 7 ft.     | 6 ft.        | none                   |
| Minor Arterial (5-lane) | 74 ft               | 72 ft               | 100 ft        | 5            | 7 ft.     | 6 ft.        | none                   |

**Notes:**

\*The standard paved width for a residential street in the local grid is 36' in 60' ROW. Two reduced cross-sections that can be approved through an annexation agreement only. These are:

Reduced Local 1: 32' in 50' ROW (with 5' utility easements on each side)

Reduced Local 2: 28' in 40' ROW (with 10' utility easements on each side - used in conjunction with alleys adjacent to single family residential only)

\*\* In certain cases, bike lanes may be reduced to 5 ft, parking may be reduced to 7 ft, and travel lanes to 11 ft at the discretion of the City Engineer

\*\*\* unstriped travel lanes

\*\*\*\* 36 ft in existing built-out areas

Figure 5. City of Redmond adopted roadway cross-section standards.

## PEDESTRIAN AND CYCLIST NETWORK

The existing pedestrian and cyclist network is somewhat limited within the area with the closest facilities located on NW 10<sup>th</sup> Street and NW Upas Avenue. Streets, sidewalks, and bicycle lanes are being extended as development occurs, the pace of which has increased over the past few years.

## TRANSIT SERVICE

The City of Redmond does not have its own fixed route transit system within City boundaries. On-demand transit services are provided to the site with 24-hour advance notice, though this service is limited to weekdays between 6:30 a.m. and 6:00 p.m.

Regional (inter-community) transit service is provided through Cascades East Transit's *Community Connector* system, with service to Madras, Prineville, Sisters, and Bend. Buses travel to and from Bend at approximately 90-minute headways on weekdays and more limited service on Saturday. No service is available on Sunday. Service to Madras, Sisters, and Prineville is more limited throughout the day, and generally only available during the commute periods. Regional transit service is provided from the Redmond Transit Hub located at SW 6<sup>th</sup> Street and SW Kalama Avenue.

Since March 21, 2020, fares have been eliminated for all Cascade East Transit services with the exception of recreation services. This was done to reduce passenger interaction with fareboxes and maintain social distance safety due to COVID-19.

Previously, fares within Zones 2 and 3 (see Figure 6) were \$1.50 for a single ride without transfers. Multizone fares were \$3.75 per ride without transfers. Discounted fares were available for disabled riders and senior citizens. Monthly passes were also available and provide a lower per-ride cost.

Regional transit service is available outside of Central Oregon to Portland, Eugene, Ontario, Chemult, Salem, and Prairie City through RIDE daily. These services are available from the Bend Hawthorne station.

## RIDE SHARING

Ride sharing is available within Central Oregon through online providers such as UBER and LYFT. The service boundary for

LYFT is more limited, providing on-demand service throughout Bend, Redmond, Prineville, Terrebonne, and Sisters. Uber service boundaries include Warm Springs, Madras, and La Pine. These on-demand ride sharing services are available all days and hours, with ride costs based on distances.

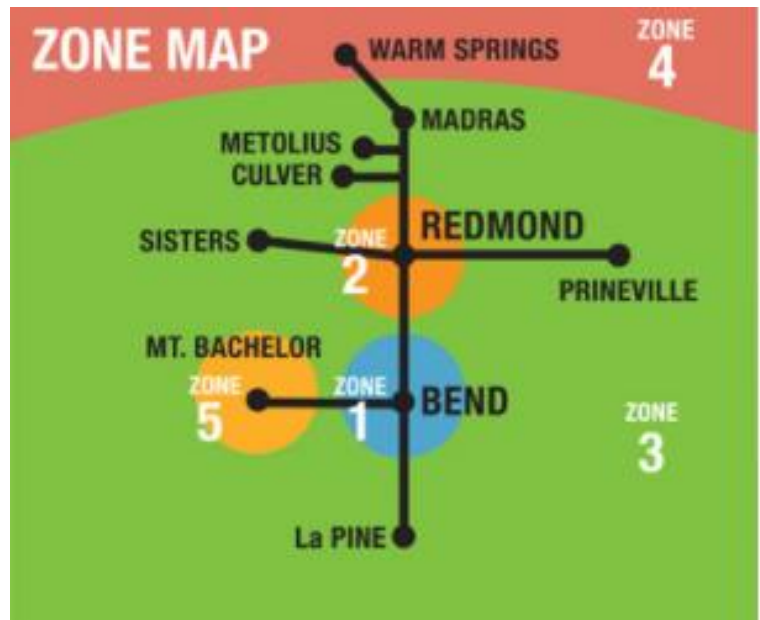


Figure 6. Cascades East Transit Zone Map

## ROADWAY SAFETY

This section provides a safety review of the transportation infrastructure serving the proposed development based on review of historical crash records submitted through the DMV and maintained by ODOT, as well as field review of area conditions, roadway and intersection geometrics, and available sight lines.

## HISTORICAL CRASH REVIEW

Historical crash records were obtained through ODOT Crash Analysis and Reporting System (CARS) from the period between January 2015 and December 2019. This reflects the most recent five-year period available. Crashes that are required to be reported during this period include those that involve at least one motor vehicle, involve any level of personal injury, or that result in \$1,500 or more in property damage before 2018 or in \$2,500 or more in property damage after 2018.

Table 1 summarizes the number and severity of reported crashes at each of the study area intersections. The table also provides a crash rate per million entering vehicles, which is often used to assess whether a geometric or traffic control deficiency is present when the crash rate is greater than 1.0 per million entering vehicles. ODOT also provides crash rates separated by control type and the number of approaches, which better distinguish between varying intersection forms and are provided for reference.

**Table 1. Crash Summary (January 2015 through December 2019)**

| Intersection                                           | Number of Crashes | Crash Severity |        |            | Crash Rate per MEV | ODOT 90 <sup>th</sup> % Rate |
|--------------------------------------------------------|-------------------|----------------|--------|------------|--------------------|------------------------------|
|                                                        |                   | Fatal          | Injury | Non-Injury |                    |                              |
| 1: NW 10 <sup>th</sup> St / NW Pershall Way            | 1                 | 0              | 0      | 1          | 0.31               | 3ST:<br>0.475 <i>Rural</i>   |
| 2: NW 10 <sup>th</sup> St / NW Walnut Pl (site access) |                   |                |        |            |                    |                              |
| 3: NW 10 <sup>th</sup> St / NW Upas Ave                | 0                 | 0              | 0      | 0          | 0.00               | 3ST:<br>0.293 <i>Urban</i>   |
| 4: NW 10 <sup>th</sup> St / NW Quince Ave              | 2                 | 0              | 1      | 1          | 0.25               | 4ST:<br>0.408 <i>Urban</i>   |
| 5: NW 6 <sup>th</sup> St / NW Quince Ave               | 13                | 0              | 9      | 4          | 0.45               | 4SG:<br>0.860 <i>Urban</i>   |
| 6: US 97 Southbound Ramp / NW 6 <sup>th</sup> St       | 4                 | 0              | 1      | 3          | 0.18               | 3SG:<br>0.509 <i>Urban</i>   |

4ST: Four-legged stop-controlled, 3ST: Three-legged stop-controlled, 4SG: Four-legged signalized, 3SG: Three-legged signalized

As shown in Table 1, all of the intersections experienced a crash rate less than 1.0 crashes per million entering vehicles and all are below ODOT's 90<sup>th</sup> percentile crash rates. Table 2 summarizes the types of collisions that occurred at the study intersections.

**Table 2. Reported Collision Types (January 2015 through December 2019)**

| Intersection                                           | Rear-End | Turning | Angle | Fixed-Object | Backing | Sideswipe |
|--------------------------------------------------------|----------|---------|-------|--------------|---------|-----------|
| 1: NW 10 <sup>th</sup> St / NW Pershall Way            | 0        | 0       | 0     | 0            | 1       | 0         |
| 2: NW 10 <sup>th</sup> St / NW Walnut Pl (site access) |          |         |       |              |         |           |
| 3: NW 10 <sup>th</sup> St / NW Upas Ave                | 0        | 0       | 0     | 0            | 0       | 0         |
| 4: NW 10 <sup>th</sup> St / NW Quince Ave              | 0        | 1       | 1     | 0            | 0       | 0         |
| 5: NW 6 <sup>th</sup> St / NW Quince Ave               | 2        | 8       | 3     | 0            | 0       | 0         |
| 6: US 97 Southbound Ramp / NW 6 <sup>th</sup> St       | 1        | 0       | 1     | 1            | 0       | 1         |

#### NW 6<sup>th</sup> Street / NW Quince Avenue

The signalized intersection of NW 6<sup>th</sup> Street and NW Quince Avenue experienced a crash rate less than ODOT's 90<sup>th</sup> Percentile Crash Rate for similar intersections. Overall, thirteen crashes were reported over the 5-year study period. A review of the crash dates shows that two to three crashes occur at this intersection each year. Most of these crashes (8) were turning collisions, of which five involved the

northbound left-turn movement. The northbound left-turn is a protected-permissive movement controlled by a four-section traffic signal head with a flashing yellow arrow. Three of these crashes involved a southbound through vehicle and two involved an eastbound through vehicle. Only one of these crashes occurred during a peak hour.

No crash patterns were observed that would identify any safety deficiencies.

## INTERSECTION SIGHT DISTANCE

The site is proposed to connect to the existing street network at one location along NW 10<sup>th</sup> Street, at a new NW Walnut Place access. Sight distance information and requirements are based on the standard reference *A Policy on Geometric Design of Highways and Streets, 7<sup>th</sup> Edition* published by the American Association of State Highway and Transportation Officials (AASHTO) in 2018, commonly referred to as the *Green Book*.

### Intersection Sight Triangles

For minor-street stop-control intersections, intersection sight triangles are based on guidance cited within Conditions B1 (left-turn from minor road) and B2 (right-turn from minor road) of the *Green Book*. All distances are measured from a vertex point located 14.5 feet from the major-road travel way along the center of the approaching travel lane, accounting for comfortable positioning distance from the travel way (6.5 feet) and the distance from the front of the vehicle to the driver eye (8.0 feet). The assumed eye height is 3.5 feet above the departing road for passenger vehicles. The object height is also 3.5 feet above the major road, providing enough space on the approaching vehicle to recognize it. Based on a posted speed of 35 mph and level terrain, Figure 7 illustrates the recommended intersection sight distance measurements required at the new NW Walnut Place connection to NW 10<sup>th</sup> Street.

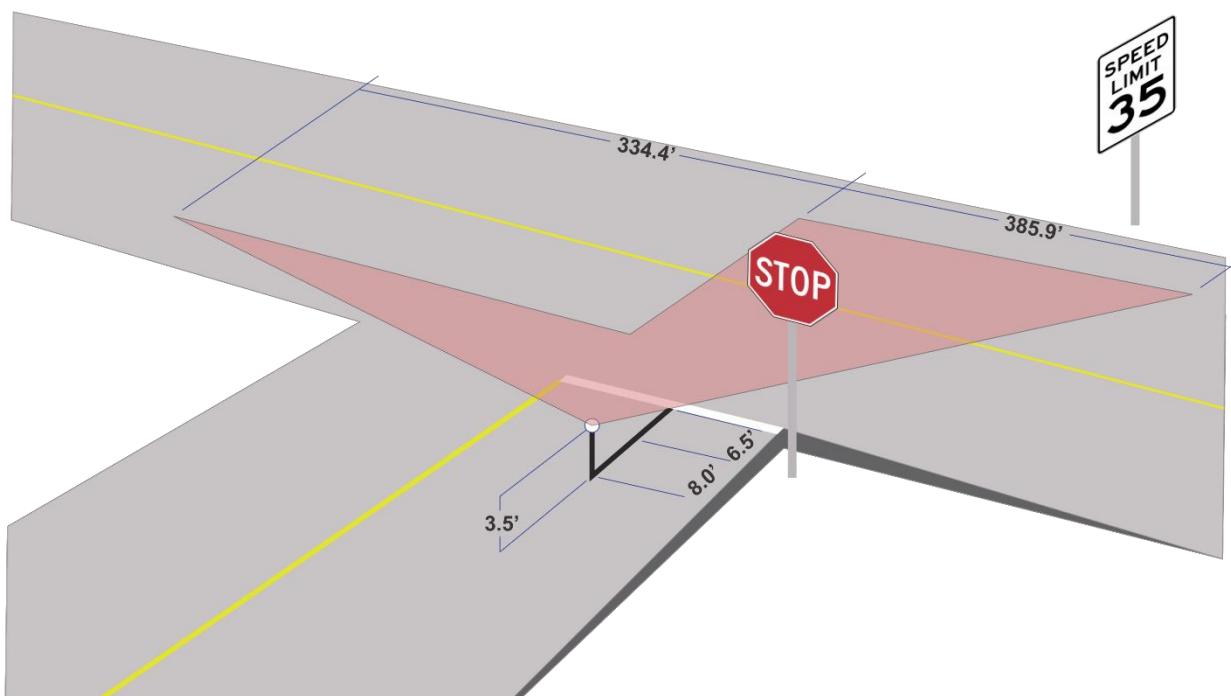


Figure 7. Recommended Intersection Sight Distance Dimensions on NW 10<sup>th</sup> Street.

The locations of the future access was visited to ensure that no sight distance obstructions were present that would prevent these sight distances from being achieved. Figures 8 and 9 illustrate the available sight distance at the new access.



Figure 8. NW 10<sup>th</sup> Street facing north.





Figure 9. NW 10<sup>th</sup> Street facing south.

## TRAFFIC OPERATIONS

This section of the report describes the impacts of the site on the transportation system.

### TRIP GENERATION ESTIMATES

The standard reference *Trip Generation Manual 10<sup>th</sup> Edition*, published by the Institute of Transportation Engineers (ITE) was used to calculate the trip generation of the proposed development. The Land Use Category that best describes the proposed development is category 210: *Single-Family Detached Housing*, which is described within the ITE Manual as follows:

*Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.*

Existing land use of the site is that of one single-family [agricultural] residence, which will provide a trip credit to reduce the impact of the proposed development. While this credit is based on a typical suburban home, a farm dwelling could arguably generate slightly higher trip levels and heavier truck trips. There are no vested trips applied to this analysis, nor are there pass-by trips available for residential uses. Table 3 details the trip generation estimates based on the application of the above category.

**Table 3. Trip Generation Comparison**

| Land Use                              | ITE Code | Size     | Daily Trips               | Weekday PM Peak Hour     |                    |                    |
|---------------------------------------|----------|----------|---------------------------|--------------------------|--------------------|--------------------|
|                                       |          |          |                           | Total                    | In                 | Out                |
| Existing Use                          |          |          |                           |                          |                    |                    |
| Single-Family Detached Housing        | 210      | 1        | 9                         | 1                        | 1                  | 0                  |
| Proposed Use                          |          |          |                           |                          |                    |                    |
| Single-Family Detached Housing        | 210      | 92 units | 868<br><i>(9.44/unit)</i> | 91<br><i>(0.99/unit)</i> | 57<br><i>(63%)</i> | 34<br><i>(37%)</i> |
| Net Impact of Redevelopment           |          |          |                           |                          |                    |                    |
| Change in Trips (Proposed – Existing) |          |          | +859                      | +90                      | +56                | +34                |

As shown in Table 3, the proposed development is expected to generate 859 new weekday daily trips and 90 new weekday p.m. peak hour trips. Redmond Development Code requires a Transportation Impact Analysis for all new developments expected to generate more than 20 weekday p.m. peak hour trip ends. Therefore, a traffic study is required as addressed herein.

## TRIP DISTRIBUTION AND TRIP ASSIGNMENT

The trip distribution pattern was prepared based on the proposed connections provided toward the south and major employment and commercial attractions within the area. A small number of trips are expected to and from the north and east to Terrebonne, Madras, and Prineville while most of the trips are expected to be to and from commercial and employment areas in Redmond. The estimated trip distribution and trip assignment for the weekday p.m. peak hour is shown in Figure 10.

The City of Redmond's *Functional Classification Map* identifies NW 10<sup>th</sup> Street as a *Major Collector*. Redmond Development Code 8.3035.8B requires the TIA to study:

1. All site access intersections
2. Nearest intersecting collector or arterial street upstream and downstream of the development.
3. Any other collector or arterial street intersection that would experience an increase of 25 additional peak hour trips.
4. Additional intersections requested by staff.

Based on these requirements, the TIA scope includes the six following intersections:

- Intersection 1 - NW 10<sup>th</sup> Street/NW Pershall Way (*nearest intersecting arterial street*)
- Intersection 2 - NW 10<sup>th</sup> Street/NW Walnut Place (*site access*)
- Intersection 3 - NW 10<sup>th</sup> Street/NW Upas Avenue (*nearest intersecting collector street from NW 11<sup>th</sup> St/NW Varnish Ave intersection*)
- Intersection 4 - NW 10<sup>th</sup> Street/NW Quince Avenue (*>25 trips*)
- Intersection 5 - NW 6<sup>th</sup> Street/NW Quince Avenue (*>25 trips*)
- Intersection 6 - US 97 Southbound Ramp/NW 6<sup>th</sup> Street (*>25 trips*)

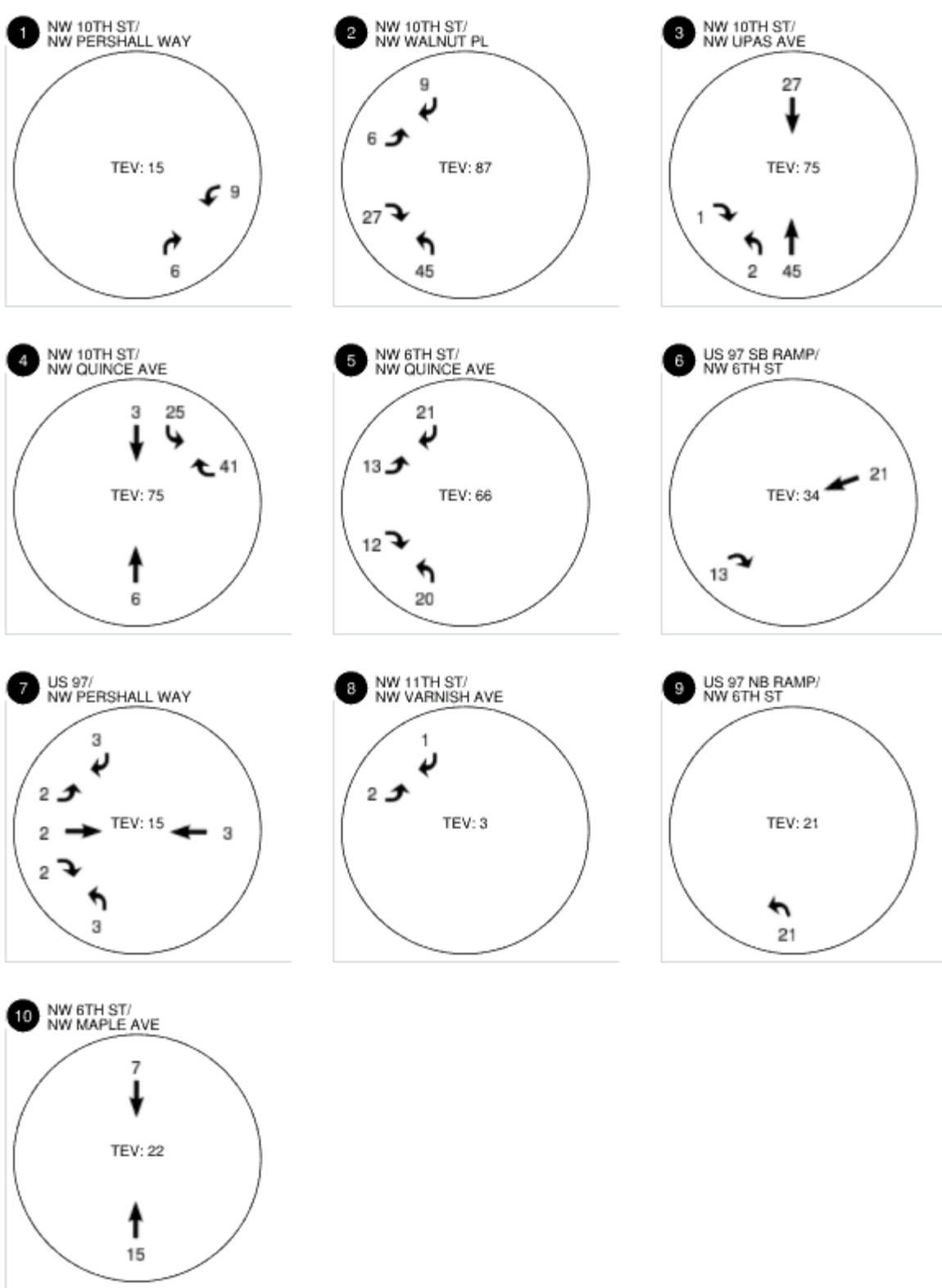


Figure 10. Estimated Trip Distribution and Trip Assignment, Weekday PM Peak Hour.  
Map Source: Deschutes County DIAL.



## ANALYSIS YEARS

Redmond Development Code 8.2815(6) requires operational analysis of the following year conditions:

- Year 2021 – Existing conditions
- Year 2023 – Estimated completion year
- Year 2028 – Five-year forecast beyond final phase

## OPERATIONAL ANALYSIS

Traffic operations analysis were prepared using Synchro 10 software and implementing the Highway Capacity Manual 6<sup>th</sup> Edition operations methods for signalized and stop-controlled intersections. All traffic operations within this report reflect peak fifteen-minute conditions.

The City of Redmond Development Code 8.2815(1) contains the City's operational requirements for intersections. Performance standards in the City of Redmond vary based on intersection control type as summarized below:

- LOS "E" or better during the peak fifteen minutes of the peak hours of the average weekday.
- Unsignalized minor street approaches should operate with a volume-to-capacity ratio of 0.90 or less and with a 95<sup>th</sup> percentile queue of less than four vehicles during the peak hour.

One of the study intersections is under the jurisdiction of ODOT. Intersections under ODOT jurisdiction require compliance with the Oregon Highway Plan mobility targets based on Action 1F. At interchange ramp terminals, ODOT has a target v/c ratio of 0.85.

Study intersections, traffic control, roadway jurisdiction, and operational standards/mobility targets throughout the study area are summarized in Table 4.

**Table 4. Study Area Intersection Operational Standards and Mobility Targets**

| Intersection                                              | Traffic Control                     | Jurisdiction    | Performance/<br>Mobility Standard               |
|-----------------------------------------------------------|-------------------------------------|-----------------|-------------------------------------------------|
| 1: NW 10 <sup>th</sup> St /<br>NW Pershall Way            | Minor-Street<br>Stop-Control        | City of Redmond | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft |
| 2: NW 10 <sup>th</sup> St /<br>NW Walnut Pl (site access) | Future Minor-Street<br>Stop-Control | City of Redmond | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft |
| 3: NW 10 <sup>th</sup> St /<br>NW Upas Ave                | Minor-Street<br>Stop-Control        | City of Redmond | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft |
| 4: NW 10 <sup>th</sup> St /<br>NW Quince Ave              | All-Way<br>Stop-Control             | City of Redmond | LOS "E" or Better                               |
| 5: NW 6 <sup>th</sup> St /<br>NW Quince Ave               | Signalized                          | City of Redmond | LOS "E" or Better                               |
| 6: US 97 Southbound Ramp /<br>NW 6 <sup>th</sup> St       | Signalized                          | ODOT            | v/c ≤ 0.85                                      |

## Year 2021 Existing Traffic Conditions

The existing year 2021 traffic conditions reflect the current operations throughout the study area during the weekday p.m. peak hour. This analysis is used to calibrate operational models to field conditions, and in conjunction with historical safety information, is intended to help understand and prioritize transportation system improvement needs.

Traffic counts were collected at the study intersections on July 1<sup>st</sup> of 2021 during the weekday p.m. peak period from 4:00 to 6:00 p.m. All counts are reflective of peak summer conditions and may be impacted by the effects of COVID-19.

To assess the impact of COVID-19 on traffic volumes, traffic data collected by ODOT on US 97 between 2019 and 2021 was reviewed. ODOT has been publishing regular reports tracking volume data throughout the state. The most recent published report of the *Observed Statewide Traffic Volume Patterns: Related to COVID-19 Monitoring* dated June 4, 2021 reports the average weekday traffic volume on US 97 for the week of May 24<sup>th</sup> to May 30<sup>th</sup> (the most recent date available) to be 17-percent higher in 2021 than 2020 and also higher than 2019 volumes. Traffic volumes on US 97 were unlikely to have been impacted by COVID-19 during the collection of the July 2021 traffic counts. Therefore, no adjustment was made to the traffic counts for COVID-19 impacts.

Figure 11 depicts the existing 2021 traffic volumes applied within the existing conditions analysis. Results of the existing conditions analysis are presented in Table 5. This shows that all the study area intersections currently meet City and State standards.

## Year 2023 Background Traffic Conditions

Background traffic conditions are presented to provide the basis for comparison to “with-site” conditions. This provides an understanding of area transportation needs that are attributable to the proposed development. These conditions consider the regional traffic growth and specific approved developments.

### Growth Forecasts

The City’s draft 2020 Transportation System Plan includes existing 2017 and forecast 2040 traffic volumes at major intersections around the City. Three of these intersections are included or within close proximity to the study area and have an annual growth rate ranging from 0.8- to 1.1-percent. The annual growth rates were averaged (as shown in Table 6) and result in an average growth rate of 0.9-percent.



**Table 5. Summary of Existing Intersection Operations, Weekday PM Peak Hour**

| Intersection                                              | Performance/<br>Mobility Standard               | LOS           | Delay (s/veh) | v/c Ratio                                                    | 95 <sup>th</sup> %<br>Queue                                                                                                            | Acceptable? |
|-----------------------------------------------------------|-------------------------------------------------|---------------|---------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1: NW 10 <sup>th</sup> St /<br>NW Pershall Way            | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | NB LTR: LOS A | NB LTR: 9.7   | NB LTR: 0.10                                                 | NB LTR: 25 ft                                                                                                                          | Yes         |
| 2: NW 10 <sup>th</sup> St /<br>NW Walnut Pl (site access) | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft |               |               |                                                              |                                                                                                                                        |             |
| 3: NW 10 <sup>th</sup> St /<br>NW Upas Ave                | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | EB L: LOS A   | EB L: 9.8     | EB L: 0.02                                                   | EB L: 0 ft                                                                                                                             | Yes         |
| 4: NW 10 <sup>th</sup> St /<br>NW Quince Ave              | LOS "E" or Better                               | LOS A         | 8.5           | EB LTR: 0.10<br>WB LTR: 0.28<br>NB LTR: 0.11<br>SB LTR: 0.13 | EB LTR: 25 ft<br>WB LTR: 50 ft<br>NB LTR: 25 ft<br>SB LTR: 25 ft                                                                       | Yes         |
| 5: NW 6 <sup>th</sup> St /<br>NW Quince Ave               | LOS "E" or Better                               | LOS B         | 11.8          | 0.36                                                         | EB L: 45 ft<br>EB TR: 35 ft<br>WB L: 55 ft<br>WB TR: 45 ft<br>NB L: 40 ft<br>NB T: 85 ft<br>NB R: 20 ft<br>SB L: 25 ft<br>SB TR: 85 ft | Yes         |
| 6: US 97 Southbound Ramp /<br>NW 6 <sup>th</sup> St       | v/c ≤ 0.85                                      | LOS B         | 10.2          | 0.41                                                         | EB TR: 115 ft<br>WB L: 15 ft<br>WB T: 85 ft<br>SB LT: 15 ft<br>SB R: 45 ft                                                             | Yes         |

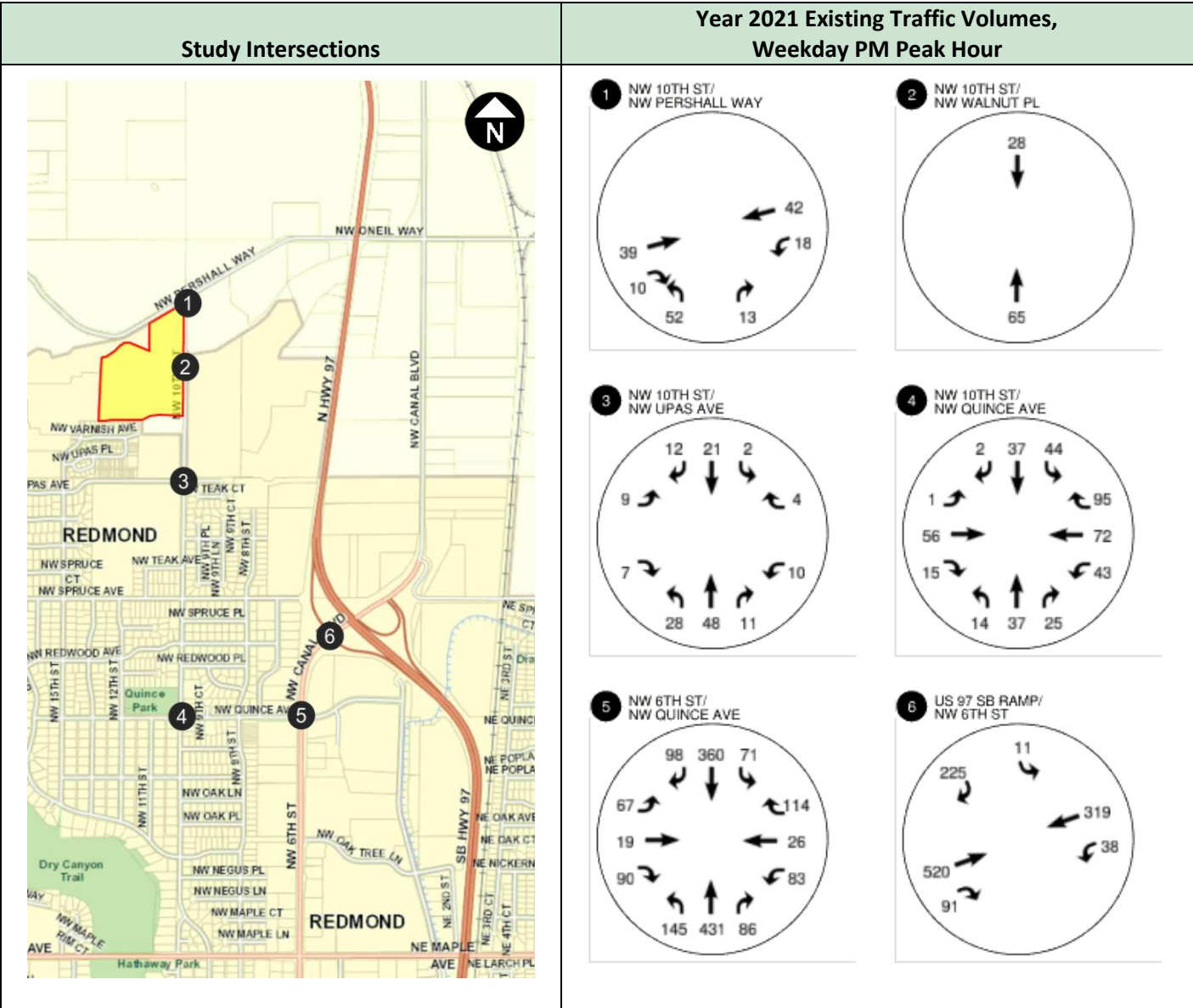


Figure 11. 2021 Existing Traffic Volumes, Weekday PM Peak Hour.

**Table 6. Forecast Growth (2017 to 2040)**

| <b>Intersection</b>                            | <b>Year 2017 Base<br/>Entering Volumes<br/>Weekday PM Peak Hour</b> | <b>Year 2040 Future<br/>Entering Volumes<br/>Weekday PM Peak Hour</b> | <b>Annual Growth</b> |
|------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------|
| US 97 Northbound Ramp /<br>NW Canal Boulevard  | 1,065                                                               | 1,274                                                                 | 0.9%                 |
| US 97 Southbound Ramp /<br>NW Canal Boulevard  | 1,306                                                               | 1,542                                                                 | 0.8%                 |
| NW 6 <sup>th</sup> Street /<br>NW Maple Avenue | 2,149                                                               | 2,689                                                                 | 1.1%                 |
| <b>Average</b>                                 |                                                                     |                                                                       | <b>0.9%</b>          |

The year 2023 traffic forecasts for the site were developed by applying the 0.9-percent annual growth rate to the 2021 existing volumes, along with inclusion of approved development trips and funded projects.

#### Planned and Funded Projects

The City's Five-Year Capital Improvement Plan (CIP) was reviewed for projects within the study area. No improvements were identified within the 5-year plan.

#### Approved Development Trips

City staff identified several projects within the site vicinity that are expected to contribute trips throughout the study area intersections. These are summarized in Table 7 along with the estimated level of development assumed in the analysis scenarios.

**Table 7. Approved/Pending Development Trip Assumptions**

| <b>Development</b>              | <b>Size</b>           | <b>Trip Generation<br/>Weekday<br/>PM Peak Hour</b> | <b>Estimated Level of Development</b> |             |             |
|---------------------------------|-----------------------|-----------------------------------------------------|---------------------------------------|-------------|-------------|
|                                 |                       |                                                     | <b>2021</b>                           | <b>2023</b> | <b>2028</b> |
| Canyon Ridge Master Plan        | 220 units             | 193                                                 | 0%                                    | 50%         | 100%        |
| Dry Canyon Village              | 505 units             | 371                                                 | 0%                                    | 60%         | 100%        |
| Cinder Butte Village Phases 2-4 | 112 units             | 111                                                 | 0%                                    | 100%        | 100%        |
| Juniper Canyon Living Center    | 108-bed care facility | 22                                                  | 0%                                    | 100%        | 100%        |

The regional growth was applied to the existing traffic volumes and approved and pending developments were added to forecast year 2023 "No-Build" conditions within the site vicinity. The resulting volumes are depicted in Figure 12. The analysis results are summarized in Table 8. As shown in Table 8, all study intersections are expected to continue to meet City and State standards in 2023 without the proposed development.

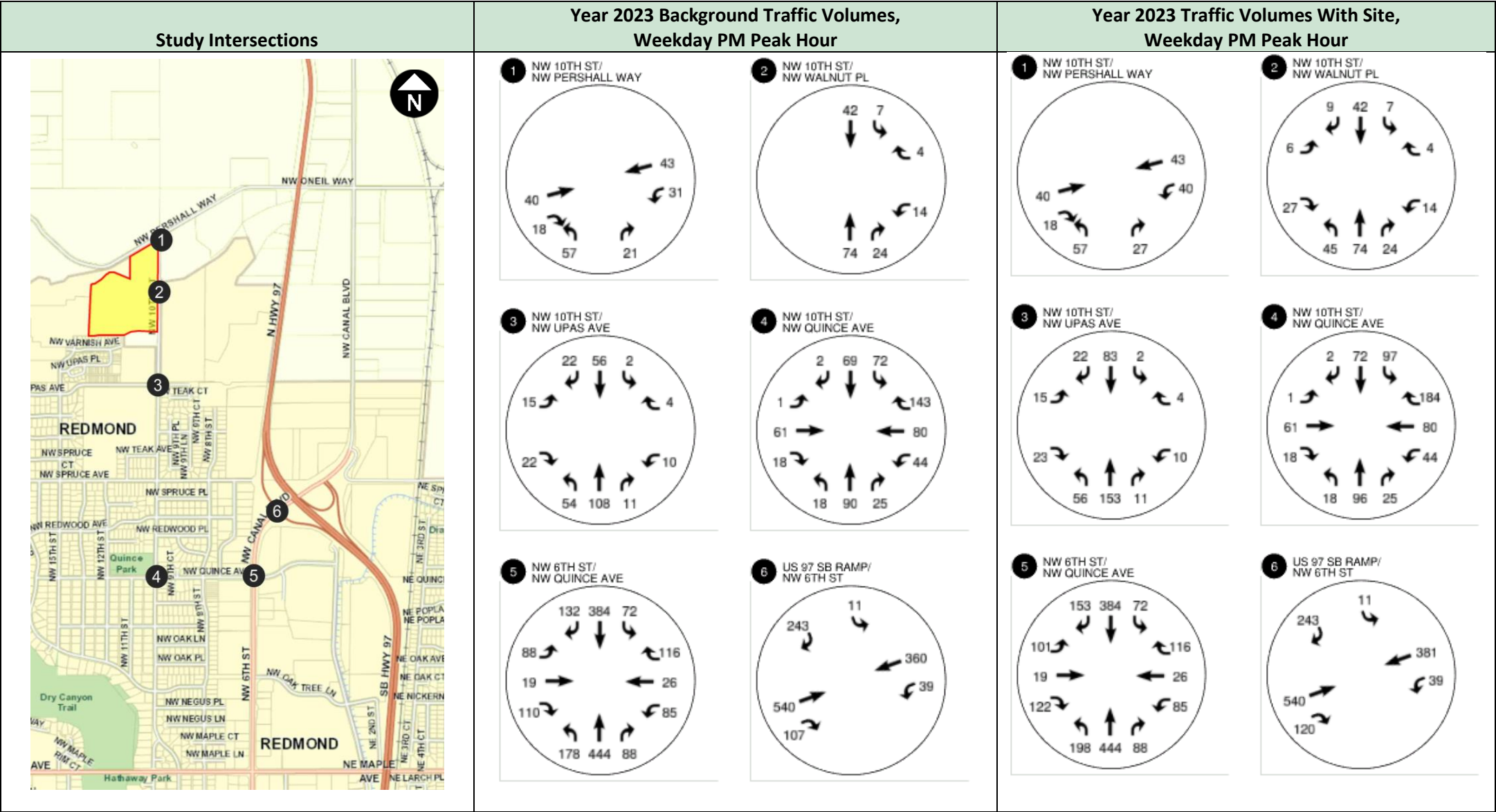


Figure 12. 2023 Traffic Volumes, Weekday PM Peak Hour.

Table 8. Summary of Year 2023 Intersection Operations, Weekday PM Peak Hour

| Intersection                                               | Performance/<br>Mobility Standard               | 2023 Background Conditions |               |                                                              |                                                                                                                                        | 2023 With Site Conditions      |                             |                                                              |                                                                                                                                         | Acceptable? |
|------------------------------------------------------------|-------------------------------------------------|----------------------------|---------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                                                            |                                                 | LOS                        | Delay (s/veh) | v/c Ratio                                                    | 95 <sup>th</sup> % Queue                                                                                                               | LOS                            | Delay (s/veh)               | v/c Ratio                                                    | 95 <sup>th</sup> % Queue                                                                                                                |             |
| 1: NW 10 <sup>th</sup> St /<br>NW Pershall Way             | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | NB LTR: LOS B              | NB LTR: 10.1  | NB LTR: 0.12                                                 | NB LTR: 25 ft                                                                                                                          | NB LTR: LOS B                  | NB LTR: 10.2                | NB LTR: 0.13                                                 | NB LTR: 25 ft                                                                                                                           | Yes         |
| 2: NW 10 <sup>th</sup> St /<br>NW Walnut Pl (site access)* | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | WB LTR: LOS A              | WB LTR: 9.6   | WB LTR: 0.03                                                 | WB LTR: 25 ft                                                                                                                          | WB LTR: LOS B<br>EB LTR: LOS A | WB LTR: 10.9<br>EB LTR: 9.2 | WB LTR: 0.04<br>EB LTR: 0.05                                 | WB LTR: 25 ft<br>EB LTR: 25 ft                                                                                                          | Yes         |
| 3: NW 10 <sup>th</sup> St /<br>NW Upas Ave                 | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | EB L: LOS B                | EB L: 11.8    | EB L: 0.04                                                   | EB L: 25 ft                                                                                                                            | EB L: LOS B                    | EB L: 13.0                  | EB L: 0.04                                                   | EB L: 25 ft                                                                                                                             | Yes         |
| 4: NW 10 <sup>th</sup> St /<br>NW Quince Ave               | LOS “E” or Better                               | LOS A                      | 9.8           | EB LTR: 0.13<br>WB LTR: 0.38<br>NB LTR: 0.21<br>SB LTR: 0.24 | EB LTR: 25 ft<br>WB LTR: 50 ft<br>NB LTR: 25 ft<br>SB LTR: 25 ft                                                                       | LOS B                          | 10.7                        | EB LTR: 0.13<br>WB LTR: 0.45<br>NB LTR: 0.23<br>SB LTR: 0.29 | EB LTR: 25 ft<br>WB LTR: 75 ft<br>NB LTR: 25 ft<br>SB LTR: 50 ft                                                                        | Yes         |
| 5: NW 6 <sup>th</sup> St /<br>NW Quince Ave                | LOS “E” or Better                               | LOS B                      | 12.4          | 0.42                                                         | EB L: 60 ft<br>EB TR: 40 ft<br>WB L: 55 ft<br>WB TR: 45 ft<br>NB L: 50 ft<br>NB T: 90 ft<br>NB R: 20 ft<br>SB L: 25 ft<br>SB TR: 95 ft | LOS B                          | 12.9                        | 0.47                                                         | EB L: 70 ft<br>EB TR: 40 ft<br>WB L: 60 ft<br>WB TR: 45 ft<br>NB L: 65 ft<br>NB T: 95 ft<br>NB R: 20 ft<br>SB L: 30 ft<br>SB TR: 105 ft | Yes         |
| 6: US 97 Southbound Ramp /<br>NW 6 <sup>th</sup> St        | v/c ≤ 0.85                                      | LOS B                      | 10.2          | 0.41                                                         | EB TR: 130 ft<br>WB L: 15 ft<br>WB T: 105 ft<br>SB LT: 15 ft<br>SB R: 45 ft                                                            | LOS B                          | 10.7                        | 0.45                                                         | EB TR: 130 ft<br>WB L: 15 ft<br>WB T: 115 ft<br>SB LT: 15 ft<br>SB R: 45 ft                                                             | Yes         |

\*NW Walnut Place is assumed to be aligned across from the northern access to Cinder Butte Village development



### Year 2023 ‘With Site’ Conditions

Year 2023 conditions with the proposed development were prepared by adding the no-build conditions with site generated trips from the Canyon Trails development. The resulting volumes are also depicted in Figure 12 and the operational analysis of “with-site” conditions are also summarized in Table 8. As shown in the table, all intersections are expected to meet City and State standards with the Canyon Trails Master Plan.

### Year 2028 Planning Analysis

Analysis of conditions five years beyond build-out were also assessed to assist with long-range planning efforts. This future scenario was conducted for both the background conditions developed through the application of continued regional growth and in-process developments, and the “With Site” conditions with the addition of site-generated trips. The forecast volumes are depicted in Figure 13 and the results of the analysis are summarized in Table 9. As shown in the table, all study intersections are expected to continue to meet standards with the site in 2028.

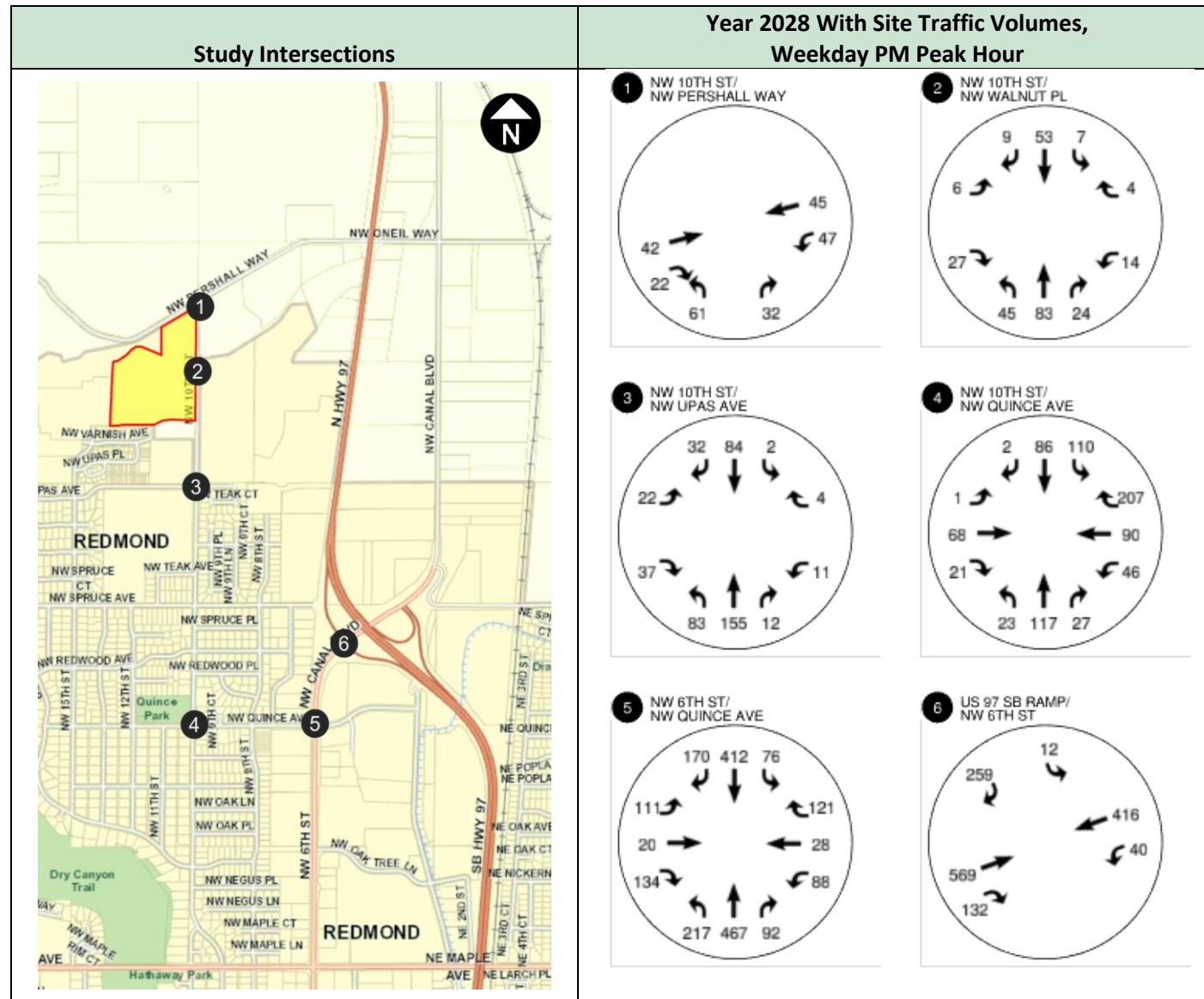


Figure 13. Year 2028 Planning Analysis (With Project Conditions) Weekday PM Peak Hour.

**Table 9. Summary of Year 2028 Intersection Operations, Weekday PM Peak Hour**

| Intersection                                              | Performance/<br>Mobility Standard               | 2028 With Site Conditions      |                             |                                                              |                                                                                                                                          | Acceptable? |
|-----------------------------------------------------------|-------------------------------------------------|--------------------------------|-----------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                                                           |                                                 | LOS                            | Delay (s/veh)               | v/c Ratio                                                    | 95 <sup>th</sup> % Queue                                                                                                                 |             |
| 1: NW 10 <sup>th</sup> St /<br>NW Pershall Way            | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | NB LTR: LOS B                  | NB LTR: 10.5                | NB LTR: 0.15                                                 | NB LTR: 25 ft                                                                                                                            | Yes         |
| 2: NW 10 <sup>th</sup> St /<br>NW Walnut Pl (site access) | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | WB LTR: LOS B<br>EB LTR: LOS A | WB LTR: 11.1<br>EB LTR: 9.3 | WB LTR: 0.04<br>EB LTR: 0.05                                 | WB LTR: 25 ft<br>EB LTR: 25 ft                                                                                                           | Yes         |
| 3: NW 10 <sup>th</sup> St /<br>NW Upas Ave                | v/c < 0.90<br>95 <sup>th</sup> % Queue < 100 ft | EB L: LOS B                    | EB L: 14.5                  | EB L: 0.07                                                   | EB L: 25 ft                                                                                                                              | Yes         |
| 4: NW 10 <sup>th</sup> St /<br>NW Quince Ave              | LOS "E" or Better                               | LOS B                          | 12.1                        | EB LTR: 0.16<br>WB LTR: 0.53<br>NB LTR: 0.29<br>SB LTR: 0.36 | EB LTR: 25 ft<br>WB LTR: 100 ft<br>NB LTR: 50 ft<br>SB LTR: 50 ft                                                                        | Yes         |
| 5: NW 6 <sup>th</sup> St /<br>NW Quince Ave               | LOS "E" or Better                               | LOS B                          | 13.6                        | 0.54                                                         | EB L: 75 ft<br>EB TR: 45 ft<br>WB L: 60 ft<br>WB TR: 45 ft<br>NB L: 70 ft<br>NB T: 105 ft<br>NB R: 20 ft<br>SB L: 30 ft<br>SB TR: 115 ft | Yes         |
| 6: US 97 Southbound<br>Ramp /<br>NW 6 <sup>th</sup> St    | v/c ≤ 0.85                                      | LOS B                          | 11.3                        | 0.48                                                         | EB TR: 145 ft<br>WB L: 15 ft<br>WB T: 130 ft<br>SB LT: 15 ft<br>SB R: 50 ft                                                              | Yes         |

## LEFT-TURN LANE WARRANTS

Turn lane warrants are reviewed based on guidance within the ODOT Transportation Planning and Analysis Unit's publication *Analysis Procedures Manual*. Left-turn lane warrants are based on the posted roadway speed, bidirectional traffic volume, and percentage of the total volume turning left. The left-turn lane warrants are essentially a cost-benefit calculation of the safety benefits provided by separating through and turning traffic versus the construction costs. Left-turn lane warrants do not apply to stop-controlled minor-street approaches. A summary of the study area intersections and the applicability of left-turn lane warrants is summarized in Table 10.

**Table 10. Summary of Left-Turn Lane Warrant Applicability**

| Intersection                                           | Applicable?                                                                                                                                                                                      | Met? |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1: NW 10 <sup>th</sup> St / NW Pershall Way            | Yes, NW Pershall Way is classified as a <i>Minor Arterial</i> . Westbound left-turn lane warrants are illustrated in Figure 14.                                                                  | No   |
| 2: NW 10 <sup>th</sup> St / NW Walnut Pl (site access) | Yes, NW 10 <sup>th</sup> Street is classified as a <i>Major Collector</i> . Northbound left-turn lane warrants are illustrated in Figure 14.                                                     | No   |
| 3: NW 10 <sup>th</sup> St / NW Upas Ave                | No, existing center turn lane for northbound left-turns already provided. Southbound left-turn volume is 2 vehicles during the peak hour, which is less than the minimum to warrant a turn lane. | n/a  |
| 4: NW 10 <sup>th</sup> St / NW Quince Ave              | No, at all-way stop intersections the intersection capacity needs dictate whether to add a left-turn lane.                                                                                       | n/a  |
| 5: NW 6 <sup>th</sup> St / NW Quince Ave               | No, at signalized intersections the intersection capacity needs dictate whether to add a left-turn lane.                                                                                         | n/a  |
| 6: US 97 Southbound Ramp / NW 6 <sup>th</sup> St       | No, at signalized intersections the intersection capacity needs dictate whether to add a left-turn lane.                                                                                         | n/a  |

The need for a left-turn lane was evaluated for the site access on NW 10<sup>th</sup> Street and on NW Pershall Way at NW 10<sup>th</sup> Street for 2023 'With Site' conditions during the weekday p.m. peak hour and is shown in Figure 14. As shown in the figure, turn lanes are not warranted at either intersection in the year 2023.

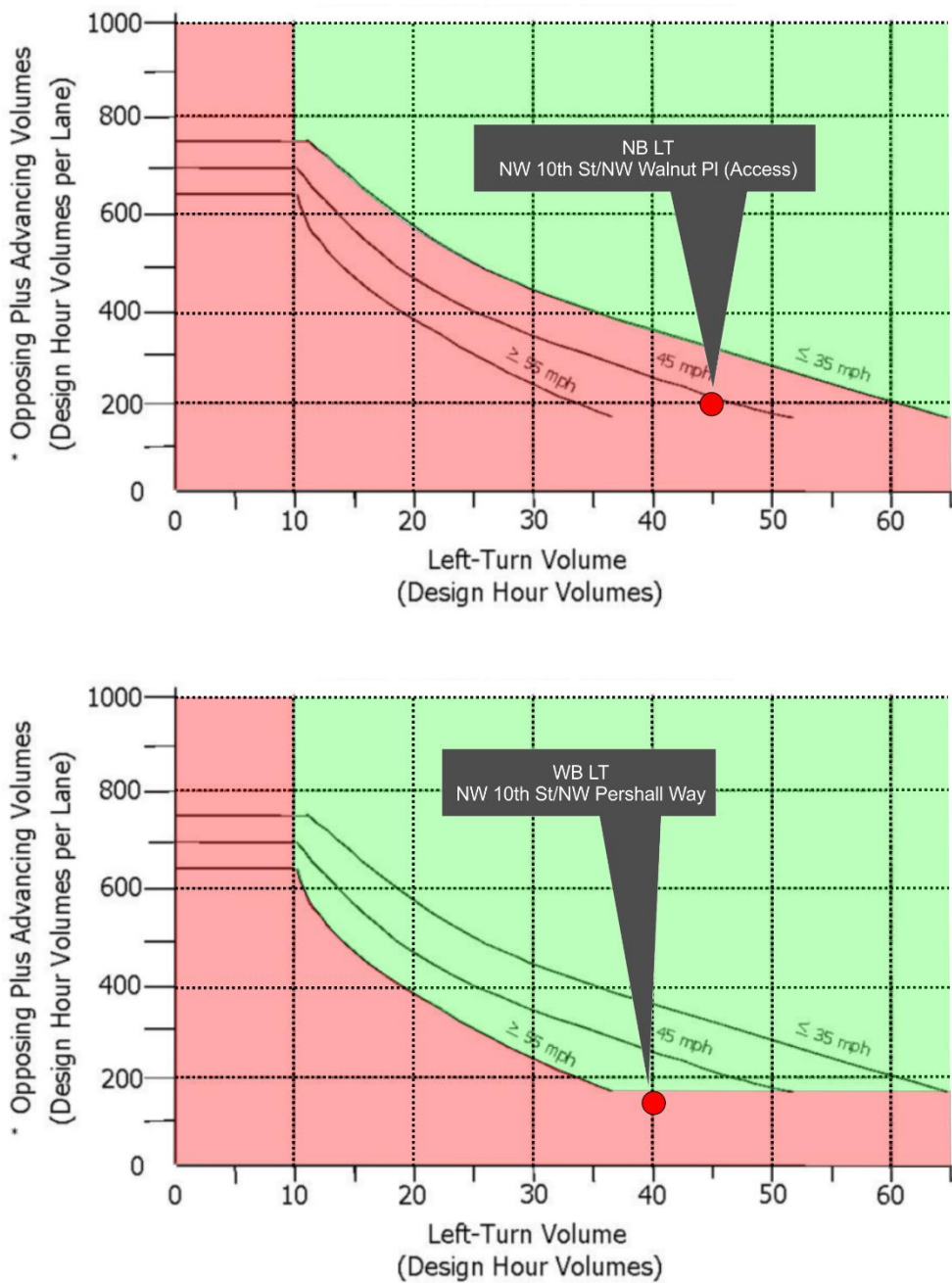


Figure 14. Left-Turn Lane Evaluation: 2023 Total Traffic Volumes, Weekday PM Peak Hour.



## RIGHT-TURN LANE WARRANTS

The purpose of a right-turn lane is to improve safety and capacity of a roadway by reducing the speed differential between through vehicles and decelerating vehicles. Within an urban environment, facility design considerations should include the increased pedestrian crossing distance, higher resultant through speeds, and right-of-way/streetscape impacts. Right turn lanes are typically reviewed based on the ODOT methodology for rural highways; as such, discretion and engineering judgement is required in applying these criteria to urban roadways. In review of the area context surrounding the residential site there are very few locations that would be considered candidates for right-turn deceleration lanes and locations that are candidate sites at this time are planned for urbanization in the TSP. Table 11 summarizes this review.

**Table 11. Summary of Right-Turn Lane Warrant Applicability**

| Intersection                                           | Applicable?                                                                                                                                                                                                            | Met? |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1: NW 10 <sup>th</sup> St / NW Pershall Way            | Yes, this intersection is located in a rural area that currently serves few pedestrians. The TSP shows a project to urbanize NW Pershall Way in the future. Eastbound right-turn lane warrants are shown in Figure 15. | No   |
| 2: NW 10 <sup>th</sup> St / NW Walnut PI (site access) | No, installation of a right-turn deceleration lane would conflict with facility goals and would not be recommended.                                                                                                    | n/a  |
| 3: NW 10 <sup>th</sup> St / NW Upas Ave                | No, installation of a right-turn deceleration lane would conflict with facility goals and would not be recommended.                                                                                                    | n/a  |
| 4: NW 10 <sup>th</sup> St / NW Quince Ave              | No, at all way stop intersections the intersection capacity needs dictate whether to add a right-turn lane.                                                                                                            | n/a  |
| 5: NW 6 <sup>th</sup> St / NW Quince Ave               | No, at signalized intersections the intersection capacity needs dictate whether to add a right-turn lane.                                                                                                              | n/a  |
| 6: US 97 Southbound Ramp / NW 6 <sup>th</sup> St       | No, at signalized intersections the intersection capacity needs dictate whether to add a right-turn lane.                                                                                                              | n/a  |

Figure 15 depict the right-turn lane warrant evaluation on NW Pershall Way at NW 10<sup>th</sup> Street. As shown in the figure, a right-turn deceleration lane is not warranted based on volume. There are few pedestrians at both of these intersections today. However, with the City's future plans to urbanize NW Pershall Way with a TSP project and the continued urbanization and development in the area, a right-turn lane would not be appropriate at this intersection even if volume warrants were met.

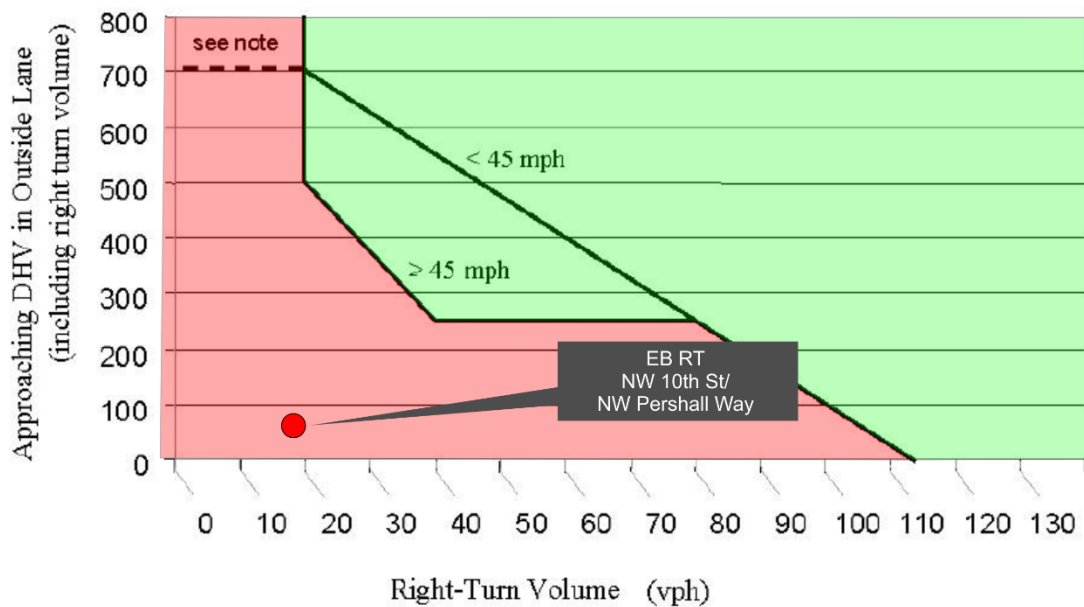


Figure 15. NW Pershall Way Right-Turn Warrant Assessment: Year 2023 Total Traffic Volumes, Weekday PM Peak Hour.

## ROADWAY CROSS-SECTIONS

The proposed Canyon Trails Master Plan has frontage along both NW Pershall Way and NW 10<sup>th</sup> Street, a *Minor Arterial* and *Major Collector*. These roadways are intended to support higher levels of mobility within the city.

The existing right-of-way on NW Pershall Way is 70 feet, with a half-width along the site frontage of 40 feet. This requires a 10-foot right-of-way dedication to meet the standard for *Minor Arterials*. NW Pershall Way is unimproved along the site frontage. The Draft TSP includes a project (S1) to improve NW Pershall Way to Minor Arterial standards to include a center turn lane and sidewalks on both sides. Project S1 is estimated to cost \$3.2 million. The Draft TSP includes a cross-section standard for Minor Arterials as shown in Figure 16. The project's contribution of Transportation SDCs together with the right-of-way dedication will support this planned project.

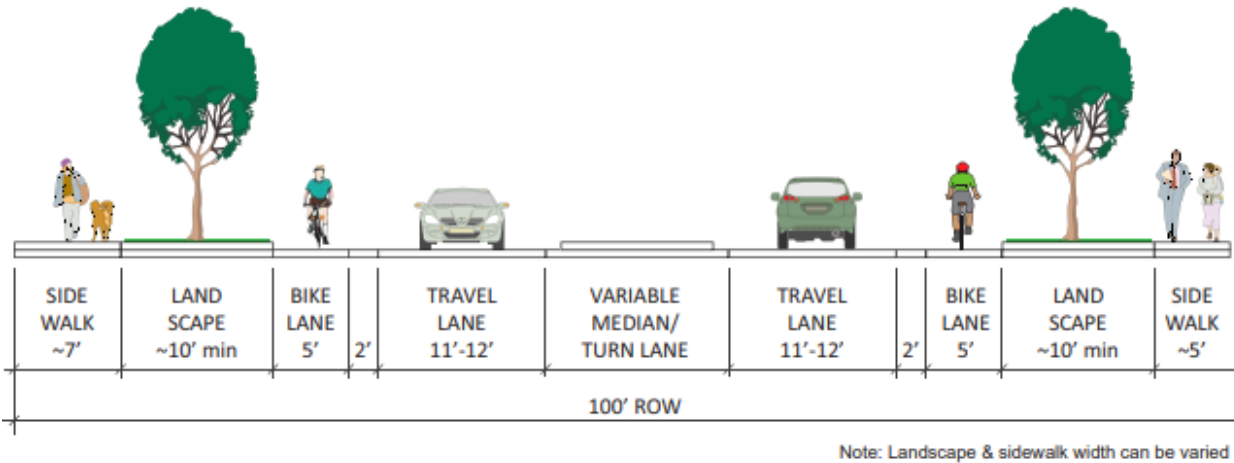


Figure 16. Minor Arterial Cross-Section.

Source: Draft Redmond Transportation System Plan Dated: December 2020

The right-of-way along NW 10<sup>th</sup> Street varies between 40- and 60-feet with a half-width along the site frontage of approximately 20 feet. Right-of-way dedication to meet the 40-foot half width standard for Major Collectors in the City of Redmond will be required. The draft TSP identifies a project (S3) for an upgrade on NW 10<sup>th</sup> Street from NW Upas Way to NW Pershall Way. The project is estimated to cost \$2.1 million and includes curbs, sidewalks, and bicycle lanes in both directions. The standard cross-section for a Major Collector from the draft TSP is shown in Figure 17.

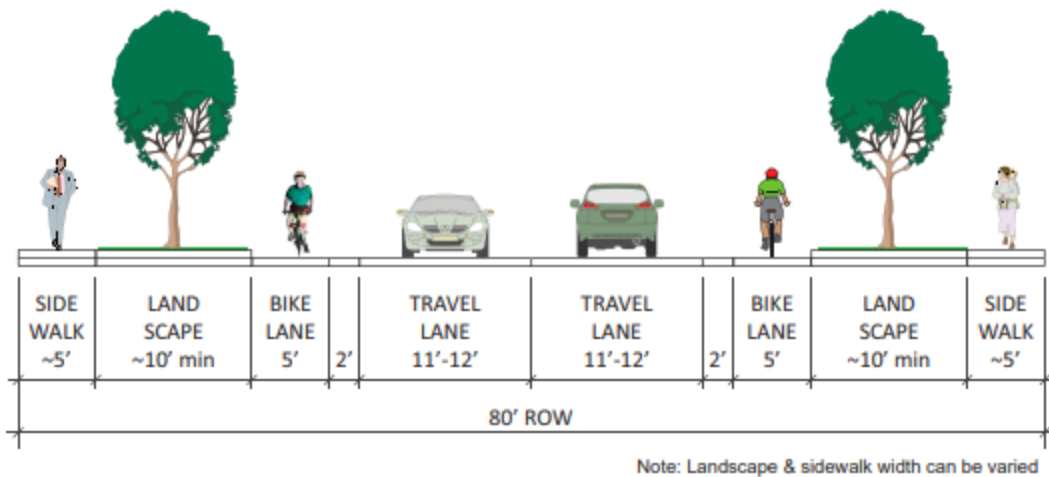


Figure 17. Major Collector Cross-Section.

Source: Draft Redmond Transportation System Plan Dated: December 2020

The roadways within the proposed subdivision are planned to conform to City standards for a typical local street with a right-of-way of 60 feet. The draft TSP includes a standard cross-section as shown in Figure 18.

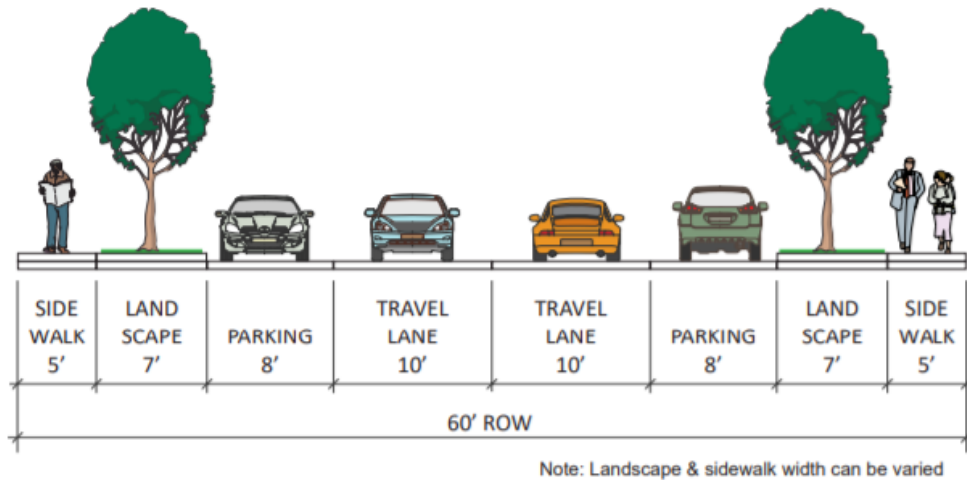


Figure 18. Local Street Cross-Section.

Source: Draft Redmond Transportation System Plan Dated: December 2020

## SUMMARY OF FINDINGS AND RECOMMENDATIONS

The Transportation Impact Analysis prepared for the proposed Canyon Trails Master Plan identified the following:

- The proposed 19.23-acre site will consist of a total of approximately 92 new dwelling units, of which 75 are designated for single-family lots and 17 are for cottage lots.
- Primary access to the subdivision will be provided by a new local street, NW Walnut Place, to NW 10<sup>th</sup> Street. Access will also be provided through the Canyon Ridge Subdivision to the south via a stubbed connection at NW 11<sup>th</sup> Street. Additional street stubs are planned on the west and south ends of the site for future local street connections to the Canyon Ridge Subdivision.
- The proposed development is consistent with the existing *General Residential (R4)* zoning.
- The development is estimated to generate 859 new weekday daily trips of which 90 trips (56 in, 34 out) are expected to occur during the weekday p.m. peak hour.
- No sight distance issues were identified at the proposed access onto NW 10<sup>th</sup> Street.
- Traffic operations show that all study intersections are expected to meet City and State operation standards with buildout of the site in years 2023 and 2028.
- None of the study intersections meet volume warrants for left-turn or right-turn lanes with the site in 2023.
- Completion of frontage improvements will be required on NW 10<sup>th</sup> Street to comply with City standards. In addition, right-of-way dedication will be required on NW Pershall Way to meet the City's 100-foot standard right-of-way width on *Minor Arterials* and on NW 10<sup>th</sup> Street to meet the City's 80-foot standard right-of-way width on *Major Collectors*. NW Pershall Way frontage improvements are identified within the City's Transportation System Plan and the project SDC fees (and right-of-way dedication) will contribute toward this improvement.
- The project will contribute to the City's long-range transportation needs through payment of Transportation System Development Charges.

With these recommendations the proposed project can comply with the City's transportation requirements. Please let me know if you have any questions related to the findings of this Transportation Impact Analysis at (503) 997-4473 or at [joe@transightconsulting.com](mailto:joe@transightconsulting.com).

Attachments:

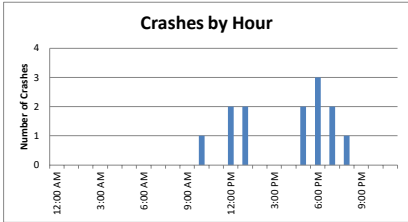
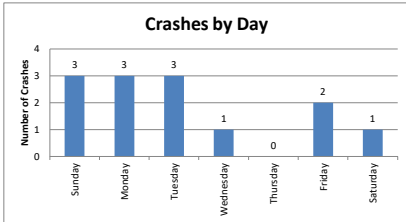
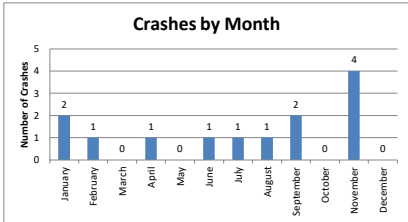
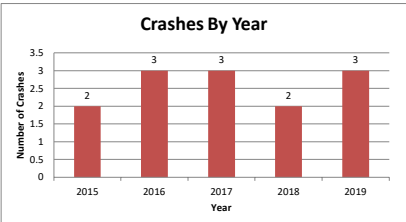
- Crash Analysis Worksheets
- Traffic Count Worksheets
- Year 2021 Existing Conditions LOS Worksheets
- Year 2023 Background Conditions LOS Worksheets
- Year 2023 Total Traffic Conditions LOS Worksheets
- Year 2028 Background Conditions LOS Worksheets
- Year 2028 Total Traffic Conditions, LOS Worksheets



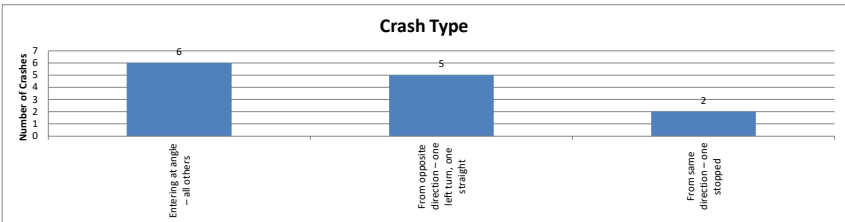
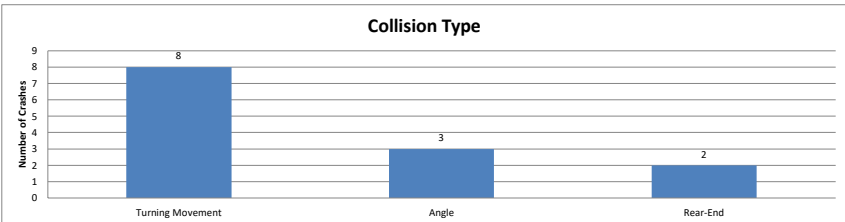
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Project Number: Canyon Trails Master Plan  
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Data Queried: January 2015 - December 2019  
Data Provider: ODOT Crash Analysis Reporting Unit  
Analyst: JWW  
Summary Date: 7/12/2021  
Text File Name:  
Filters Applied: : County: Deschutes

## NW 6th Street / NW Quince Avenue

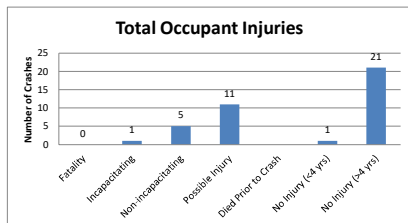
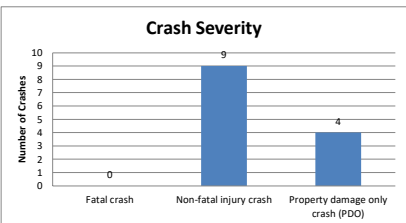
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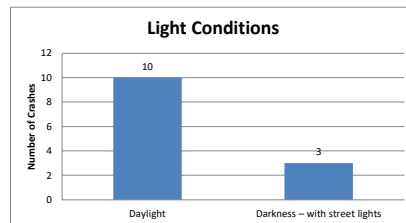
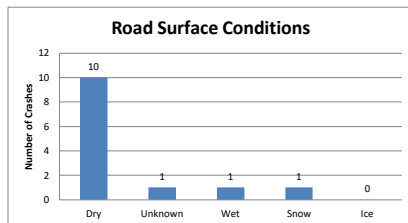
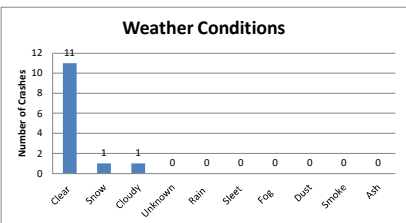
### Crash Summary by Type



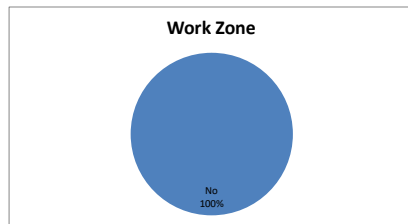
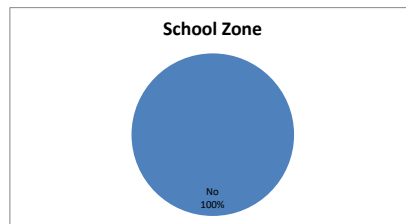
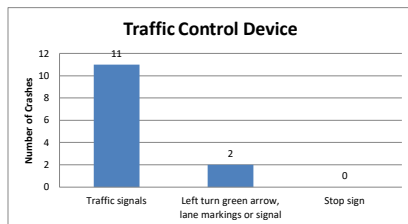
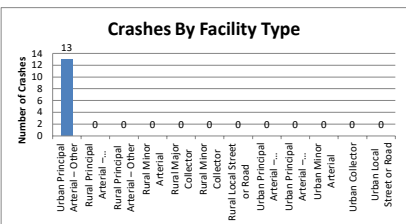
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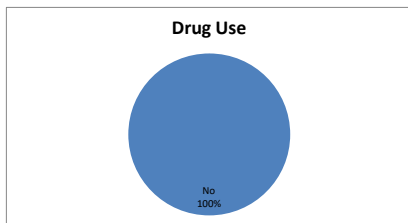
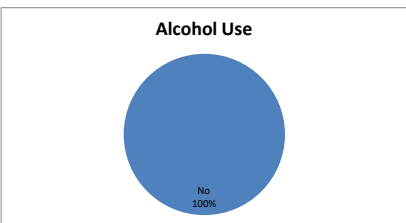
### Crash Environment Characteristics



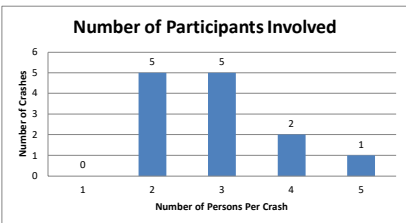
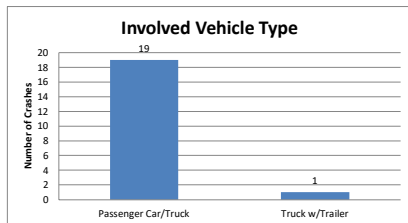
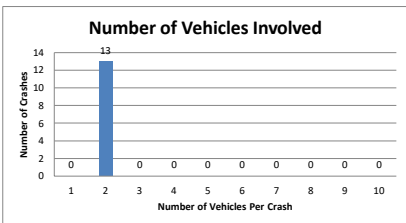
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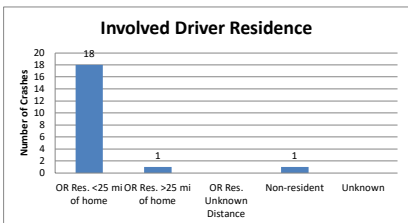
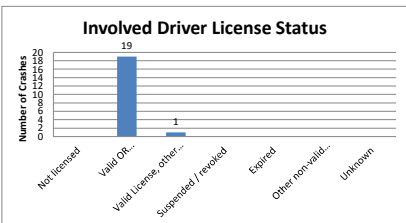
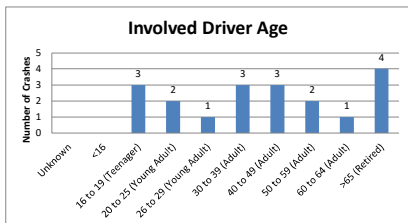
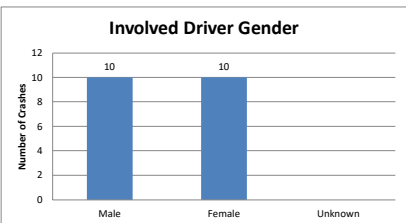
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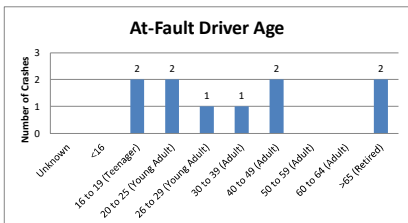
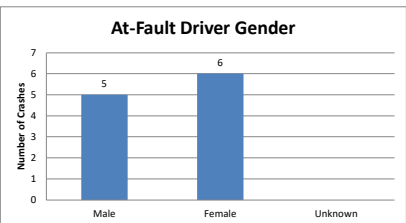
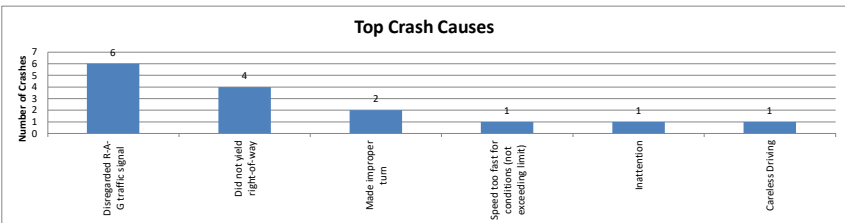
### Vehicles and Occupants



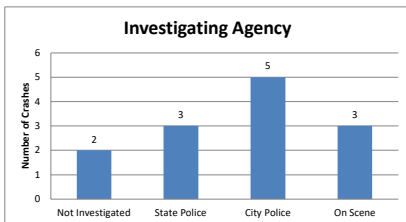
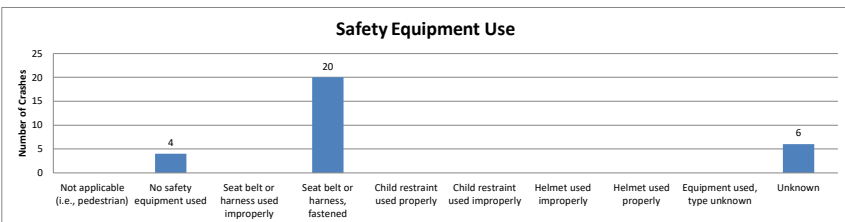
### Involved Driver Characteristics



### At-Fault Driver Characteristics



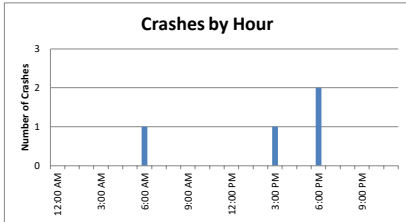
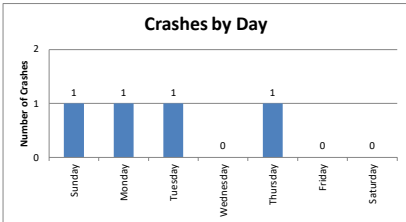
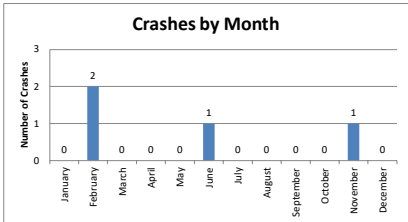
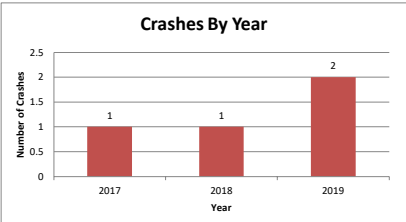
### Other Crash Characteristics



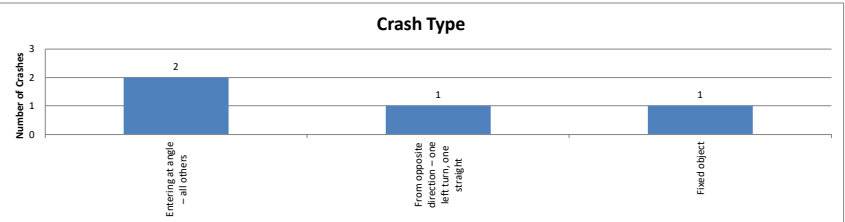
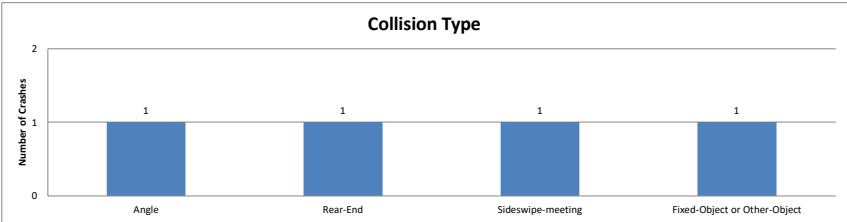
Project Name: 1588  
Project Number: Canyon Trails Master Plan  
Query Information: NW 6th Street/US 97 SB Ramp  
Data Queried: January 2015 - December 2019  
Data Provider: ODOT Crash Analysis Reporting Unit  
Analyst: JWW  
Summary Date: 7/12/2021  
Text File Name:  
Filters Applied: : County: Deschutes

## US 97 SB Ramps / NW 6th Street

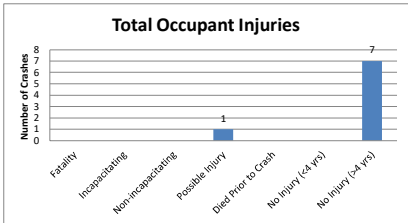
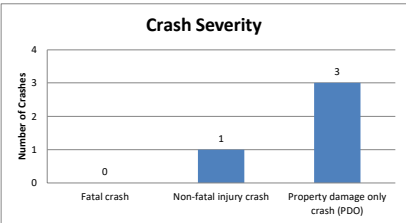
### Crash Summary by Date and Time



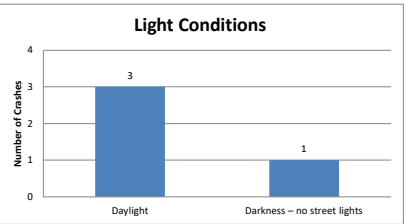
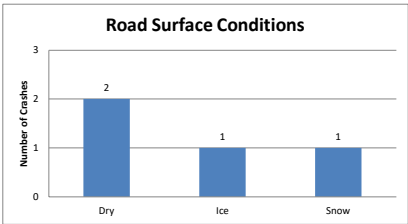
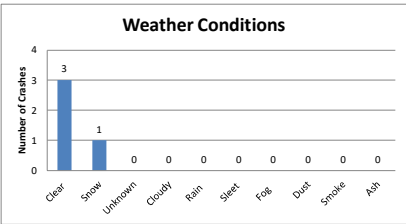
### Crash Summary by Type



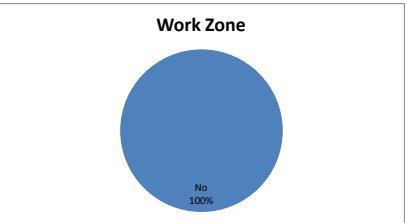
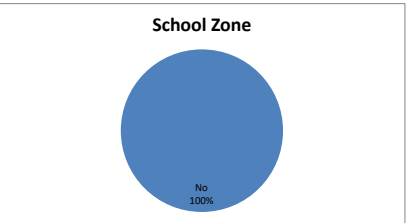
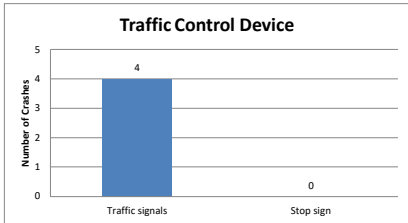
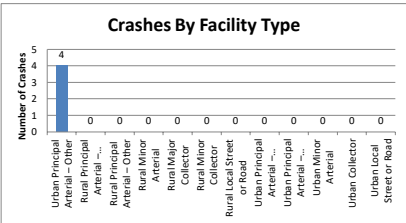
### Crash Severity



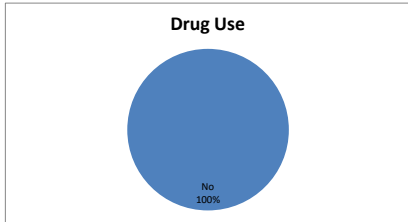
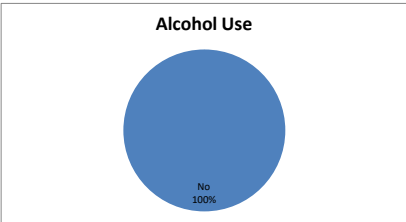
### Crash Environment Characteristics



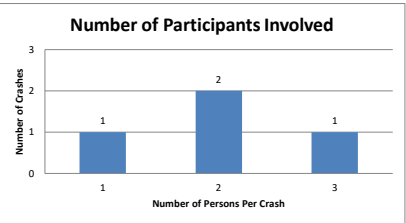
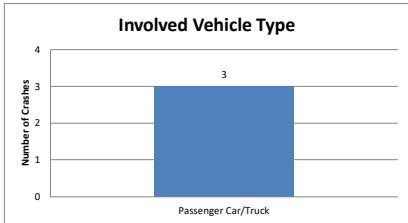
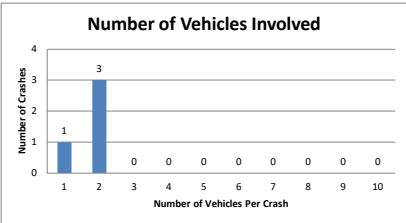
### Crash Area Characteristics



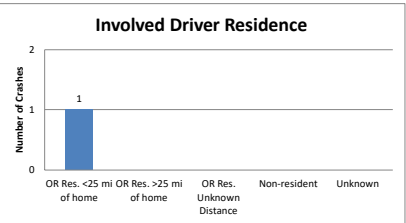
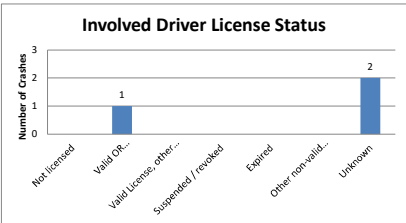
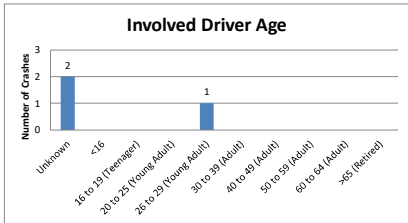
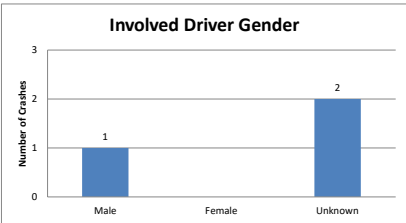
### Driving Impairments



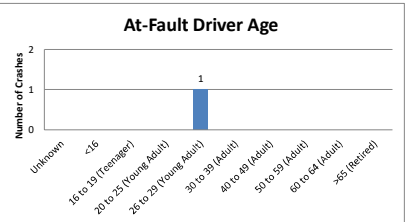
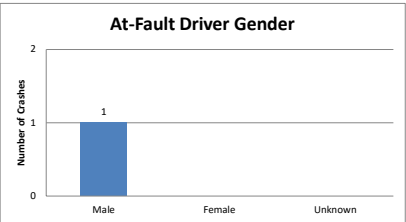
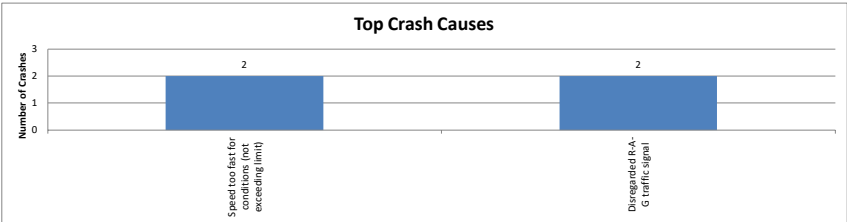
### Vehicles and Occupants



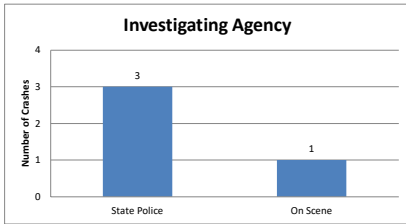
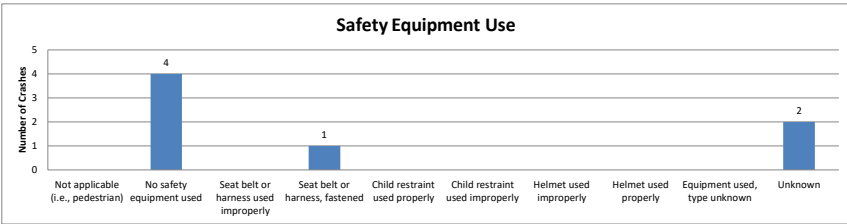
### Involved Driver Characteristics



### At-Fault Driver Characteristics



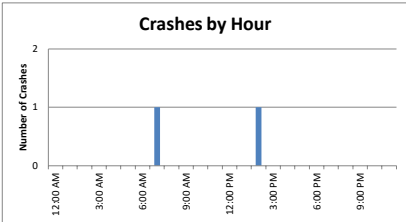
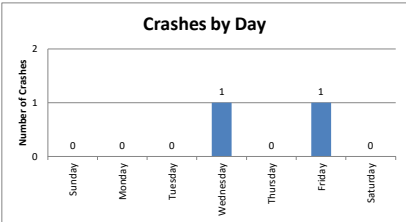
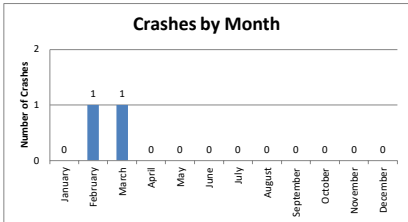
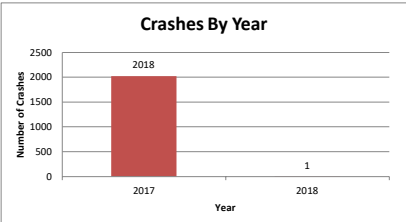
### Other Crash Characteristics



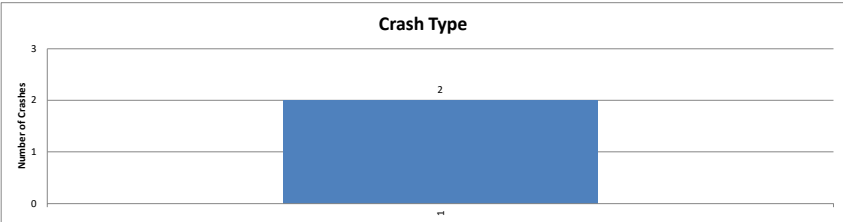
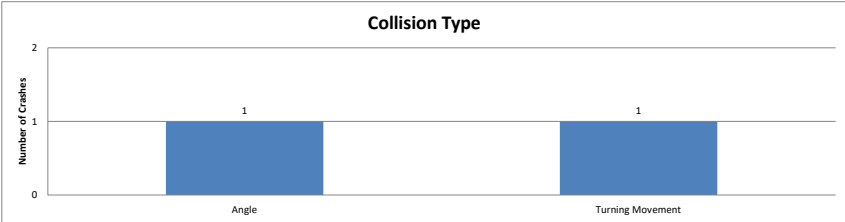
Project Name: 1588  
Project Number: Canyon Trails Master Plan  
Query Information: NW 10th Street/NW Quince Avenue  
Data Queried: January 2015 - December 2019  
Data Provider: ODOT Crash Analysis Reporting Unit  
Analyst: JWW  
Summary Date: 7/12/2021  
Text File Name:  
Filters Applied: : County: Deschutes

## NW 10th Street / NW Quince Avenue

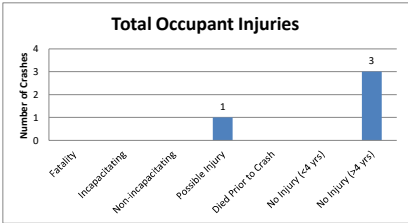
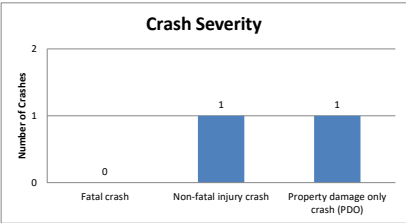
### Crash Summary by Date and Time



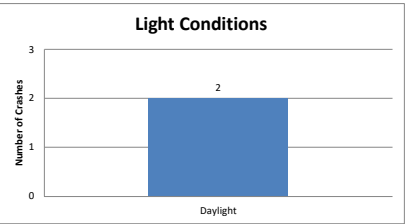
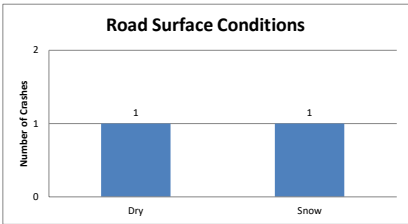
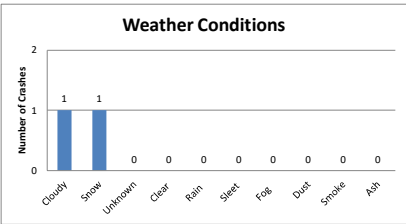
### Crash Summary by Type



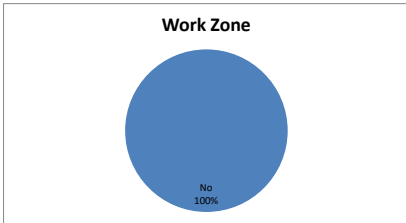
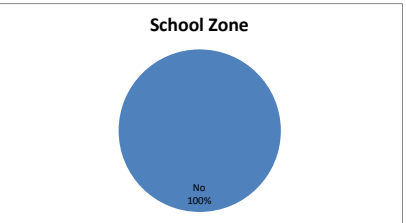
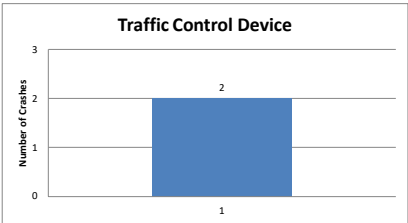
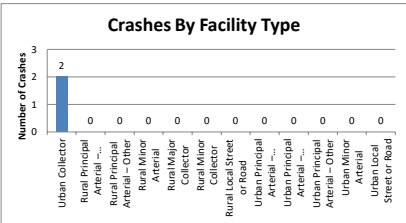
### Crash Severity



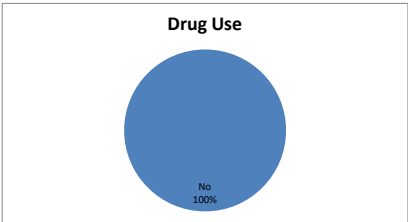
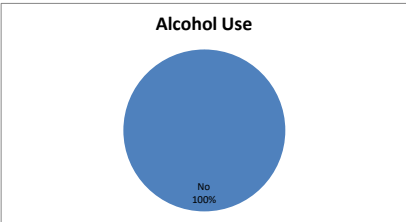
### Crash Environment Characteristics



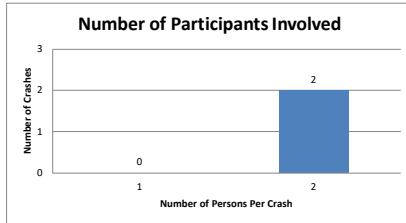
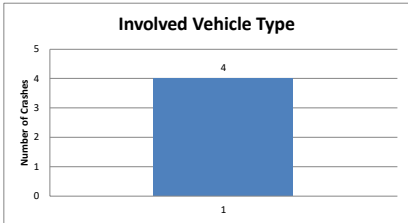
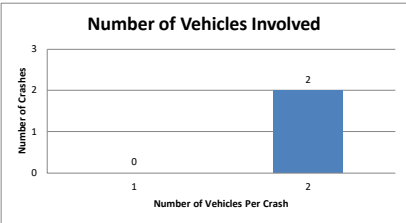
### Crash Area Characteristics



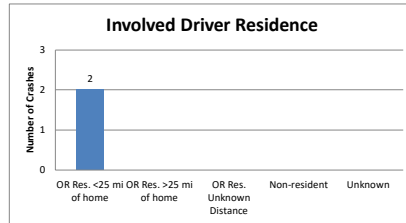
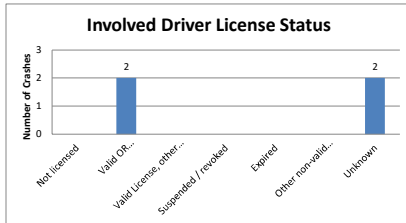
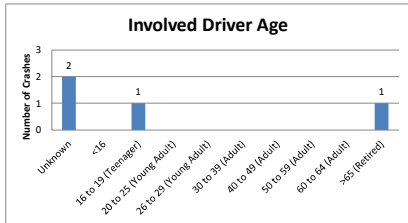
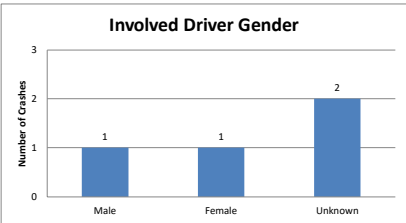
### Driving Impairments



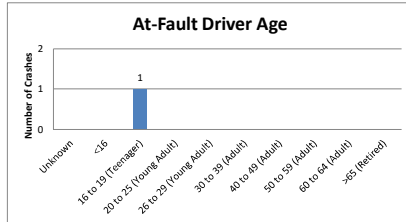
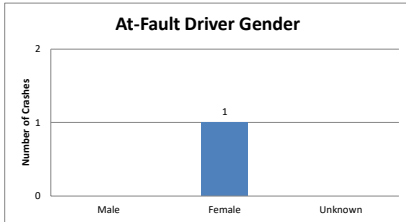
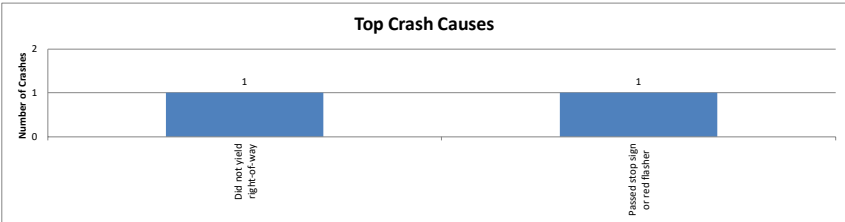
### Vehicles and Occupants



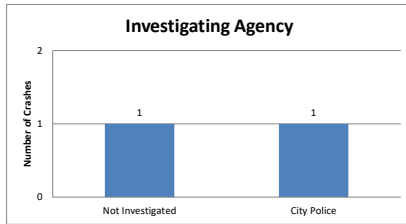
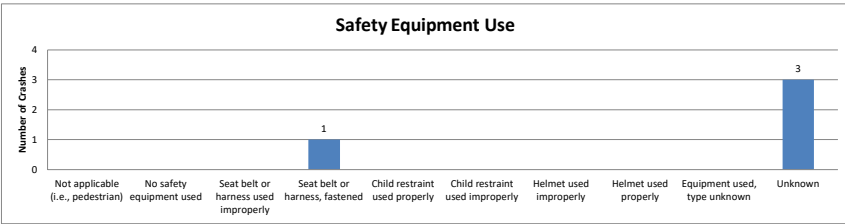
### Involved Driver Characteristics



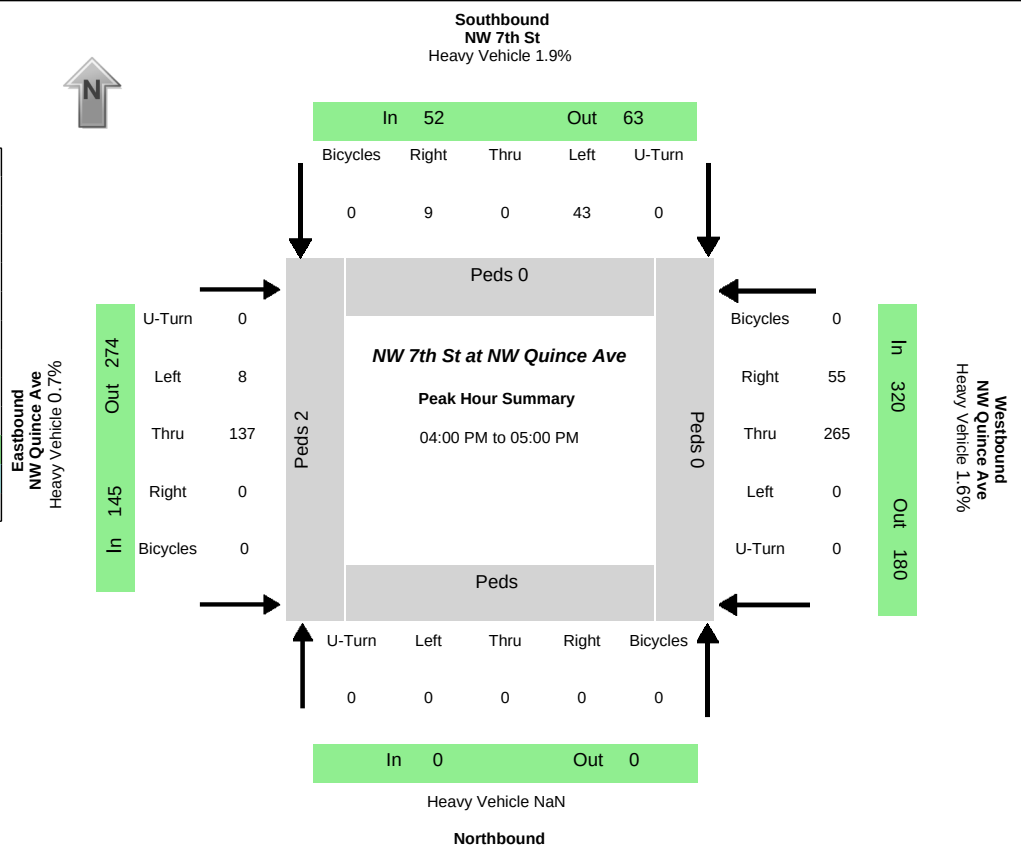
### At-Fault Driver Characteristics



### Other Crash Characteristics



|                                         |                           |
|-----------------------------------------|---------------------------|
| Data Provided by K-D-N.com 503-594-4224 |                           |
| N/S street                              | NW 7th St                 |
| E/W street                              | NW Quince Ave             |
| City, State                             | Redmond OR                |
| Site Notes                              |                           |
| Location                                | 44.298242 - -121.175596   |
| Start Date                              | Tuesday, January 21, 2020 |
| Start Time                              | 04:00:00 PM               |
| Weather                                 |                           |
| Study ID #                              |                           |
| Peak Hour Start                         | 04:00:00 PM               |
| Peak 15 Min Start                       | 04:40:00 PM               |
| PHF (15-Min Int)                        | 0.88                      |

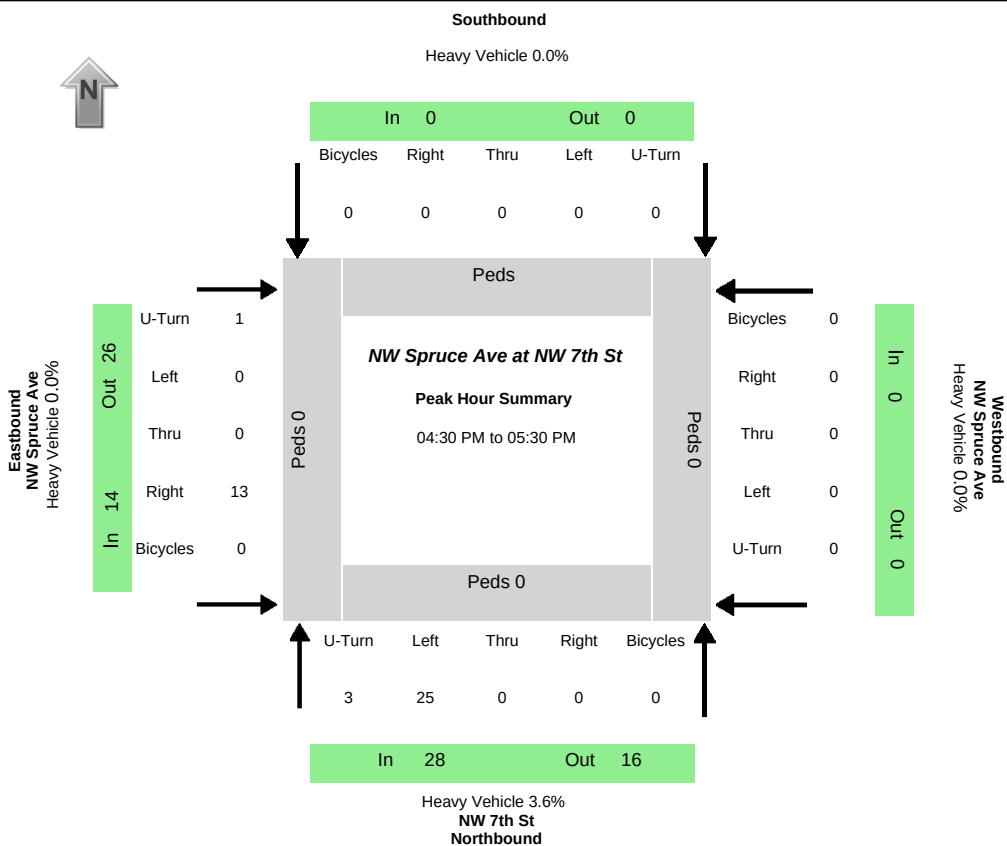


| Peak-Hour Volumes (PHV) |      |       |       |            |      |       |       |           |      |       |       |           |      |       |       |          |      |      |      |         |      |      |      |
|-------------------------|------|-------|-------|------------|------|-------|-------|-----------|------|-------|-------|-----------|------|-------|-------|----------|------|------|------|---------|------|------|------|
| Northbound              |      |       |       | Southbound |      |       |       | Eastbound |      |       |       | Westbound |      |       |       | Entering |      |      |      | Leaving |      |      |      |
| Left                    | Thru | Right | Uturn | Left       | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Left      | Thru | Right | Uturn | NB       | SB   | EB   | WB   | NB      | SB   | EB   | WB   |
| 0                       | 0    | 0     | 0     | 43         | 0    | 9     | 0     | 8         | 137  | 0     | 0     | 0         | 265  | 55    | 0     | 0        | 52   | 145  | 320  | 0       | 63   | 274  | 180  |
| Percent Heavy Vehicles  |      |       |       |            |      |       |       |           |      |       |       |           |      |       |       |          |      |      |      |         |      |      |      |
| 0.0%                    | 0.0% | 0.0%  | 0.0%  | 2.3%       | 0.0% | 0.0%  | 0.0%  | 0.0%      | 0.7% | 0.0%  | 0.0%  | 0.0%      | 1.5% | 1.8%  | 0.0%  | NaN      | 1.9% | 0.7% | 1.6% | NaN     | 1.6% | 1.5% | 1.1% |

| PHV - Bicycles |      |       |       |            |      |       |       |           |      |       |       | PHV - Pedestrians |      |       |       |     |              |
|----------------|------|-------|-------|------------|------|-------|-------|-----------|------|-------|-------|-------------------|------|-------|-------|-----|--------------|
| Northbound     |      |       |       | Southbound |      |       |       | Eastbound |      |       |       | Westbound         |      |       |       | Sum | in Crosswalk |
| Left           | Thru | Right | Uturn | Left       | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Left              | Thru | Right | Uturn | Sum | NB SB EB WB  |
| 0              | 0    | 0     | 0     | 0          | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 0                 | 0    | 0     | 0     | 0   | 0 0 0 0      |

| All Vehicle Volumes |            |      |       |       |                      |      |       |       |                         |      |       |       |                         |      |       |       |         |
|---------------------|------------|------|-------|-------|----------------------|------|-------|-------|-------------------------|------|-------|-------|-------------------------|------|-------|-------|---------|
| Time                | Northbound |      |       |       | Southbound NW 7th St |      |       |       | Eastbound NW Quince Ave |      |       |       | Westbound NW Quince Ave |      |       |       | Sum     |
|                     | Left       | Thru | Right | Uturn | Left                 | Thru | Right | Uturn | Left                    | Thru | Right | Uturn | Left                    | Thru | Right | Uturn |         |
| 04:00:00 PM         |            |      |       |       | 4                    | 0    | 0     | 0     | 3                       | 7    | 0     | 0     | 23                      | 2    | 0     | 0     |         |
| 04:05:00 PM         |            |      |       |       | 6                    | 1    | 0     | 0     | 2                       | 13   | 0     | 0     | 21                      | 10   | 0     | 0     |         |
| 04:10:00 PM         |            |      |       |       | 2                    | 0    | 0     | 0     | 1                       | 11   | 0     | 0     | 22                      | 4    | 0     | 0     | 132     |
| 04:15:00 PM         |            |      |       |       | 5                    | 1    | 0     | 0     | 0                       | 12   | 0     | 0     | 23                      | 3    | 0     | 0     | 137     |
| 04:20:00 PM         |            |      |       |       | 4                    | 1    | 0     | 0     | 0                       | 10   | 0     | 0     | 21                      | 7    | 0     | 0     | 127     |
| 04:25:00 PM         |            |      |       |       | 3                    | 0    | 0     | 0     | 0                       | 8    | 0     | 0     | 18                      | 5    | 0     | 0     | 121     |
| 04:30:00 PM         |            |      |       |       | 4                    | 1    | 0     | 0     | 0                       | 8    | 0     | 0     | 18                      | 2    | 0     | 0     | 110     |
| 04:35:00 PM         |            |      |       |       | 1                    | 2    | 0     | 0     | 1                       | 9    | 0     | 0     | 27                      | 4    | 0     | 0     | 111     |
| 04:40:00 PM         |            |      |       |       | 5                    | 0    | 0     | 0     | 0                       | 16   | 0     | 0     | 20                      | 5    | 0     | 0     | 123     |
| 04:45:00 PM         |            |      |       |       | 3                    | 1    | 0     | 0     | 1                       | 8    | 0     | 0     | 28                      | 6    | 0     | 0     | 137     |
| 04:50:00 PM         |            |      |       |       | 6                    | 1    | 0     | 0     | 0                       | 20   | 0     | 0     | 25                      | 2    | 0     | 0     | 147     |
| 04:55:00 PM         |            |      |       |       | 0                    | 1    | 0     | 0     | 0                       | 15   | 0     | 0     | 19                      | 5    | 0     | 0     | 141 517 |
| 05:00:00 PM         |            |      |       |       | 3                    | 0    | 0     | 0     | 3                       | 13   | 0     | 0     | 15                      | 4    | 0     | 0     | 132 516 |
| 05:05:00 PM         |            |      |       |       | 2                    | 0    | 0     | 0     | 0                       | 8    | 0     | 0     | 22                      | 8    | 0     | 0     | 118 503 |
| 05:10:00 PM         |            |      |       |       | 7                    | 1    | 0     | 0     | 0                       | 12   | 0     | 0     | 18                      | 3    | 0     | 0     | 119 504 |
| 05:15:00 PM         |            |      |       |       | 2                    | 0    | 0     | 0     | 2                       | 7    | 0     | 0     | 21                      | 2    | 1     | 0     | 116 495 |
| 05:20:00 PM         |            |      |       |       | 5                    | 1    | 0     | 0     | 0                       | 11   | 0     | 0     | 13                      | 4    | 0     | 0     | 110 486 |
| 05:25:00 PM         |            |      |       |       | 4                    | 2    | 0     | 0     | 1                       | 16   | 0     | 0     | 19                      | 4    | 0     | 0     | 115 498 |
| 05:30:00 PM         |            |      |       |       | 4                    | 3    | 0     | 0     | 0                       | 6    | 0     | 0     | 22                      | 3    | 0     | 0     | 118 503 |
| 05:35:00 PM         |            |      |       |       | 0                    | 2    | 0     | 0     | 0                       | 5    | 0     | 0     | 14                      | 4    | 0     | 0     | 109 484 |
| 05:40:00 PM         |            |      |       |       | 3                    | 0    | 0     | 0     | 2                       | 12   | 0     | 0     | 24                      | 5    | 0     | 0     | 109 484 |
| 05:45:00 PM         |            |      |       |       | 2                    | 0    | 0     | 0     | 1                       | 8    | 0     | 0     | 23                      | 4    | 0     | 0     | 109 475 |
| 05:50:00 PM         |            |      |       |       | 2                    | 2    | 0     | 0     | 1                       | 6    | 0     | 0     | 17                      | 1    | 0     | 0     | 113 450 |
| 05:55:00 PM         |            |      |       |       | 2                    | 0    | 0     | 0     | 0                       | 5    | 0     | 0     | 19                      | 9    | 0     | 0     | 102 445 |

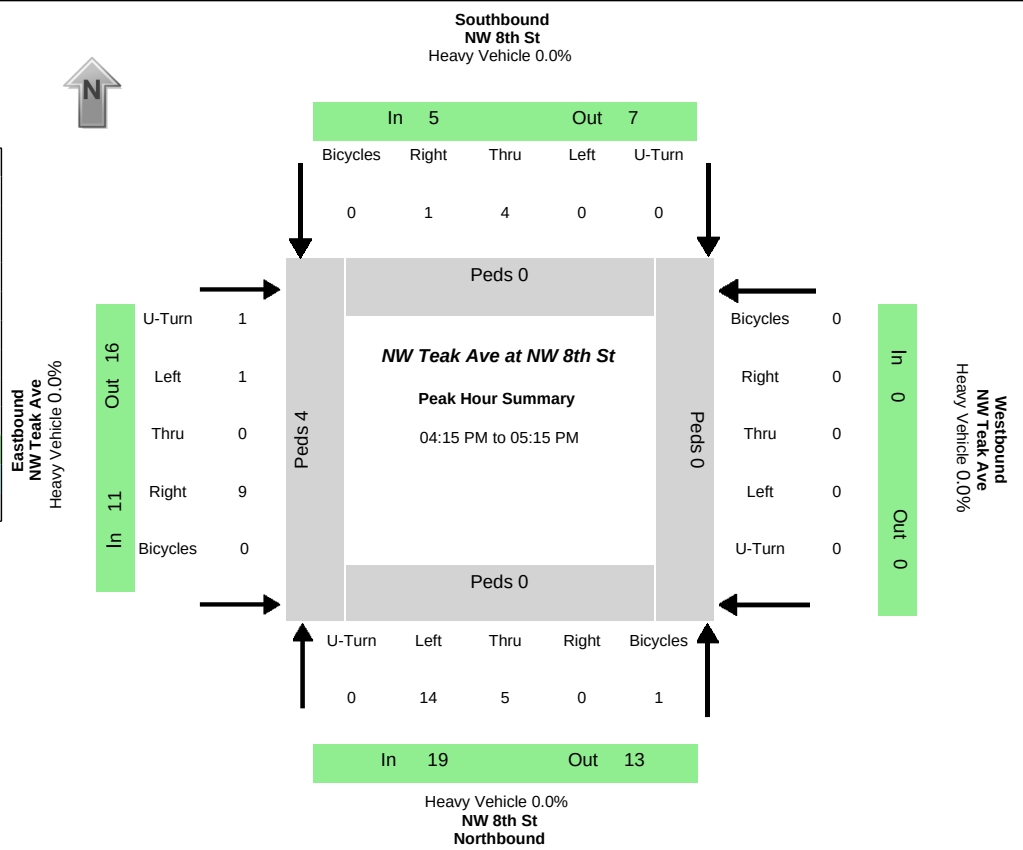
|                                         |                           |
|-----------------------------------------|---------------------------|
| Data Provided by K-D-N.com 503-594-4224 |                           |
| N/S street                              | NW 7th St                 |
| E/W street                              | NW Spruce Ave             |
| City, State                             | Redmond OR                |
| Site Notes                              |                           |
| Location                                | 44.298247 - -121.175611   |
| Start Date                              | Tuesday, January 21, 2020 |
| Start Time                              | 04:00:00 PM               |
| Weather                                 |                           |
| Study ID #                              |                           |
| Peak Hour Start                         | 04:30:00 PM               |
| Peak 15 Min Start                       | 04:55:00 PM               |
| PHF (15-Min Int)                        | 0.75                      |



| Peak-Hour Volumes (PHV) |                         |       |       |            |            |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         |      |      |      |
|-------------------------|-------------------------|-------|-------|------------|------------|-------|-------|-----------|----------------------------|-------|-------|-----------|----------------------------|-------|-------|-------------------|--------------|------|------|---------|------|------|------|
| Northbound              |                         |       |       | Southbound |            |       |       | Eastbound |                            |       |       | Westbound |                            |       |       | Entering          |              |      |      | Leaving |      |      |      |
| Left                    | Thru                    | Right | Uturn | Left       | Thru       | Right | Uturn | Left      | Thru                       | Right | Uturn | Left      | Thru                       | Right | Uturn | NB                | SB           | EB   | WB   | NB      | SB   | EB   | WB   |
| 25                      | 0                       | 0     | 3     | 0          | 0          | 0     | 0     | 0         | 0                          | 13    | 1     | 0         | 0                          | 0     | 0     | 28                | 0            | 14   | 0    | 16      | 0    | 26   | 0    |
| Percent Heavy Vehicles  |                         |       |       |            |            |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         |      |      |      |
| 4.0%                    | 0.0%                    | 0.0%  | 0.0%  | 0.0%       | 0.0%       | 0.0%  | 0.0%  | 0.0%      | 0.0%                       | 0.0%  | 0.0%  | 0.0%      | 0.0%                       | 0.0%  | 0.0%  | 3.6%              | 0.0%         | 0.0% | 0.0% | 0.0%    | 0.0% | 3.8% | 0.0% |
| PHV- Bicycles           |                         |       |       |            |            |       |       |           |                            |       |       |           |                            |       |       | PHV - Pedestrians |              |      |      |         |      |      |      |
| Northbound              |                         |       |       | Southbound |            |       |       | Eastbound |                            |       |       | Westbound |                            |       |       |                   | in Crosswalk |      |      |         |      |      |      |
| Left                    | Thru                    | Right | Uturn | Left       | Thru       | Right | Uturn | Left      | Thru                       | Right | Uturn | Left      | Thru                       | Right | Uturn | Sum               | NB           | SB   | EB   | WB      | Sum  |      |      |
| 0                       |                         | 0     | 0     |            |            |       |       | 0         | 0                          | 0     | 0     | 0         | 0                          | 0     | 0     | 0                 | 0            | 0    | 0    | 0       | 0    |      |      |
| All Vehicle Volumes     |                         |       |       |            |            |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         |      |      |      |
|                         | Northbound<br>NW 7th St |       |       |            | Southbound |       |       |           | Eastbound<br>NW Spruce Ave |       |       |           | Westbound<br>NW Spruce Ave |       |       |                   | 15<br>Min    | 1 HR |      |         |      |      |      |
| Time                    | Left                    | Thru  | Right | Uturn      | Left       | Thru  | Right | Uturn     | Left                       | Thru  | Right | Uturn     | Left                       | Thru  | Right | Uturn             | Sum          |      |      |         |      |      |      |
| 04:00:00 PM             | 3                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 |              |      |      |         |      |      |      |
| 04:05:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 2     | 0     | 0         | 0                          | 0     |       | 0                 |              |      |      |         |      |      |      |
| 04:10:00 PM             | 3                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 |              | 11   |      |         |      |      |      |
| 04:15:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 2     | 0     | 0         | 0                          | 0     |       | 0                 |              | 10   |      |         |      |      |      |
| 04:20:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 2     | 0     | 0         | 0                          | 0     |       | 0                 |              | 10   |      |         |      |      |      |
| 04:25:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 |              | 8    |      |         |      |      |      |
| 04:30:00 PM             | 1                       |       | 0     | 1          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 |              | 7    |      |         |      |      |      |
| 04:35:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 |              | 5    |      |         |      |      |      |
| 04:40:00 PM             | 4                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 |              | 9    |      |         |      |      |      |
| 04:45:00 PM             | 2                       |       | 0     | 1          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 |              | 11   |      |         |      |      |      |
| 04:50:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 |              | 12   |      |         |      |      |      |
| 04:55:00 PM             | 3                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 | 10           | 38   |      |         |      |      |      |
| 05:00:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 2     | 0     | 0         | 0                          | 0     |       | 0                 | 9            | 37   |      |         |      |      |      |
| 05:05:00 PM             | 5                       |       | 0     | 0          |            |       |       |           | 0                          | 3     | 0     | 0         | 0                          | 0     |       | 0                 | 14           | 41   |      |         |      |      |      |
| 05:10:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 1     | 0         | 0                          | 0     |       | 0                 | 14           | 41   |      |         |      |      |      |
| 05:15:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 | 13           | 40   |      |         |      |      |      |
| 05:20:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 | 8            | 39   |      |         |      |      |      |
| 05:25:00 PM             | 1                       |       | 0     | 1          |            |       |       |           | 0                          | 2     | 0     | 0         | 0                          | 0     |       | 0                 | 9            | 42   |      |         |      |      |      |
| 05:30:00 PM             | 1                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 | 8            | 41   |      |         |      |      |      |
| 05:35:00 PM             | 2                       |       | 0     | 0          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 | 7            | 41   |      |         |      |      |      |
| 05:40:00 PM             | 3                       |       | 0     | 1          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 | 7            | 40   |      |         |      |      |      |
| 05:45:00 PM             | 1                       |       | 0     | 1          |            |       |       |           | 0                          | 0     | 0     | 0         | 0                          | 0     |       | 0                 | 8            | 38   |      |         |      |      |      |
| 05:50:00 PM             | 0                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 | 7            | 36   |      |         |      |      |      |
| 05:55:00 PM             | 0                       |       | 0     | 0          |            |       |       |           | 0                          | 1     | 0     | 0         | 0                          | 0     |       | 0                 | 4            | 34   |      |         |      |      |      |

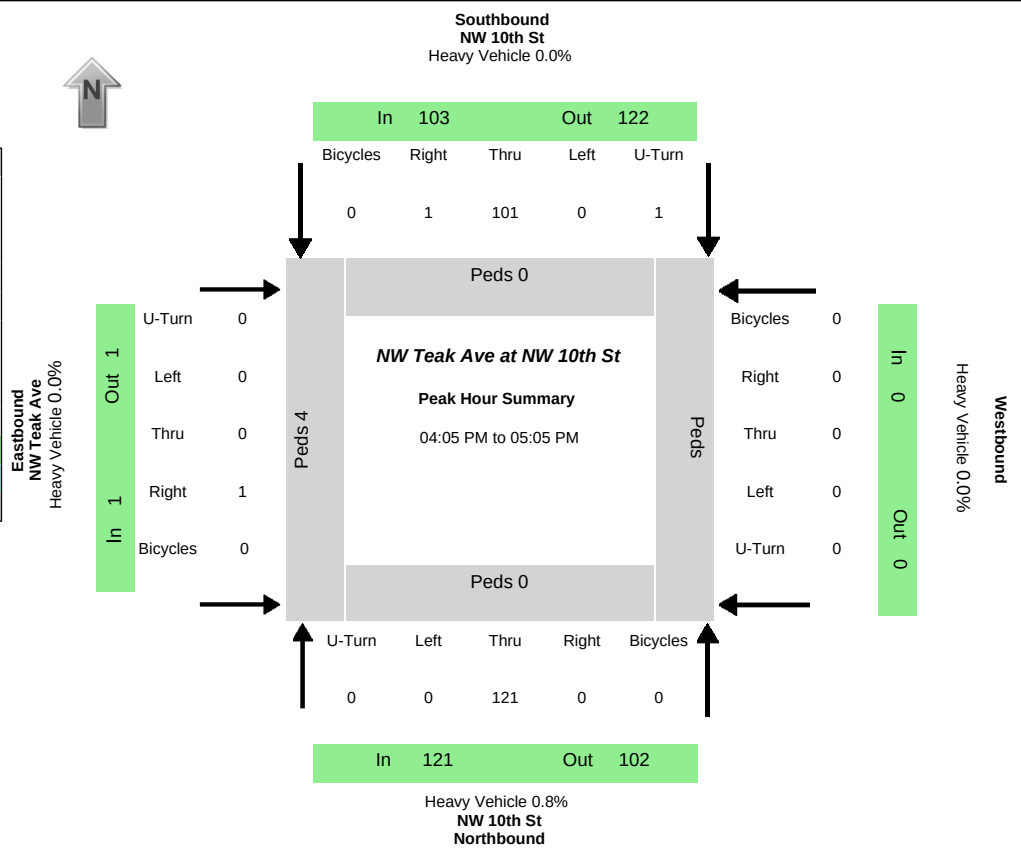


|                                         |                           |
|-----------------------------------------|---------------------------|
| Data Provided by K-D-N.com 503-594-4224 |                           |
| N/S street                              | NW 8th St                 |
| E/W street                              | NW Teak Ave               |
| City, State                             | Redmond OR                |
| Site Notes                              |                           |
| Location                                | 44.303629 - -121.17587    |
| Start Date                              | Tuesday, January 21, 2020 |
| Start Time                              | 04:00:00 PM               |
| Weather                                 |                           |
| Study ID #                              |                           |
| Peak Hour Start                         | 04:15:00 PM               |
| Peak 15 Min Start                       | 04:50:00 PM               |
| PHF (15-Min Int)                        | 0.73                      |



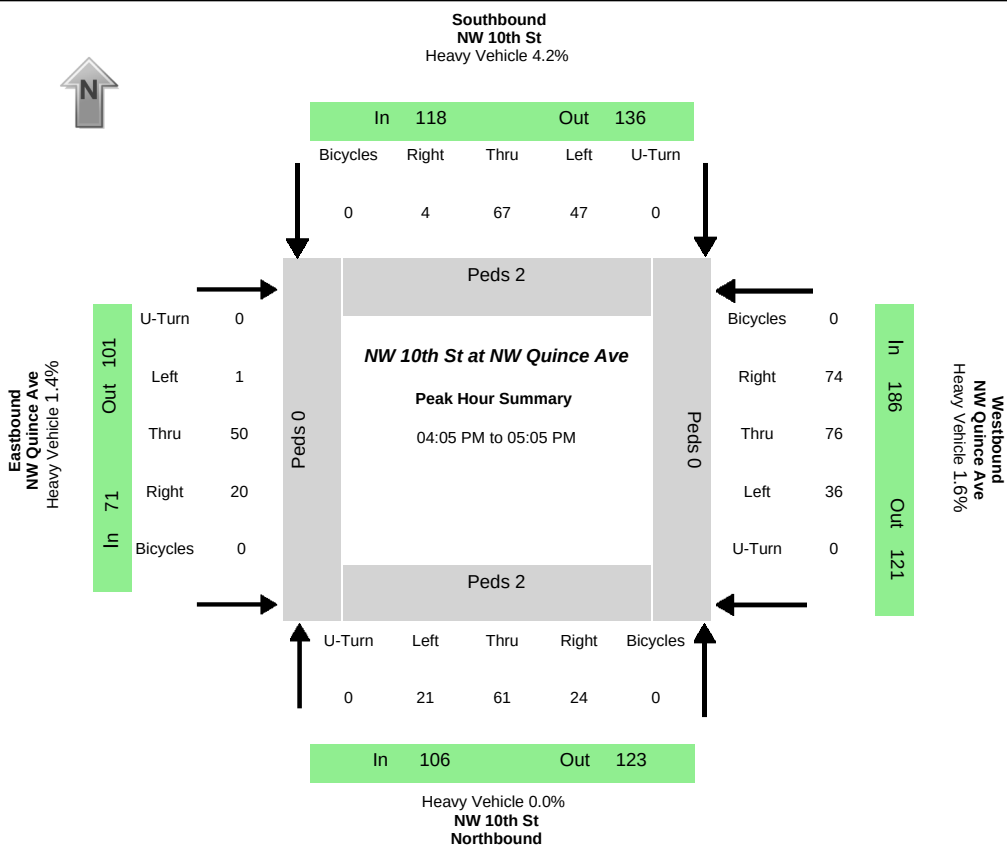
| Peak-Hour Volumes (PHV) |                         |       |       |            |                         |       |       |           |                          |       |       |           |                          |       |       |                   |                  |             |      |         |      |      |      |
|-------------------------|-------------------------|-------|-------|------------|-------------------------|-------|-------|-----------|--------------------------|-------|-------|-----------|--------------------------|-------|-------|-------------------|------------------|-------------|------|---------|------|------|------|
| Northbound              |                         |       |       | Southbound |                         |       |       | Eastbound |                          |       |       | Westbound |                          |       |       | Entering          |                  |             |      | Leaving |      |      |      |
| Left                    | Thru                    | Right | Uturn | Left       | Thru                    | Right | Uturn | Left      | Thru                     | Right | Uturn | Left      | Thru                     | Right | Uturn | NB                | SB               | EB          | WB   | NB      | SB   | EB   | WB   |
| 14                      | 5                       | 0     | 0     | 0          | 4                       | 1     | 0     | 1         | 0                        | 9     | 1     | 0         | 0                        | 0     | 0     | 19                | 5                | 11          | 0    | 13      | 6    | 16   | 0    |
| Percent Heavy Vehicles  |                         |       |       |            |                         |       |       |           |                          |       |       |           |                          |       |       |                   |                  |             |      |         |      |      |      |
| 0.0%                    | 0.0%                    | 0.0%  | 0.0%  | 0.0%       | 0.0%                    | 0.0%  | 0.0%  | 0.0%      | 0.0%                     | 0.0%  | 0.0%  | 0.0%      | 0.0%                     | 0.0%  | 0.0%  | 0.0%              | 0.0%             | 0.0%        | 0.0% | 0.0%    | 0.0% | 0.0% | 0.0% |
| PHV - Bicycles          |                         |       |       |            |                         |       |       |           |                          |       |       |           |                          |       |       | PHV - Pedestrians |                  |             |      |         |      |      |      |
| Northbound              |                         |       |       | Southbound |                         |       |       | Eastbound |                          |       |       | Westbound |                          |       |       | Sum               | in Crosswalk     |             |      |         | Sum  |      |      |
| Left                    | Thru                    | Right | Uturn | Left       | Thru                    | Right | Uturn | Left      | Thru                     | Right | Uturn | Left      | Thru                     | Right | Uturn |                   | NB               | SB          | EB   | WB      |      |      |      |
| 0                       | 1                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 1                 | 0                | 0           | 4    | 0       |      |      | 4    |
| All Vehicle Volumes     |                         |       |       |            |                         |       |       |           |                          |       |       |           |                          |       |       |                   |                  |             |      |         |      |      |      |
| Time                    | Northbound<br>NW 8th St |       |       |            | Southbound<br>NW 8th St |       |       |           | Eastbound<br>NW Teak Ave |       |       |           | Westbound<br>NW Teak Ave |       |       |                   | 15<br>Min<br>Sum | 1 HR<br>Sum |      |         |      |      |      |
|                         | Left                    | Thru  | Right | Uturn      | Left                    | Thru  | Right | Uturn     | Left                     | Thru  | Right | Uturn     | Left                     | Thru  | Right | Uturn             |                  |             |      |         |      |      |      |
| 04:00:00 PM             | 2                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    |         |      |      |      |
| 04:05:00 PM             | 1                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    |         |      |      |      |
| 04:10:00 PM             | 0                       | 1     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 5       |      |      |      |
| 04:15:00 PM             | 1                       | 1     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 1     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 6       |      |      |      |
| 04:20:00 PM             | 2                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 7       |      |      |      |
| 04:25:00 PM             | 1                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 6       |      |      |      |
| 04:30:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 3     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 7       |      |      |      |
| 04:35:00 PM             | 1                       | 2     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 8       |      |      |      |
| 04:40:00 PM             | 2                       | 0     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 10      |      |      |      |
| 04:45:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 6       |      |      |      |
| 04:50:00 PM             | 3                       | 0     | 0     | 0          | 0                       | 0     | 1     | 0         | 1                        | 0     | 1     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 9       |      |      |      |
| 04:55:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 1     | 1         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 9       | 30   |      |      |
| 05:00:00 PM             | 1                       | 1     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 1     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 12      | 31   |      |      |
| 05:05:00 PM             | 1                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 2     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 9       | 33   |      |      |
| 05:10:00 PM             | 2                       | 1     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 10      | 35   |      |      |
| 05:15:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 7       | 32   |      |      |
| 05:20:00 PM             | 1                       | 0     | 0     | 0          | 0                       | 1     | 0     | 0         | 0                        | 0     | 1     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 7       | 33   |      |      |
| 05:25:00 PM             | 1                       | 0     | 0     | 0          | 0                       | 1     | 0     | 0         | 1                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 6       | 35   |      |      |
| 05:30:00 PM             | 0                       | 1     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 1     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 8       | 33   |      |      |
| 05:35:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 0     | 1     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 6       | 31   |      |      |
| 05:40:00 PM             | 1                       | 1     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 5       | 30   |      |      |
| 05:45:00 PM             | 0                       | 0     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 3       | 30   |      |      |
| 05:50:00 PM             | 0                       | 1     | 0     | 0          | 0                       | 0     | 0     | 0         | 0                        | 0     | 0     | 0         | 0                        | 0     | 0     | 0                 | 0                | 0           | 0    | 3       | 25   |      |      |
| 05:55:00 PM             | 1                       | 1     | 0     | 0          | 1                       | 0     | 0     | 0         | 1                        | 0     | 0     | 0         | 1                        | 0     | 0     | 0                 | 6                | 27          |      |         |      |      |      |

|                                         |                           |
|-----------------------------------------|---------------------------|
| Data Provided by K-D-N.com 503-594-4224 |                           |
| N/S street                              | NW 10th St                |
| E/W street                              | NW Teak Ave               |
| City, State                             | Redmond OR                |
| Site Notes                              |                           |
| Location                                | 44.303629 - -121.178863   |
| Start Date                              | Tuesday, January 21, 2020 |
| Start Time                              | 04:00:00 PM               |
| Weather                                 |                           |
| Study ID #                              |                           |
| Peak Hour Start                         | 04:05:00 PM               |
| Peak 15 Min Start                       | 04:40:00 PM               |
| PHF (15-Min Int)                        | 0.71                      |



| Peak-Hour Volumes (PHV) |                          |       |       |            |                          |       |       |           |                          |       |       |           |           |       |       |                   |                  |             |      |         |      |      |      |
|-------------------------|--------------------------|-------|-------|------------|--------------------------|-------|-------|-----------|--------------------------|-------|-------|-----------|-----------|-------|-------|-------------------|------------------|-------------|------|---------|------|------|------|
| Northbound              |                          |       |       | Southbound |                          |       |       | Eastbound |                          |       |       | Westbound |           |       |       | Entering          |                  |             |      | Leaving |      |      |      |
| Left                    | Thru                     | Right | Uturn | Left       | Thru                     | Right | Uturn | Left      | Thru                     | Right | Uturn | Left      | Thru      | Right | Uturn | NB                | SB               | EB          | WB   | NB      | SB   | EB   | WB   |
| 0                       | 121                      | 0     | 0     | 0          | 101                      | 1     | 1     | 0         | 0                        | 1     | 0     | 0         | 0         | 0     | 0     | 121               | 103              | 1           | 0    | 102     | 122  | 1    | 0    |
| Percent Heavy Vehicles  |                          |       |       |            |                          |       |       |           |                          |       |       |           |           |       |       |                   |                  |             |      |         |      |      |      |
| 0.0%                    | 0.8%                     | 0.0%  | 0.0%  | 0.0%       | 0.0%                     | 0.0%  | 0.0%  | 0.0%      | 0.0%                     | 0.0%  | 0.0%  | 0.0%      | 0.0%      | 0.0%  | 0.0%  | 0.8%              | 0.0%             | 0.0%        | 0.0% | 0.0%    | 0.8% | 0.0% | 0.0% |
| PHV- Bicycles           |                          |       |       |            |                          |       |       |           |                          |       |       |           |           |       |       | PHV - Pedestrians |                  |             |      |         |      |      |      |
| Northbound              |                          |       |       | Southbound |                          |       |       | Eastbound |                          |       |       | Westbound |           |       |       | Sum               | in Crosswalk     |             |      |         | Sum  |      |      |
| Left                    | Thru                     | Right | Uturn | Left       | Thru                     | Right | Uturn | Left      | Thru                     | Right | Uturn | Left      | Thru      | Right | Uturn |                   | NB               | SB          | EB   | WB      |      |      |      |
| 0                       | 0                        |       | 0     | 0          | 0                        | 0     | 0     | 0         |                          | 0     | 0     | 0         |           |       | 0     | 0                 | 0                | 4           |      |         |      | 4    |      |
| All Vehicle Volumes     |                          |       |       |            |                          |       |       |           |                          |       |       |           |           |       |       |                   |                  |             |      |         |      |      |      |
| Time                    | Northbound<br>NW 10th St |       |       |            | Southbound<br>NW 10th St |       |       |           | Eastbound<br>NW Teak Ave |       |       |           | Westbound |       |       |                   | 15<br>Min<br>Sum | 1 HR<br>Sum |      |         |      |      |      |
|                         | Left                     | Thru  | Right | Uturn      | Left                     | Thru  | Right | Uturn     | Left                     | Thru  | Right | Uturn     | Left      | Thru  | Right | Uturn             |                  |             |      |         |      |      |      |
| 04:00:00 PM             | 0                        | 7     |       | 0          |                          | 4     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  |             |      |         |      |      |      |
| 04:05:00 PM             | 0                        | 7     |       | 0          |                          | 9     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  |             |      |         |      |      |      |
| 04:10:00 PM             | 0                        | 6     |       | 0          |                          | 5     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 38          |      |         |      |      |      |
| 04:15:00 PM             | 0                        | 11    |       | 0          |                          | 8     | 1     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 47          |      |         |      |      |      |
| 04:20:00 PM             | 0                        | 9     |       | 0          |                          | 5     | 0     | 0         | 0                        | 0     |       | 1         | 0         |       |       |                   |                  | 46          |      |         |      |      |      |
| 04:25:00 PM             | 0                        | 8     |       | 0          |                          | 7     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 50          |      |         |      |      |      |
| 04:30:00 PM             | 0                        | 7     |       | 0          |                          | 6     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 43          |      |         |      |      |      |
| 04:35:00 PM             | 0                        | 13    |       | 0          |                          | 8     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 49          |      |         |      |      |      |
| 04:40:00 PM             | 0                        | 10    |       | 0          |                          | 16    | 0     | 1         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 61          |      |         |      |      |      |
| 04:45:00 PM             | 0                        | 17    |       | 0          |                          | 7     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 72          |      |         |      |      |      |
| 04:50:00 PM             | 0                        | 18    |       | 0          |                          | 10    | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 79          |      |         |      |      |      |
| 04:55:00 PM             | 0                        | 11    |       | 0          |                          | 12    | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 75          | 224  |         |      |      |      |
| 05:00:00 PM             | 0                        | 4     |       | 0          |                          | 8     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 63          | 225  |         |      |      |      |
| 05:05:00 PM             | 0                        | 9     |       | 0          |                          | 4     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 48          | 222  |         |      |      |      |
| 05:10:00 PM             | 0                        | 6     |       | 0          |                          | 2     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 33          | 219  |         |      |      |      |
| 05:15:00 PM             | 0                        | 4     |       | 0          |                          | 6     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 31          | 209  |         |      |      |      |
| 05:20:00 PM             | 0                        | 6     |       | 0          |                          | 3     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 27          | 203  |         |      |      |      |
| 05:25:00 PM             | 0                        | 4     |       | 0          |                          | 8     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 31          | 200  |         |      |      |      |
| 05:30:00 PM             | 0                        | 9     |       | 0          |                          | 4     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 34          | 200  |         |      |      |      |
| 05:35:00 PM             | 0                        | 12    |       | 0          |                          | 5     | 1     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 43          | 197  |         |      |      |      |
| 05:40:00 PM             | 1                        | 9     |       | 0          |                          | 6     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 47          | 186  |         |      |      |      |
| 05:45:00 PM             | 1                        | 8     |       | 0          |                          | 2     | 0     | 0         | 0                        | 1     |       | 1         | 0         |       |       |                   |                  | 47          | 175  |         |      |      |      |
| 05:50:00 PM             | 0                        | 8     |       | 0          |                          | 5     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 42          | 160  |         |      |      |      |
| 05:55:00 PM             | 0                        | 5     |       | 0          |                          | 4     | 0     | 0         | 0                        | 0     |       | 0         | 0         | 0     |       |                   |                  | 35          | 146  |         |      |      |      |

|                                         |                            |
|-----------------------------------------|----------------------------|
| Data Provided by K-D-N.com 503-594-4224 |                            |
| N/S street                              | NW 10th St                 |
| E/W street                              | NW Quince Ave              |
| City, State                             | Redmond OR                 |
| Site Notes                              |                            |
| Location                                | 44.298208 - -121.178963    |
| Start Date                              | Thursday, January 17, 2019 |
| Start Time                              | 04:00:00 PM                |
| Weather                                 |                            |
| Study ID #                              |                            |
| Peak Hour Start                         | 04:05:00 PM                |
| Peak 15 Min Start                       | 04:35:00 PM                |
| PHF (15-Min Int)                        | 0.90                       |



| Peak-Hour Volumes (PHV) |                          |       |       |            |                          |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         |               |      |      |             |  |
|-------------------------|--------------------------|-------|-------|------------|--------------------------|-------|-------|-----------|----------------------------|-------|-------|-----------|----------------------------|-------|-------|-------------------|--------------|------|------|---------|---------------|------|------|-------------|--|
| Northbound              |                          |       |       | Southbound |                          |       |       | Eastbound |                            |       |       | Westbound |                            |       |       | Entering          |              |      |      | Leaving |               |      |      |             |  |
| Left                    | Thru                     | Right | Uturn | Left       | Thru                     | Right | Uturn | Left      | Thru                       | Right | Uturn | Left      | Thru                       | Right | Uturn | NB                | SB           | EB   | WB   | NB      | SB            | EB   | WB   |             |  |
| 21                      | 61                       | 24    | 0     | 47         | 67                       | 4     | 0     | 1         | 50                         | 20    | 0     | 36        | 76                         | 74    | 0     | 106               | 118          | 71   | 186  | 123     | 136           | 101  | 121  |             |  |
| Percent Heavy Vehicles  |                          |       |       |            |                          |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         |               |      |      |             |  |
| 0.0%                    | 0.0%                     | 0.0%  | 0.0%  | 0.0%       | 7.5%                     | 0.0%  | 0.0%  | 0.0%      | 0.0%                       | 5.0%  | 0.0%  | 2.8%      | 0.0%                       | 2.7%  | 0.0%  | 0.0%              | 4.2%         | 1.4% | 1.6% | 5.7%    | 1.5%          | 0.0% | 0.0% |             |  |
| PHV- Bicycles           |                          |       |       |            |                          |       |       |           |                            |       |       |           |                            |       |       | PHV - Pedestrians |              |      |      |         |               |      |      |             |  |
| Northbound              |                          |       |       | Southbound |                          |       |       | Eastbound |                            |       |       | Westbound |                            |       |       | Sum               | in Crosswalk |      |      |         | Sum           |      |      |             |  |
| Left                    | Thru                     | Right | Uturn | Left       | Thru                     | Right | Uturn | Left      | Thru                       | Right | Uturn | Left      | Thru                       | Right | Uturn |                   | NB           | SB   | EB   | WB      |               |      |      |             |  |
| 0                       | 0                        | 0     | 0     | 0          | 0                        | 0     | 0     | 0         | 0                          | 0     | 0     | 0         | 0                          | 0     | 0     |                   | 0            | 2    | 2    | 0       |               | 0    |      |             |  |
| All Vehicle Volumes     |                          |       |       |            |                          |       |       |           |                            |       |       |           |                            |       |       |                   |              |      |      |         | 15 Min<br>Sum |      |      | 1 HR<br>Sum |  |
| Time                    | Northbound<br>NW 10th St |       |       |            | Southbound<br>NW 10th St |       |       |           | Eastbound<br>NW Quince Ave |       |       |           | Westbound<br>NW Quince Ave |       |       |                   |              |      |      |         |               |      |      |             |  |
|                         | Left                     | Thru  | Right | Uturn      | Left                     | Thru  | Right | Uturn     | Left                       | Thru  | Right | Uturn     | Left                       | Thru  | Right | Uturn             |              |      |      |         |               |      |      |             |  |
| 04:00:00 PM             | 1                        | 3     | 2     | 0          | 4                        | 9     | 0     | 0         | 0                          | 2     | 0     | 0         | 2                          | 3     | 4     | 0                 |              |      |      |         |               |      |      |             |  |
| 04:05:00 PM             | 1                        | 6     | 3     | 0          | 4                        | 7     | 0     | 0         | 0                          | 3     | 6     | 0         | 4                          | 10    | 6     | 0                 |              |      |      |         |               |      |      |             |  |
| 04:10:00 PM             | 3                        | 3     | 2     | 0          | 5                        | 5     | 0     | 0         | 0                          | 5     | 1     | 0         | 3                          | 8     | 7     | 0                 | 122          |      |      |         |               |      |      |             |  |
| 04:15:00 PM             | 1                        | 6     | 1     | 0          | 2                        | 5     | 3     | 0         | 0                          | 5     | 3     | 0         | 1                          | 3     | 6     | 0                 | 128          |      |      |         |               |      |      |             |  |
| 04:20:00 PM             | 2                        | 5     | 1     | 0          | 2                        | 4     | 0     | 0         | 0                          | 4     | 1     | 0         | 1                          | 3     | 9     | 0                 | 110          |      |      |         |               |      |      |             |  |
| 04:25:00 PM             | 0                        | 8     | 2     | 0          | 7                        | 7     | 0     | 0         | 0                          | 2     | 1     | 0         | 2                          | 4     | 4     | 0                 | 105          |      |      |         |               |      |      |             |  |
| 04:30:00 PM             | 3                        | 0     | 1     | 0          | 3                        | 3     | 0     | 0         | 0                          | 2     | 1     | 0         | 6                          | 10    | 6     | 0                 | 104          |      |      |         |               |      |      |             |  |
| 04:35:00 PM             | 3                        | 8     | 2     | 0          | 5                        | 6     | 0     | 0         | 0                          | 5     | 1     | 0         | 4                          | 7     | 4     | 0                 | 117          |      |      |         |               |      |      |             |  |
| 04:40:00 PM             | 1                        | 7     | 3     | 0          | 8                        | 9     | 0     | 0         | 0                          | 5     | 2     | 0         | 2                          | 6     | 10    | 0                 | 133          |      |      |         |               |      |      |             |  |
| 04:45:00 PM             | 1                        | 4     | 5     | 0          | 2                        | 3     | 0     | 0         | 1                          | 4     | 0     | 0         | 2                          | 5     | 9     | 0                 | 134          |      |      |         |               |      |      |             |  |
| 04:50:00 PM             | 2                        | 7     | 2     | 0          | 4                        | 3     | 1     | 0         | 0                          | 6     | 1     | 0         | 3                          | 8     | 5     | 0                 | 131          |      |      |         |               |      |      |             |  |
| 04:55:00 PM             | 1                        | 3     | 1     | 0          | 5                        | 7     | 0     | 0         | 0                          | 5     | 3     | 0         | 4                          | 8     | 4     | 0                 | 119          | 479  |      |         |               |      |      |             |  |
| 05:00:00 PM             | 3                        | 4     | 1     | 0          | 0                        | 8     | 0     | 0         | 0                          | 4     | 0     | 0         | 4                          | 4     | 4     | 0                 | 115          | 481  |      |         |               |      |      |             |  |
| 05:05:00 PM             | 2                        | 1     | 1     | 0          | 2                        | 12    | 0     | 0         | 0                          | 5     | 0     | 0         | 2                          | 6     | 3     | 0                 | 107          | 465  |      |         |               |      |      |             |  |
| 05:10:00 PM             | 3                        | 5     | 2     | 0          | 3                        | 3     | 0     | 0         | 0                          | 4     | 0     | 0         | 1                          | 7     | 8     | 0                 | 102          | 459  |      |         |               |      |      |             |  |
| 05:15:00 PM             | 1                        | 2     | 1     | 0          | 2                        | 7     | 1     | 0         | 0                          | 4     | 1     | 0         | 5                          | 12    | 4     | 0                 | 110          | 463  |      |         |               |      |      |             |  |
| 05:20:00 PM             | 0                        | 2     | 1     | 0          | 1                        | 5     | 0     | 0         | 0                          | 2     | 1     | 0         | 0                          | 8     | 6     | 0                 | 102          | 457  |      |         |               |      |      |             |  |
| 05:25:00 PM             | 1                        | 5     | 1     | 0          | 2                        | 1     | 0     | 0         | 0                          | 5     | 1     | 0         | 1                          | 4     | 4     | 0                 | 91           | 445  |      |         |               |      |      |             |  |
| 05:30:00 PM             | 3                        | 4     | 0     | 0          | 4                        | 3     | 0     | 0         | 0                          | 2     | 0     | 0         | 1                          | 10    | 5     | 0                 | 83           | 442  |      |         |               |      |      |             |  |
| 05:35:00 PM             | 3                        | 5     | 1     | 0          | 3                        | 5     | 0     | 0         | 0                          | 3     | 0     | 0         | 2                          | 7     | 6     | 0                 | 92           | 432  |      |         |               |      |      |             |  |
| 05:40:00 PM             | 1                        | 3     | 3     | 0          | 3                        | 1     | 0     | 0         | 0                          | 5     | 0     | 0         | 2                          | 11    | 5     | 0                 | 101          | 413  |      |         |               |      |      |             |  |
| 05:45:00 PM             | 1                        | 3     | 3     | 0          | 1                        | 0     | 0     | 0         | 0                          | 3     | 1     | 0         | 1                          | 5     | 6     | 0                 | 93           | 401  |      |         |               |      |      |             |  |
| 05:50:00 PM             | 2                        | 11    | 2     | 0          | 1                        | 1     | 0     | 0         | 0                          | 3     | 0     | 0         | 3                          | 10    | 1     | 0                 | 92           | 393  |      |         |               |      |      |             |  |
| 05:55:00 PM             | 1                        | 8     | 1     | 0          | 2                        | 3     | 0     | 0         | 1                          | 3     | 2     | 0         | 1                          | 3     | 5     | 0                 | 88           | 382  |      |         |               |      |      |             |  |

| Data Provided by K-D-N.com 503-594-4224 |                         |
|-----------------------------------------|-------------------------|
| N/S street:                             | 97 SB Ramps             |
| E/W street:                             | NW 6th St               |
| City, State                             | Redmond OR              |
| Study ID #                              |                         |
| Location                                | 44.300677 - -121.172564 |
| Start Date                              | Thursday, July 01, 2021 |
| Start Time                              | 04:00:00 PM             |
| Peak Hour Start                         | 04:25:00 PM             |
| Peak 15 Min Start                       | 04:25:00 PM             |
| PHF (15-Min Int)                        | 0.90                    |

| Peak-Hour Volumes (PHV) |      |       |       |            |      |       |       |           |      |       |       |           |      |       |       |          |      |      |      |         |      |      |      |
|-------------------------|------|-------|-------|------------|------|-------|-------|-----------|------|-------|-------|-----------|------|-------|-------|----------|------|------|------|---------|------|------|------|
| Northbound              |      |       |       | Southbound |      |       |       | Eastbound |      |       |       | Westbound |      |       |       | Entering |      |      |      | Leaving |      |      |      |
| Left                    | Thru | Right | Uturn | Left       | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Left      | Thru | Right | Uturn | NB       | SB   | EB   | WB   | NB      | SB   | EB   | WB   |
| 0                       | 0    | 0     | 0     | 11         | 0    | 225   | 0     | 0         | 520  | 91    | 0     | 38        | 319  | 0     | 0     | 0        | 236  | 611  | 357  | 129     | 0    | 544  | 531  |
| Percent Heavy Vehicles  |      |       |       |            |      |       |       |           |      |       |       |           |      |       |       |          |      |      |      |         |      |      |      |
| 0.0%                    | 0.0% | 0.0%  | 0.0%  | 0.0%       | 0.0% | 2.2%  | 0.0%  | 0.0%      | 0.8% | 2.2%  | 0.0%  | 5.3%      | 1.6% | 0.0%  | 0.0%  | #DIV/0!  | 2.1% | 1.0% | 2.0% | 3.1%    | 0.0% | 1.8% | 0.8% |

| PHV- Bicycles |      |       |       |            |      |       |       |           |      |       |       |           |      |       |       | PHV - Pedestrians |    |    |    |    |     |
|---------------|------|-------|-------|------------|------|-------|-------|-----------|------|-------|-------|-----------|------|-------|-------|-------------------|----|----|----|----|-----|
| Northbound    |      |       |       | Southbound |      |       |       | Eastbound |      |       |       | Westbound |      |       |       | in Crosswalk      |    |    |    |    |     |
| Left          | Thru | Right | Uturn | Left       | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Sum               | NB | SB | EB | WB | Sum |
| 0             | 0    | 0     | 0     | 0          | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 0                 | 0  | 2  | 0  | 0  | 2   |

| All Vehicle Volumes |             |      |       |       |             |      |       |       |           |      |       |       |           |      |       |       |             |      |
|---------------------|-------------|------|-------|-------|-------------|------|-------|-------|-----------|------|-------|-------|-----------|------|-------|-------|-------------|------|
| Time                | Northbound  |      |       |       | Southbound  |      |       |       | Eastbound |      |       |       | Westbound |      |       |       | 15 Min 1 HR |      |
|                     | 97 SB Ramps |      |       |       | 97 SB Ramps |      |       |       | NW 6th St |      |       |       | NW 6th St |      |       |       | Sum         | Sum  |
|                     | Left        | Thru | Right | Uturn | Left        | Thru | Right | Uturn | Left      | Thru | Right | Uturn | Left      | Thru | Right | Uturn |             |      |
| 04:00:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 0         | 0    | 0     | 0     |             |      |
| 04:05:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 23    | 0     | 0         | 19   | 5     | 0     | 3         | 19   | 0     | 0     |             |      |
| 04:10:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 15    | 0     | 0         | 35   | 6     | 0     | 8         | 32   | 0     | 0     | 165         |      |
| 04:15:00 PM         | 0           | 0    | 0     | 0     | 2           | 0    | 21    | 0     | 0         | 33   | 5     | 0     | 4         | 25   | 0     | 0     | 255         |      |
| 04:20:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 12    | 0     | 0         | 46   | 5     | 0     | 5         | 23   | 0     | 0     | 278         |      |
| 04:25:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 28    | 0     | 0         | 50   | 7     | 0     | 4         | 30   | 0     | 0     | 301         |      |
| 04:30:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 18    | 0     | 0         | 47   | 7     | 0     | 2         | 26   | 0     | 0     | 311         |      |
| 04:35:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 21    | 0     | 0         | 47   | 9     | 0     | 6         | 30   | 0     | 0     | 333         |      |
| 04:40:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 24    | 0     | 0         | 38   | 3     | 0     | 1         | 22   | 0     | 0     | 302         |      |
| 04:45:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 13    | 0     | 0         | 38   | 9     | 0     | 5         | 32   | 0     | 0     | 300         |      |
| 04:50:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 20    | 0     | 0         | 48   | 6     | 0     | 3         | 20   | 0     | 0     | 284         |      |
| 04:55:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 16    | 0     | 0         | 27   | 6     | 0     | 2         | 25   | 0     | 0     | 272         | 1040 |
| 05:00:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 20    | 0     | 0         | 42   | 8     | 0     | 3         | 23   | 0     | 0     | 271         | 1137 |
| 05:05:00 PM         | 0           | 0    | 0     | 0     | 2           | 0    | 12    | 0     | 0         | 55   | 4     | 0     | 5         | 22   | 0     | 0     | 273         | 1168 |
| 05:10:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 21    | 0     | 0         | 46   | 9     | 0     | 2         | 21   | 0     | 0     | 297         | 1172 |
| 05:15:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 15    | 0     | 0         | 49   | 9     | 0     | 4         | 34   | 0     | 0     | 312         | 1194 |
| 05:20:00 PM         | 0           | 0    | 0     | 0     | 3           | 0    | 17    | 0     | 0         | 33   | 14    | 0     | 1         | 34   | 0     | 0     | 314         | 1204 |
| 05:25:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 18    | 0     | 0         | 45   | 6     | 0     | 6         | 29   | 0     | 0     | 319         | 1190 |
| 05:30:00 PM         | 0           | 0    | 0     | 0     | 2           | 0    | 19    | 0     | 0         | 45   | 7     | 0     | 10        | 20   | 0     | 0     | 310         | 1193 |
| 05:35:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 15    | 0     | 0         | 32   | 8     | 0     | 4         | 22   | 0     | 0     | 289         | 1160 |
| 05:40:00 PM         | 0           | 0    | 0     | 0     | 1           | 0    | 15    | 0     | 0         | 42   | 8     | 0     | 5         | 21   | 0     | 0     | 276         | 1164 |
| 05:45:00 PM         | 0           | 0    | 0     | 0     | 2           | 0    | 16    | 0     | 0         | 25   | 11    | 0     | 4         | 23   | 0     | 0     | 254         | 1147 |
| 05:50:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 12    | 0     | 0         | 30   | 3     | 0     | 3         | 22   | 0     | 0     | 243         | 1119 |
| 05:55:00 PM         | 0           | 0    | 0     | 0     | 0           | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 0         | 0    | 0     | 0     | 151         | 1043 |

| Bicycles on Road |            |  |  |  |            |  |  |  |           |  |  |  |           |  |  |  |  |
|------------------|------------|--|--|--|------------|--|--|--|-----------|--|--|--|-----------|--|--|--|--|
|                  | Northbound |  |  |  | Southbound |  |  |  | Eastbound |  |  |  | Westbound |  |  |  |  |

| Time                                | 97 SB Ramps               |      |       |       | 97 SB Ramps               |      |       |       | NW 6th St              |      |       |       | NW 6th St              |      |       |       | 15 Min | 1 HR |
|-------------------------------------|---------------------------|------|-------|-------|---------------------------|------|-------|-------|------------------------|------|-------|-------|------------------------|------|-------|-------|--------|------|
|                                     | Left                      | Thru | Right | Uturn | Left                      | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Sum    | Sum  |
| 04:00:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     |        |      |
| 04:05:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     |        |      |
| 04:10:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 0                      | 0    | 0     | 0     | 1      |      |
| 04:15:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 1      |      |
| 04:20:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 1      |      |
| 04:25:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:30:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:35:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:40:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:45:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:50:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      |      |
| 04:55:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 1    |
| 05:00:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 1    |
| 05:05:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 1    |
| 05:10:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:15:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:20:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:25:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:30:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:35:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:40:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:45:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:50:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| 05:55:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0      | 0    |
| Passenger vehicles and light trucks |                           |      |       |       |                           |      |       |       |                        |      |       |       |                        |      |       |       |        |      |
| Time                                | Northbound<br>97 SB Ramps |      |       |       | Southbound<br>97 SB Ramps |      |       |       | Eastbound<br>NW 6th St |      |       |       | Westbound<br>NW 6th St |      |       |       | 15 Min | 1 HR |
|                                     | Left                      | Thru | Right | Uturn | Left                      | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Sum    | Sum  |
| 04:00:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     |        |      |
| 04:05:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 23    | 0     | 0                      | 19   | 5     | 0     | 3                      | 19   | 0     | 0     |        |      |
| 04:10:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 15    | 0     | 0                      | 34   | 6     | 0     | 7                      | 31   | 0     | 0     | 162    |      |
| 04:15:00 PM                         | 0                         | 0    | 0     | 0     | 2                         | 0    | 20    | 0     | 0                      | 32   | 5     | 0     | 4                      | 23   | 0     | 0     | 248    |      |
| 04:20:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 12    | 0     | 0                      | 44   | 4     | 0     | 5                      | 23   | 0     | 0     | 268    |      |
| 04:25:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 28    | 0     | 0                      | 49   | 7     | 0     | 4                      | 30   | 0     | 0     | 293    |      |
| 04:30:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 17    | 0     | 0                      | 47   | 7     | 0     | 2                      | 25   | 0     | 0     | 305    |      |
| 04:35:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 21    | 0     | 0                      | 47   | 9     | 0     | 5                      | 29   | 0     | 0     | 328    |      |
| 04:40:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 22    | 0     | 0                      | 37   | 3     | 0     | 1                      | 22   | 0     | 0     | 295    |      |
| 04:45:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 13    | 0     | 0                      | 37   | 9     | 0     | 5                      | 32   | 0     | 0     | 294    |      |
| 04:50:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 20    | 0     | 0                      | 48   | 6     | 0     | 3                      | 20   | 0     | 0     | 280    |      |
| 04:55:00 PM                         | 0                         | 0    | 0     | 0     | 0                         | 0    | 16    | 0     | 0                      | 27   | 6     | 0     | 1                      | 24   | 0     | 0     | 269    | 1019 |
| 05:00:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 20    | 0     | 0                      | 42   | 8     | 0     | 3                      | 22   | 0     | 0     | 268    | 1115 |
| 05:05:00 PM                         | 0                         | 0    | 0     | 0     | 2                         | 0    | 12    | 0     | 0                      | 55   | 4     | 0     | 5                      | 21   | 0     | 0     | 269    | 1145 |
| 05:10:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 20    | 0     | 0                      | 45   | 8     | 0     | 2                      | 21   | 0     | 0     | 292    | 1149 |
| 05:15:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 15    | 0     | 0                      | 49   | 9     | 0     | 4                      | 34   | 0     | 0     | 308    | 1175 |
| 05:20:00 PM                         | 0                         | 0    | 0     | 0     | 3                         | 0    | 16    | 0     | 0                      | 33   | 13    | 0     | 1                      | 34   | 0     | 0     | 309    | 1186 |
| 05:25:00 PM                         | 0                         | 0    | 0     | 0     | 1                         | 0    | 18    | 0     | 0                      | 45   | 6     | 0     | 6                      | 29   | 0     | 0     | 317    | 1173 |



|             |   |   |   |   |   |   |    |   |   |    |    |   |    |    |   |   |     |      |
|-------------|---|---|---|---|---|---|----|---|---|----|----|---|----|----|---|---|-----|------|
| 05:30:00 PM | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 0 | 0 | 45 | 7  | 0 | 10 | 20 | 0 | 0 | 306 | 1176 |
| 05:35:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 32 | 8  | 0 | 3  | 21 | 0 | 0 | 285 | 1143 |
| 05:40:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 0 | 0 | 42 | 7  | 0 | 5  | 21 | 0 | 0 | 271 | 1149 |
| 05:45:00 PM | 0 | 0 | 0 | 0 | 1 | 0 | 16 | 0 | 0 | 25 | 11 | 0 | 4  | 23 | 0 | 0 | 250 | 1132 |
| 05:50:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 30 | 3  | 0 | 3  | 21 | 0 | 0 | 238 | 1101 |
| 05:55:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0  | 0  | 0 | 0  | 0  | 0 | 0 | 147 | 1027 |

FHWA 4-13 -Truck/Multi-Unit/Heavy Trucks

| Time        | Northbound<br>97 SB Ramps |      |       |       | Southbound<br>97 SB Ramps |      |       |       | Eastbound<br>NW 6th St |      |       |       | Westbound<br>NW 6th St |      |       |       | 15 Min 1 HR |     |
|-------------|---------------------------|------|-------|-------|---------------------------|------|-------|-------|------------------------|------|-------|-------|------------------------|------|-------|-------|-------------|-----|
|             | Left                      | Thru | Right | Uturn | Left                      | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Left                   | Thru | Right | Uturn | Sum         | Sum |
|             |                           |      |       |       |                           |      |       |       |                        |      |       |       |                        |      |       |       |             |     |
| 04:00:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     |             |     |
| 04:05:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     |             |     |
| 04:10:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 1                      | 1    | 0     | 0     | 3           |     |
| 04:15:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 1     | 0     | 0                      | 1    | 0     | 0     | 0                      | 2    | 0     | 0     | 7           |     |
| 04:20:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 2    | 1     | 0     | 0                      | 0    | 0     | 0     | 10          |     |
| 04:25:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 0                      | 0    | 0     | 0     | 8           |     |
| 04:30:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 1     | 0     | 0                      | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 6           |     |
| 04:35:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 1                      | 1    | 0     | 0     | 5           |     |
| 04:40:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 2     | 0     | 0                      | 1    | 0     | 0     | 0                      | 0    | 0     | 0     | 7           |     |
| 04:45:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 0                      | 0    | 0     | 0     | 6           |     |
| 04:50:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 4           |     |
| 04:55:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 1                      | 1    | 0     | 0     | 3           | 21  |
| 05:00:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 3           | 22  |
| 05:05:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 4           | 23  |
| 05:10:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 1     | 0     | 0                      | 1    | 1     | 0     | 0                      | 0    | 0     | 0     | 5           | 23  |
| 05:15:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 4           | 19  |
| 05:20:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 1     | 0     | 0                      | 0    | 1     | 0     | 0                      | 0    | 0     | 0     | 5           | 18  |
| 05:25:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 2           | 17  |
| 05:30:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 2     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 4           | 17  |
| 05:35:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 1                      | 1    | 0     | 0     | 4           | 17  |
| 05:40:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 1     | 0     | 0                      | 0    | 0     | 0     | 5           | 15  |
| 05:45:00 PM | 0                         | 0    | 0     | 0     | 1                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 4           | 15  |
| 05:50:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 2     | 0     | 0                      | 0    | 0     | 0     | 0                      | 1    | 0     | 0     | 5           | 18  |
| 05:55:00 PM | 0                         | 0    | 0     | 0     | 0                         | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 0                      | 0    | 0     | 0     | 4           | 16  |

| Pedestrians Crossing |    |    |    |    | 15 Min | 1 HR |
|----------------------|----|----|----|----|--------|------|
| Time                 | NB | SB | EB | WB | Sum    | Sum  |
| 04:00:00 PM          | 0  | 0  | 0  | 0  |        |      |
| 04:05:00 PM          | 0  | 0  | 0  | 0  |        |      |
| 04:10:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:15:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:20:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:25:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:30:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:35:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:40:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:45:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:50:00 PM          | 0  | 0  | 0  | 0  | 0      |      |
| 04:55:00 PM          | 0  | 0  | 0  | 0  | 0      | 0    |



KEY DATA NETWORK

|             |   |   |   |   |   |   |
|-------------|---|---|---|---|---|---|
| 05:00:00 PM | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:05:00 PM | 0 | 2 | 0 | 0 | 2 | 2 |
| 05:10:00 PM | 0 | 0 | 0 | 0 | 2 | 2 |
| 05:15:00 PM | 0 | 0 | 0 | 0 | 2 | 2 |
| 05:20:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:25:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:30:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:35:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:40:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:45:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:50:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |
| 05:55:00 PM | 0 | 0 | 0 | 0 | 0 | 2 |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 4.4    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR  | SBL    | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |      |        |  |      |        |  |      |        |  |      |
| Traffic Vol, veh/h       | 0      | 39                                                                                | 10   | 18     | 42                                                                                | 0    | 52     | 0                                                                                 | 13   | 0      | 0                                                                                   | 0    |
| Future Vol, veh/h        | 0      | 39                                                                                | 10   | 18     | 42                                                                                | 0    | 52     | 0                                                                                 | 13   | 0      | 0                                                                                   | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                   | 0    |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop | Stop   | Stop                                                                                | Stop |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                   | -    |
| Peak Hour Factor         | 79     | 79                                                                                | 79   | 79     | 79                                                                                | 79   | 79     | 79                                                                                | 79   | 79     | 79                                                                                  | 79   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 0    | 0      | 2                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                   | 0    |
| Mvmt Flow                | 0      | 49                                                                                | 13   | 23     | 53                                                                                | 0    | 66     | 0                                                                                 | 16   | 0      | 0                                                                                   | 0    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |      | Minor2 |                                                                                     |      |
| Conflicting Flow All     | 53     | 0                                                                                 | 0    | 62     | 0                                                                                 | 0    | 155    | 155                                                                               | 56   | 163    | 161                                                                                 | 53   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 56     | 56                                                                                | -    | 99     | 99                                                                                  | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 99     | 99                                                                                | -    | 64     | 62                                                                                  | -    |
| Critical Hdwy            | 4.1    | -                                                                                 | -    | 4.1    | -                                                                                 | -    | 7.1    | 6.5                                                                               | 6.2  | 7.1    | 6.5                                                                                 | 6.2  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.5                                                                               | -    | 6.1    | 5.5                                                                                 | -    |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.5                                                                               | -    | 6.1    | 5.5                                                                                 | -    |
| Follow-up Hdwy           | 2.2    | -                                                                                 | -    | 2.2    | -                                                                                 | -    | 3.5    | 4                                                                                 | 3.3  | 3.5    | 4                                                                                   | 3.3  |
| Pot Cap-1 Maneuver       | 1566   | -                                                                                 | -    | 1554   | -                                                                                 | -    | 816    | 741                                                                               | 1016 | 806    | 735                                                                                 | 1020 |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 961    | 852                                                                               | -    | 912    | 817                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 912    | 817                                                                               | -    | 952    | 847                                                                                 | -    |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |      |        |                                                                                     |      |
| Mov Cap-1 Maneuver       | 1566   | -                                                                                 | -    | 1554   | -                                                                                 | -    | 807    | 730                                                                               | 1016 | 784    | 724                                                                                 | 1020 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 807    | 730                                                                               | -    | 784    | 724                                                                                 | -    |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 961    | 852                                                                               | -    | 912    | 805                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 898    | 805                                                                               | -    | 937    | 847                                                                                 | -    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |      | SB     |                                                                                     |      |
| HCM Control Delay, s     | 0      |                                                                                   |      | 2.2    |                                                                                   |      | 9.7    |                                                                                   |      | 0      |                                                                                     |      |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | A      |                                                                                   |      | A      |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |      |        |                                                                                     |      |
| Capacity (veh/h)         | 842    | 1566                                                                              | -    | -      | 1554                                                                              | -    | -      | -                                                                                 |      |        |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.098  | -                                                                                 | -    | -      | 0.015                                                                             | -    | -      | -                                                                                 |      |        |                                                                                     |      |
| HCM Control Delay (s)    | 9.7    | 0                                                                                 | -    | -      | 7.4                                                                               | 0    | -      | 0                                                                                 |      |        |                                                                                     |      |
| HCM Lane LOS             | A      | A                                                                                 | -    | -      | A                                                                                 | A    | -      | A                                                                                 |      |        |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.3    | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | -                                                                                 |      |        |                                                                                     |      |

| Intersection             |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.3                                                                               |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR    | WBL   | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |        |       |  |       |  |  |      |      |  |      |
| Traffic Vol, veh/h       | 9                                                                                 | 0                                                                                 | 7      | 10    | 0                                                                                 | 4     | 28                                                                                | 48                                                                                | 11   | 2    | 21                                                                                  | 12   |
| Future Vol, veh/h        | 9                                                                                 | 0                                                                                 | 7      | 10    | 0                                                                                 | 4     | 28                                                                                | 48                                                                                | 11   | 2    | 21                                                                                  | 12   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop   | Stop  | Stop                                                                              | Stop  | Free                                                                              | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -                                                                                 | -                                                                                 | None   | -     | -                                                                                 | None  | -                                                                                 | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 55                                                                                | -                                                                                 | -      | -     | -                                                                                 | -     | 75                                                                                | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -     | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -     | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76                                                                                | 76                                                                                | 76     | 76    | 76                                                                                | 76    | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 8    |
| Mvmt Flow                | 12                                                                                | 0                                                                                 | 9      | 13    | 0                                                                                 | 5     | 37                                                                                | 63                                                                                | 14   | 3    | 28                                                                                  | 16   |
| Major/Minor              | Minor2                                                                            |                                                                                   | Minor1 |       | Major1                                                                            |       | Major2                                                                            |                                                                                   |      |      |                                                                                     |      |
| Conflicting Flow All     | 189                                                                               | 193                                                                               | 36     | 191   | 194                                                                               | 70    | 44                                                                                | 0                                                                                 | 0    | 77   | 0                                                                                   | 0    |
| Stage 1                  | 42                                                                                | 42                                                                                | -      | 144   | 144                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 147                                                                               | 151                                                                               | -      | 47    | 50                                                                                | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy            | 7.1                                                                               | 6.5                                                                               | 6.2    | 7.1   | 6.5                                                                               | 6.2   | 4.1                                                                               | -                                                                                 | -    | 4.1  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.1                                                                               | 5.5                                                                               | -      | 6.1   | 5.5                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.1                                                                               | 5.5                                                                               | -      | 6.1   | 5.5                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Follow-up Hdwy           | 3.5                                                                               | 4                                                                                 | 3.3    | 3.5   | 4                                                                                 | 3.3   | 2.2                                                                               | -                                                                                 | -    | 2.2  | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 776                                                                               | 706                                                                               | 1042   | 773   | 705                                                                               | 998   | 1577                                                                              | -                                                                                 | -    | 1535 | -                                                                                   | -    |
| Stage 1                  | 978                                                                               | 864                                                                               | -      | 864   | 782                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 860                                                                               | 776                                                                               | -      | 972   | 857                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Platoon blocked, %       |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   | -                                                                                 | -    | -    | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 757                                                                               | 688                                                                               | 1042   | 751   | 687                                                                               | 998   | 1577                                                                              | -                                                                                 | -    | 1535 | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 757                                                                               | 688                                                                               | -      | 751   | 687                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 1                  | 956                                                                               | 862                                                                               | -      | 844   | 764                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 835                                                                               | 758                                                                               | -      | 961   | 855                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Approach                 | EB                                                                                |                                                                                   | WB     |       | NB                                                                                |       | SB                                                                                |                                                                                   |      |      |                                                                                     |      |
| HCM Control Delay, s     | 9.2                                                                               |                                                                                   | 9.6    |       | 2.4                                                                               |       | 0.4                                                                               |                                                                                   |      |      |                                                                                     |      |
| HCM LOS                  | A                                                                                 |                                                                                   | A      |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT                                                                               | NBR    | EBLn1 | EBLn2                                                                             | WBLn1 | SBL                                                                               | SBT                                                                               | SBR  |      |                                                                                     |      |
| Capacity (veh/h)         | 1577                                                                              | -                                                                                 | -      | 757   | 1042                                                                              | 808   | 1535                                                                              | -                                                                                 | -    |      |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.023                                                                             | -                                                                                 | -      | 0.016 | 0.009                                                                             | 0.023 | 0.002                                                                             | -                                                                                 | -    |      |                                                                                     |      |
| HCM Control Delay (s)    | 7.3                                                                               | -                                                                                 | -      | 9.8   | 8.5                                                                               | 9.6   | 7.3                                                                               | 0                                                                                 | -    |      |                                                                                     |      |
| HCM Lane LOS             | A                                                                                 | -                                                                                 | -      | A     | A                                                                                 | A     | A                                                                                 | A                                                                                 | -    |      |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.1                                                                               | -                                                                                 | -      | 0     | 0                                                                                 | 0.1   | 0                                                                                 | -                                                                                 | -    |      |                                                                                     |      |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 8.5 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h  | 1    | 56   | 15   | 43   | 72   | 95   | 14   | 37   | 25   | 44   | 37   | 2    |
| Future Vol, veh/h   | 1    | 56   | 15   | 43   | 72   | 95   | 14   | 37   | 25   | 44   | 37   | 2    |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 0    | 0    |
| Mvmt Flow           | 1    | 64   | 17   | 49   | 82   | 108  | 16   | 42   | 28   | 50   | 42   | 2    |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB | WB  | NB  | SB  |
|----------------------------|----|-----|-----|-----|
| Opposing Approach          | WB | EB  | SB  | NB  |
| Opposing Lanes             | 1  | 1   | 1   | 1   |
| Conflicting Approach Left  | SB | NB  | EB  | WB  |
| Conflicting Lanes Left     | 1  | 1   | 1   | 1   |
| Conflicting Approach Right | NB | SB  | WB  | EB  |
| Conflicting Lanes Right    | 1  | 1   | 1   | 1   |
| HCM Control Delay          | 8  | 8.8 | 8.2 | 8.6 |
| HCM LOS                    | A  | A   | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 18%   | 1%    | 20%   | 53%   |
| Vol Thru, %            | 49%   | 78%   | 34%   | 45%   |
| Vol Right, %           | 33%   | 21%   | 45%   | 2%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 76    | 72    | 210   | 83    |
| LT Vol                 | 14    | 1     | 43    | 44    |
| Through Vol            | 37    | 56    | 72    | 37    |
| RT Vol                 | 25    | 15    | 95    | 2     |
| Lane Flow Rate         | 86    | 82    | 239   | 94    |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.109 | 0.102 | 0.278 | 0.128 |
| Departure Headway (Hd) | 4.561 | 4.468 | 4.198 | 4.882 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 785   | 802   | 857   | 734   |
| Service Time           | 2.595 | 2.496 | 2.22  | 2.915 |
| HCM Lane V/C Ratio     | 0.11  | 0.102 | 0.279 | 0.128 |
| HCM Control Delay      | 8.2   | 8     | 8.8   | 8.6   |
| HCM Lane LOS           | A     | A     | A     | A     |
| HCM 95th-tile Q        | 0.4   | 0.3   | 1.1   | 0.4   |



Queues  
5: NW 6th St & NW Quince Ave

Canyon Trails  
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| Lane Group              | EBL  | EBT  | WBL  | WBT  | NBL  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 72   | 117  | 89   | 151  | 156  | 463  | 92   | 76   | 492  |
| v/c Ratio               | 0.28 | 0.28 | 0.33 | 0.34 | 0.26 | 0.26 | 0.11 | 0.14 | 0.33 |
| Control Delay           | 18.0 | 7.5  | 18.6 | 7.8  | 6.2  | 10.4 | 2.4  | 5.9  | 11.3 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 18.0 | 7.5  | 18.6 | 7.8  | 6.2  | 10.4 | 2.4  | 5.9  | 11.3 |
| Queue Length 50th (ft)  | 14   | 4    | 18   | 5    | 14   | 44   | 0    | 7    | 43   |
| Queue Length 95th (ft)  | 44   | 35   | 52   | 41   | 40   | 83   | 16   | 22   | 83   |
| Internal Link Dist (ft) | 1251 |      | 707  |      | 1308 |      | 912  |      |      |
| Turn Bay Length (ft)    | 100  |      | 300  |      | 150  |      | 350  | 385  |      |
| Base Capacity (vph)     | 589  | 847  | 627  | 855  | 603  | 2119 | 984  | 526  | 2004 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.12 | 0.14 | 0.14 | 0.18 | 0.26 | 0.22 | 0.09 | 0.14 | 0.25 |
| Intersection Summary    |      |      |      |      |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 67                                                                                | 19                                                                                | 90                                                                                | 83                                                                                | 26                                                                                | 114                                                                               | 145                                                                                 | 431                                                                                 | 86                                                                                  | 71                                                                                  | 360                                                                                 | 98                                                                                  |
| Future Volume (vph)               | 67                                                                                | 19                                                                                | 90                                                                                | 83                                                                                | 26                                                                                | 114                                                                               | 145                                                                                 | 431                                                                                 | 86                                                                                  | 71                                                                                  | 360                                                                                 | 98                                                                                  |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.98                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 0.88                                                                              |                                                                                   | 1.00                                                                              | 0.88                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 0.97                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1749                                                                              | 1646                                                                              |                                                                                   | 1804                                                                              | 1635                                                                              |                                                                                   | 1805                                                                                | 3574                                                                                | 1579                                                                                | 1702                                                                                | 3467                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.68                                                                              | 1.00                                                                              |                                                                                   | 0.42                                                                                | 1.00                                                                                | 1.00                                                                                | 0.49                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1217                                                                              | 1646                                                                              |                                                                                   | 1295                                                                              | 1635                                                                              |                                                                                   | 800                                                                                 | 3574                                                                                | 1579                                                                                | 870                                                                                 | 3467                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 72                                                                                | 20                                                                                | 97                                                                                | 89                                                                                | 28                                                                                | 123                                                                               | 156                                                                                 | 463                                                                                 | 92                                                                                  | 76                                                                                  | 387                                                                                 | 105                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 82                                                                                | 0                                                                                 | 0                                                                                 | 104                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 53                                                                                  | 0                                                                                   | 38                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 72                                                                                | 35                                                                                | 0                                                                                 | 89                                                                                | 47                                                                                | 0                                                                                 | 156                                                                                 | 463                                                                                 | 39                                                                                  | 76                                                                                  | 454                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 3                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 3                                                                                 |                                                                                     |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 3%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 6%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Turn Type                         | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 6.8                                                                               | 6.8                                                                               |                                                                                   | 6.8                                                                               | 6.8                                                                               |                                                                                   | 23.2                                                                                | 18.5                                                                                | 18.5                                                                                | 19.2                                                                                | 16.5                                                                                |                                                                                     |
| Effective Green, g (s)            | 6.8                                                                               | 6.8                                                                               |                                                                                   | 6.8                                                                               | 6.8                                                                               |                                                                                   | 23.2                                                                                | 18.5                                                                                | 18.5                                                                                | 19.2                                                                                | 16.5                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.16                                                                              | 0.16                                                                              |                                                                                   | 0.16                                                                              | 0.16                                                                              |                                                                                   | 0.53                                                                                | 0.43                                                                                | 0.43                                                                                | 0.44                                                                                | 0.38                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 190                                                                               | 257                                                                               |                                                                                   | 202                                                                               | 256                                                                               |                                                                                   | 536                                                                                 | 1523                                                                                | 673                                                                                 | 436                                                                                 | 1318                                                                                |                                                                                     |
| v/s Ratio Prot                    |                                                                                   | 0.02                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   | c0.03                                                                               | 0.13                                                                                |                                                                                     | 0.01                                                                                | c0.13                                                                               |                                                                                     |
| v/s Ratio Perm                    | 0.06                                                                              |                                                                                   |                                                                                   | c0.07                                                                             |                                                                                   |                                                                                   | 0.12                                                                                |                                                                                     | 0.02                                                                                | 0.07                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.38                                                                              | 0.14                                                                              |                                                                                   | 0.44                                                                              | 0.18                                                                              |                                                                                   | 0.29                                                                                | 0.30                                                                                | 0.06                                                                                | 0.17                                                                                | 0.34                                                                                |                                                                                     |
| Uniform Delay, d1                 | 16.4                                                                              | 15.8                                                                              |                                                                                   | 16.6                                                                              | 15.9                                                                              |                                                                                   | 5.2                                                                                 | 8.2                                                                                 | 7.3                                                                                 | 7.1                                                                                 | 9.6                                                                                 |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 1.3                                                                               | 0.2                                                                               |                                                                                   | 1.5                                                                               | 0.3                                                                               |                                                                                   | 0.3                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 |                                                                                     |
| Delay (s)                         | 17.7                                                                              | 16.0                                                                              |                                                                                   | 18.1                                                                              | 16.2                                                                              |                                                                                   | 5.5                                                                                 | 8.3                                                                                 | 7.4                                                                                 | 7.3                                                                                 | 9.8                                                                                 |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 16.6                                                                              |                                                                                   |                                                                                   | 16.9                                                                              |                                                                                   |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     | 9.4                                                                                 |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.36                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 43.4                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 50.7%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

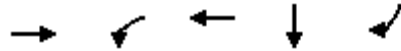
|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 67                                                                                | 19                                                                                | 90                                                                                | 83                                                                                | 26                                                                                | 114                                                                               | 145                                                                                 | 431                                                                                 | 86                                                                                  | 71                                                                                  | 360                                                                                 | 98                                                                                  |
| Future Volume (veh/h)        | 67                                                                                | 19                                                                                | 90                                                                                | 83                                                                                | 26                                                                                | 114                                                                               | 145                                                                                 | 431                                                                                 | 86                                                                                  | 71                                                                                  | 360                                                                                 | 98                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1885                                                                              | 1900                                                                                | 1885                                                                                | 1900                                                                                | 1811                                                                                | 1885                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 72                                                                                | 20                                                                                | 97                                                                                | 89                                                                                | 28                                                                                | 123                                                                               | 156                                                                                 | 463                                                                                 | 92                                                                                  | 76                                                                                  | 387                                                                                 | 105                                                                                 |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 6                                                                                   | 1                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 363                                                                               | 60                                                                                | 291                                                                               | 396                                                                               | 65                                                                                | 286                                                                               | 516                                                                                 | 1028                                                                                | 461                                                                                 | 476                                                                                 | 701                                                                                 | 188                                                                                 |
| Arrive On Green              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.21                                                                              | 0.11                                                                                | 0.29                                                                                | 0.29                                                                                | 0.07                                                                                | 0.25                                                                                | 0.25                                                                                |
| Sat Flow, veh/h              | 1223                                                                              | 282                                                                               | 1366                                                                              | 1291                                                                              | 306                                                                               | 1345                                                                              | 1810                                                                                | 3582                                                                                | 1605                                                                                | 1725                                                                                | 2790                                                                                | 748                                                                                 |
| Grp Volume(v), veh/h         | 72                                                                                | 0                                                                                 | 117                                                                               | 89                                                                                | 0                                                                                 | 151                                                                               | 156                                                                                 | 463                                                                                 | 92                                                                                  | 76                                                                                  | 247                                                                                 | 245                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1223                                                                              | 0                                                                                 | 1647                                                                              | 1291                                                                              | 0                                                                                 | 1651                                                                              | 1810                                                                                | 1791                                                                                | 1605                                                                                | 1725                                                                                | 1791                                                                                | 1747                                                                                |
| Q Serve(g_s), s              | 2.0                                                                               | 0.0                                                                               | 2.2                                                                               | 2.3                                                                               | 0.0                                                                               | 2.9                                                                               | 2.2                                                                                 | 3.8                                                                                 | 1.6                                                                                 | 1.1                                                                                 | 4.3                                                                                 | 4.4                                                                                 |
| Cycle Q Clear(g_c), s        | 4.8                                                                               | 0.0                                                                               | 2.2                                                                               | 4.4                                                                               | 0.0                                                                               | 2.9                                                                               | 2.2                                                                                 | 3.8                                                                                 | 1.6                                                                                 | 1.1                                                                                 | 4.3                                                                                 | 4.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.83                                                                              | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.43                                                                                |
| Lane Grp Cap(c), veh/h       | 363                                                                               | 0                                                                                 | 351                                                                               | 396                                                                               | 0                                                                                 | 351                                                                               | 516                                                                                 | 1028                                                                                | 461                                                                                 | 476                                                                                 | 450                                                                                 | 439                                                                                 |
| V/C Ratio(X)                 | 0.20                                                                              | 0.00                                                                              | 0.33                                                                              | 0.22                                                                              | 0.00                                                                              | 0.43                                                                              | 0.30                                                                                | 0.45                                                                                | 0.20                                                                                | 0.16                                                                                | 0.55                                                                                | 0.56                                                                                |
| Avail Cap(c_a), veh/h        | 729                                                                               | 0                                                                                 | 844                                                                               | 783                                                                               | 0                                                                                 | 845                                                                               | 633                                                                                 | 2082                                                                                | 933                                                                                 | 592                                                                                 | 982                                                                                 | 957                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.4                                                                              | 0.0                                                                               | 12.0                                                                              | 13.9                                                                              | 0.0                                                                               | 12.3                                                                              | 8.4                                                                                 | 10.5                                                                                | 9.7                                                                                 | 8.7                                                                                 | 11.7                                                                                | 11.8                                                                                |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 0.0                                                                               | 0.6                                                                               | 0.3                                                                               | 0.0                                                                               | 0.8                                                                               | 0.3                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 1.0                                                                                 | 1.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 0.0                                                                               | 0.7                                                                               | 0.6                                                                               | 0.0                                                                               | 0.9                                                                               | 0.6                                                                                 | 1.2                                                                                 | 0.4                                                                                 | 0.3                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 14.7                                                                              | 0.0                                                                               | 12.6                                                                              | 14.2                                                                              | 0.0                                                                               | 13.1                                                                              | 8.7                                                                                 | 10.9                                                                                | 10.0                                                                                | 8.9                                                                                 | 12.8                                                                                | 12.9                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | A                                                                                   | B                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 189                                                                               |                                                                                   |                                                                                   | 240                                                                               |                                                                                   |                                                                                     | 711                                                                                 |                                                                                     |                                                                                     | 568                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 13.4                                                                              |                                                                                   |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                     | 10.3                                                                                |                                                                                     |                                                                                     | 12.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.4                                                                               | 16.1                                                                              |                                                                                   | 11.7                                                                              | 9.7                                                                               | 14.8                                                                              |                                                                                     | 11.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | 5.7                                                                               |                                                                                   | 4.0                                                                               | 5.7                                                                               | 5.7                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 21.0                                                                              |                                                                                   | 18.5                                                                              | 6.3                                                                               | 19.8                                                                              |                                                                                     | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.1                                                                               | 5.8                                                                               |                                                                                   | 6.8                                                                               | 4.2                                                                               | 6.4                                                                               |                                                                                     | 6.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               |                                                                                   | 0.6                                                                               | 0.1                                                                               | 2.5                                                                               |                                                                                     | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## 6: US 97 SB Ramp &amp; NW 6th St

Canyon Trails

07/14/2021



| Lane Group              | EBT  | WBL  | WBT  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 679  | 42   | 354  | 12   | 250  |
| v/c Ratio               | 0.45 | 0.10 | 0.38 | 0.04 | 0.52 |
| Control Delay           | 9.1  | 4.5  | 6.2  | 14.5 | 7.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.1  | 4.5  | 6.2  | 14.5 | 7.3  |
| Queue Length 50th (ft)  | 25   | 3    | 27   | 1    | 0    |
| Queue Length 95th (ft)  | 113  | 13   | 83   | 13   | 44   |
| Internal Link Dist (ft) | 912  |      | 627  | 485  |      |
| Turn Bay Length (ft)    |      | 240  |      |      | 400  |
| Base Capacity (vph)     | 1872 | 439  | 1389 | 1030 | 998  |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.36 | 0.10 | 0.25 | 0.01 | 0.25 |
| Intersection Summary    |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 520                                                                               | 91                                                                                | 38                                                                                | 319                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 225                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 520                                                                               | 91                                                                                | 38                                                                                | 319                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 225                                                                                 |
| Ideal Flow (vphpl)                | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                               | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                |
| Total Lost time (s)               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Lane Util. Factor                 |                                                                                   | 0.95                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Flpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.98                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 3203                                                                              |                                                                                   | 1583                                                                              | 1716                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Flt Permitted                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.29                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 3203                                                                              |                                                                                   | 487                                                                               | 1716                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 578                                                                               | 101                                                                               | 42                                                                                | 354                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 250                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 20                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 204                                                                                 |
| Lane Group Flow (vph)             | 0                                                                                 | 659                                                                               | 0                                                                                 | 42                                                                                | 354                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 46                                                                                  |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 0%                                                                                | 1%                                                                                | 2%                                                                                | 5%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                 | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Turn Type                         |                                                                                   | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             |                                                                                   | 17.1                                                                              |                                                                                   | 23.3                                                                              | 23.3                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 7.2                                                                                 | 7.2                                                                                 |
| Effective Green, g (s)            |                                                                                   | 17.1                                                                              |                                                                                   | 23.3                                                                              | 23.3                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 7.2                                                                                 | 7.2                                                                                 |
| Actuated g/C Ratio                |                                                                                   | 0.43                                                                              |                                                                                   | 0.59                                                                              | 0.59                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.18                                                                                | 0.18                                                                                |
| Clearance Time (s)                |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 1386                                                                              |                                                                                   | 334                                                                               | 1012                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 302                                                                                 | 265                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.21                                                                             |                                                                                   | 0.01                                                                              | c0.21                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.01                                                                                | c0.03                                                                               |
| v/c Ratio                         |                                                                                   | 0.48                                                                              |                                                                                   | 0.13                                                                              | 0.35                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.04                                                                                | 0.17                                                                                |
| Uniform Delay, d1                 |                                                                                   | 8.0                                                                               |                                                                                   | 3.8                                                                               | 4.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 13.3                                                                                | 13.6                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 0.3                                                                               |                                                                                   | 0.2                                                                               | 0.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.1                                                                                 | 0.3                                                                                 |
| Delay (s)                         |                                                                                   | 8.3                                                                               |                                                                                   | 4.0                                                                               | 4.4                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 13.4                                                                                | 13.9                                                                                |
| Level of Service                  |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 8.3                                                                               |                                                                                   |                                                                                   | 4.4                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 13.9                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 8.2                                                                               |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.41                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 39.5                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

c Critical Lane Group



# HCM 6th Signalized Intersection Summary

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                              |  |      |      |      |      |      |     |      |     |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|-----|------|-----|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL | NBT  | NBR | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↑↑   |      | ↑    | ↑    |      |     |      |     |      | ↑    | ↑    |
| Traffic Volume (veh/h)       | 0                                                                                  | 520  | 91   | 38   | 319  | 0    | 0   | 0    | 0   | 11   | 0    | 225  |
| Future Volume (veh/h)        | 0                                                                                  | 520  | 91   | 38   | 319  | 0    | 0   | 0    | 0   | 11   | 0    | 225  |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    |     |      |     | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 |     |      |     | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    | No   |      |      | No   |      |     |      |     |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1736 | 1723 | 1682 | 1723 | 0    |     |      |     | 1750 | 1750 | 1723 |
| Adj Flow Rate, veh/h         | 0                                                                                  | 578  | 101  | 42   | 354  | 0    |     |      |     | 12   | 0    | 250  |
| Peak Hour Factor             | 0.90                                                                               | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |     |      |     | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, %         | 0                                                                                  | 1    | 2    | 5    | 2    | 0    |     |      |     | 0    | 0    | 2    |
| Cap, veh/h                   | 0                                                                                  | 936  | 163  | 398  | 885  | 0    |     |      |     | 369  | 0    | 323  |
| Arrive On Green              | 0.00                                                                               | 0.33 | 0.33 | 0.05 | 0.51 | 0.00 |     |      |     | 0.22 | 0.00 | 0.22 |
| Sat Flow, veh/h              | 0                                                                                  | 2894 | 489  | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Grp Volume(v), veh/h         | 0                                                                                  | 339  | 340  | 42   | 354  | 0    |     |      |     | 12   | 0    | 250  |
| Grp Sat Flow(s), veh/h/ln    | 0                                                                                  | 1650 | 1647 | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Q Serve(g_s), s              | 0.0                                                                                | 5.9  | 5.9  | 0.5  | 4.3  | 0.0  |     |      |     | 0.2  | 0.0  | 5.5  |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 5.9  | 5.9  | 0.5  | 4.3  | 0.0  |     |      |     | 0.2  | 0.0  | 5.5  |
| Prop In Lane                 | 0.00                                                                               |      | 0.30 | 1.00 |      | 0.00 |     |      |     | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 550  | 549  | 398  | 885  | 0    |     |      |     | 369  | 0    | 323  |
| V/C Ratio(X)                 | 0.00                                                                               | 0.62 | 0.62 | 0.11 | 0.40 | 0.00 |     |      |     | 0.03 | 0.00 | 0.77 |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 946  | 945  | 580  | 1495 | 0    |     |      |     | 1054 | 0    | 923  |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 0.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |     |      |     | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 9.5  | 9.5  | 6.4  | 5.1  | 0.0  |     |      |     | 10.4 | 0.0  | 12.4 |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 1.1  | 1.1  | 0.1  | 0.3  | 0.0  |     |      |     | 0.0  | 0.0  | 4.0  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |      |     | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 1.6  | 1.6  | 0.1  | 0.8  | 0.0  |     |      |     | 0.1  | 0.0  | 1.7  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |      |      |      |      |     |      |     |      |      |      |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 10.6 | 10.7 | 6.6  | 5.3  | 0.0  |     |      |     | 10.4 | 0.0  | 16.4 |
| LnGrp LOS                    | A                                                                                  | B    | B    | A    | A    | A    |     |      |     | B    | A    | B    |
| Approach Vol, veh/h          |                                                                                    | 679  |      |      | 396  |      |     |      |     |      | 262  |      |
| Approach Delay, s/veh        |                                                                                    | 10.7 |      |      | 5.5  |      |     |      |     |      | 16.1 |      |
| Approach LOS                 |                                                                                    | B    |      |      | A    |      |     |      |     |      | B    |      |
| Timer - Assigned Phs         |                                                                                    |      | 3    | 4    |      | 6    |     | 8    |     |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    |      | 6.1  | 15.8 |      | 12.0 |     | 22.0 |     |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    |      | 4.5  | 4.5  |      | 4.5  |     | 4.5  |     |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    |      | 5.5  | 19.5 |      | 21.5 |     | 29.5 |     |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    |      | 2.5  | 7.9  |      | 7.5  |     | 6.3  |     |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    |      | 0.0  | 3.3  |      | 0.7  |     | 2.2  |     |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |     |      |     |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      | 10.2 |      |      |      |     |      |     |      |      |      |
| HCM 6th LOS                  |                                                                                    |      | B    |      |      |      |     |      |     |      |      |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 4.8  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 0    | 40   | 18   | 31   | 43   | 0    | 57   | 0    | 21   | 0    | 0    | 0    |
| Future Vol, veh/h        | 0    | 40   | 18   | 31   | 43   | 0    | 57   | 0    | 21   | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 0    | 51   | 23   | 39   | 54   | 0    | 72   | 0    | 27   | 0    | 0    | 0    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |     |      | Minor2 |     |      |
|----------------------|--------|---|---|--------|---|---|--------|-----|------|--------|-----|------|
| Conflicting Flow All | 54     | 0 | 0 | 74     | 0 | 0 | 195    | 195 | 63   | 208    | 206 | 54   |
| Stage 1              | -      | - | - | -      | - | - | 63     | 63  | -    | 132    | 132 | -    |
| Stage 2              | -      | - | - | -      | - | - | 132    | 132 | -    | 76     | 74  | -    |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5 | 6.2  | 7.1    | 6.5 | 6.2  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5 | -    | 6.1    | 5.5 | -    |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5 | -    | 6.1    | 5.5 | -    |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4   | 3.3  | 3.5    | 4   | 3.3  |
| Pot Cap-1 Maneuver   | 1564   | - | - | 1538   | - | - | 769    | 704 | 1007 | 754    | 694 | 1019 |
| Stage 1              | -      | - | - | -      | - | - | 953    | 846 | -    | 876    | 791 | -    |
| Stage 2              | -      | - | - | -      | - | - | 876    | 791 | -    | 938    | 837 | -    |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -   | -    | -      | -   | -    |
| Mov Cap-1 Maneuver   | 1564   | - | - | 1538   | - | - | 754    | 686 | 1007 | 719    | 676 | 1019 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 754    | 686 | -    | 719    | 676 | -    |
| Stage 1              | -      | - | - | -      | - | - | 953    | 846 | -    | 876    | 770 | -    |
| Stage 2              | -      | - | - | -      | - | - | 853    | 770 | -    | 913    | 837 | -    |

| Approach             | EB | WB  | NB   | SB |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0  | 3.1 | 10.1 | 0  |
| HCM LOS              |    |     | B    | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 809   | 1564 | -   | -   | 1538  | -   | -   | -     |
| HCM Lane V/C Ratio    | 0.122 | -    | -   | -   | 0.026 | -   | -   | -     |
| HCM Control Delay (s) | 10.1  | 0    | -   | -   | 7.4   | 0   | -   | 0     |
| HCM Lane LOS          | B     | A    | -   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.4   | 0    | -   | -   | 0.1   | -   | -   | -     |

| Intersection             |        |      |        |            |        |       |        |      |      |      |      |      |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|------|------|------|
| Int Delay, s/veh         | 1.4    |      |        |            |        |       |        |      |      |      |      |      |
| Movement                 | EBL    | EBT  | EBR    | WBL        | WBT    | WBR   | NBL    | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |        | ↕    |        |            | ↕      |       |        | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 0      | 0    | 0      | 14         | 0      | 4     | 0      | 74   | 24   | 7    | 42   | 0    |
| Future Vol, veh/h        | 0      | 0    | 0      | 14         | 0      | 4     | 0      | 74   | 24   | 7    | 42   | 0    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop | Stop   | Stop       | Stop   | Stop  | Free   | Free | Free | Free | Free | Free |
| RT Channelized           | -      | -    | None   | -          | -      | None  | -      | -    | None | -    | -    | None |
| Storage Length           | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Grade, %                 | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 76     | 76   | 76     | 76         | 76     | 76    | 76     | 76   | 76   | 76   | 76   | 76   |
| Heavy Vehicles, %        | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 0      | 0    | 0      | 18         | 0      | 5     | 0      | 97   | 32   | 9    | 55   | 0    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Major/Minor              | Minor2 |      | Minor1 |            | Major1 |       | Major2 |      |      |      |      |      |
| Conflicting Flow All     | 189    | 202  | 55     | 186        | 186    | 113   | 55     | 0    | 0    | 129  | 0    | 0    |
| Stage 1                  | 73     | 73   | -      | 113        | 113    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 116    | 129  | -      | 73         | 73     | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy            | 7.1    | 6.5  | 6.2    | 7.1        | 6.5    | 6.2   | 4.1    | -    | -    | 4.1  | -    | -    |
| Critical Hdwy Stg 1      | 6.1    | 5.5  | -      | 6.1        | 5.5    | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy Stg 2      | 6.1    | 5.5  | -      | 6.1        | 5.5    | -     | -      | -    | -    | -    | -    | -    |
| Follow-up Hdwy           | 3.5    | 4    | 3.3    | 3.5        | 4      | 3.3   | 2.2    | -    | -    | 2.2  | -    | -    |
| Pot Cap-1 Maneuver       | 776    | 698  | 1018   | 779        | 712    | 945   | 1563   | -    | -    | 1469 | -    | -    |
| Stage 1                  | 942    | 838  | -      | 897        | 806    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 894    | 793  | -      | 942        | 838    | -     | -      | -    | -    | -    | -    | -    |
| Platoon blocked, %       |        |      |        |            |        |       |        | -    | -    |      | -    | -    |
| Mov Cap-1 Maneuver       | 768    | 694  | 1018   | 775        | 708    | 945   | 1563   | -    | -    | 1469 | -    | -    |
| Mov Cap-2 Maneuver       | 768    | 694  | -      | 775        | 708    | -     | -      | -    | -    | -    | -    | -    |
| Stage 1                  | 942    | 833  | -      | 897        | 806    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 889    | 793  | -      | 936        | 833    | -     | -      | -    | -    | -    | -    | -    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Approach                 | EB     |      | WB     |            | NB     |       | SB     |      |      |      |      |      |
| HCM Control Delay, s     | 0      |      | 9.6    |            | 0      |       | 1.1    |      |      |      |      |      |
| HCM LOS                  | A      |      | A      |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT  | NBR    | EBLn1WBLn1 | SBL    | SBT   | SBR    |      |      |      |      |      |
| Capacity (veh/h)         | 1563   | -    | -      | -          | 807    | 1469  | -      | -    |      |      |      |      |
| HCM Lane V/C Ratio       | -      | -    | -      | -          | 0.029  | 0.006 | -      | -    |      |      |      |      |
| HCM Control Delay (s)    | 0      | -    | -      | 0          | 9.6    | 7.5   | 0      | -    |      |      |      |      |
| HCM Lane LOS             | A      | -    | -      | A          | A      | A     | A      | -    |      |      |      |      |
| HCM 95th %tile Q(veh)    | 0      | -    | -      | -          | 0.1    | 0     | -      | -    |      |      |      |      |

| Intersection             |                                                                                   |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.1                                                                               |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL                                                                               | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |      |      |  |      |  |  |      |      |  |      |
| Traffic Vol, veh/h       | 15                                                                                | 0                                                                                 | 22   | 10   | 0                                                                                 | 4    | 54                                                                                | 108                                                                               | 11   | 2    | 56                                                                                  | 22   |
| Future Vol, veh/h        | 15                                                                                | 0                                                                                 | 22   | 10   | 0                                                                                 | 4    | 54                                                                                | 108                                                                               | 11   | 2    | 56                                                                                  | 22   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop | Stop | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 55                                                                                | -                                                                                 | -    | -    | -                                                                                 | -    | 75                                                                                | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                | 76   | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 8    |
| Mvmt Flow                | 20                                                                                | 0                                                                                 | 29   | 13   | 0                                                                                 | 5    | 71                                                                                | 142                                                                               | 14   | 3    | 74                                                                                  | 29   |

| Major/Minor          | Minor2 |     | Minor1 |     | Major1 |     | Major2 |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|
| Conflicting Flow All | 389    | 393 | 89     | 400 | 400    | 149 | 103    | 0 |
| Stage 1              | 95     | 95  | -      | 291 | 291    | -   | -      | - |
| Stage 2              | 294    | 298 | -      | 109 | 109    | -   | -      | - |
| Critical Hdwy        | 7.1    | 6.5 | 6.2    | 7.1 | 6.5    | 6.2 | 4.1    | - |
| Critical Hdwy Stg 1  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Critical Hdwy Stg 2  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Follow-up Hdwy       | 3.5    | 4   | 3.3    | 3.5 | 4      | 3.3 | 2.2    | - |
| Pot Cap-1 Maneuver   | 574    | 546 | 975    | 564 | 541    | 903 | 1502   | - |
| Stage 1              | 917    | 820 | -      | 721 | 675    | -   | -      | - |
| Stage 2              | 719    | 671 | -      | 901 | 809    | -   | -      | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - |
| Mov Cap-1 Maneuver   | 549    | 519 | 975    | 527 | 514    | 903 | 1502   | - |
| Mov Cap-2 Maneuver   | 549    | 519 | -      | 527 | 514    | -   | -      | - |
| Stage 1              | 874    | 818 | -      | 687 | 643    | -   | -      | - |
| Stage 2              | 681    | 639 | -      | 873 | 807    | -   | -      | - |

| Approach             | EB | WB   | NB  | SB  |
|----------------------|----|------|-----|-----|
| HCM Control Delay, s | 10 | 11.2 | 2.3 | 0.2 |
| HCM LOS              | B  | B    |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1502  | -   | -   | 549   | 975   | 598   | 1436  | -   | -   |
| HCM Lane V/C Ratio    | 0.047 | -   | -   | 0.036 | 0.03  | 0.031 | 0.002 | -   | -   |
| HCM Control Delay (s) | 7.5   | -   | -   | 11.8  | 8.8   | 11.2  | 7.5   | 0   | -   |
| HCM Lane LOS          | A     | -   | -   | B     | A     | B     | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0.1   | -   | -   | 0.1   | 0.1   | 0.1   | 0     | -   | -   |

| Intersection              |     |
|---------------------------|-----|
| Intersection Delay, s/veh | 9.8 |
| Intersection LOS          | A   |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 1    | 61   | 18   | 44   | 80   | 143  | 18   | 90   | 25   | 72   | 69   | 2    |
| Future Vol, veh/h   | 1    | 61   | 18   | 44   | 80   | 143  | 18   | 90   | 25   | 72   | 69   | 2    |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 0    | 0    |
| Mvmt Flow           | 1    | 69   | 20   | 50   | 91   | 163  | 20   | 102  | 28   | 82   | 78   | 2    |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB   | NB  | SB  |
|----------------------------|-----|------|-----|-----|
| Opposing Approach          | WB  | EB   | SB  | NB  |
| Opposing Lanes             | 1   | 1    | 1   | 1   |
| Conflicting Approach Left  | SB  | NB   | EB  | WB  |
| Conflicting Lanes Left     | 1   | 1    | 1   | 1   |
| Conflicting Approach Right | NB  | SB   | WB  | EB  |
| Conflicting Lanes Right    | 1   | 1    | 1   | 1   |
| HCM Control Delay          | 8.7 | 10.4 | 9.3 | 9.9 |
| HCM LOS                    | A   | B    | A   | A   |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 14%   | 1%    | 16%   | 50%   |
| Vol Thru, %            | 68%   | 76%   | 30%   | 48%   |
| Vol Right, %           | 19%   | 23%   | 54%   | 1%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 133   | 80    | 267   | 143   |
| LT Vol                 | 18    | 1     | 44    | 72    |
| Through Vol            | 90    | 61    | 80    | 69    |
| RT Vol                 | 25    | 18    | 143   | 2     |
| Lane Flow Rate         | 151   | 91    | 303   | 162   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.208 | 0.124 | 0.38  | 0.234 |
| Departure Headway (Hd) | 4.946 | 4.925 | 4.514 | 5.183 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 718   | 721   | 792   | 686   |
| Service Time           | 3.026 | 3.006 | 2.575 | 3.263 |
| HCM Lane V/C Ratio     | 0.21  | 0.126 | 0.383 | 0.236 |
| HCM Control Delay      | 9.3   | 8.7   | 10.4  | 9.9   |
| HCM Lane LOS           | A     | A     | B     | A     |
| HCM 95th-tile Q        | 0.8   | 0.4   | 1.8   | 0.9   |





| Lane Group              | EBL  | EBT  | WBL  | WBT  | NBL  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 95   | 138  | 91   | 153  | 191  | 477  | 95   | 77   | 555  |
| v/c Ratio               | 0.37 | 0.31 | 0.34 | 0.34 | 0.33 | 0.26 | 0.11 | 0.15 | 0.36 |
| Control Delay           | 20.1 | 7.4  | 19.4 | 7.9  | 6.9  | 10.4 | 2.4  | 6.1  | 11.1 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.1 | 7.4  | 19.4 | 7.9  | 6.9  | 10.4 | 2.4  | 6.1  | 11.1 |
| Queue Length 50th (ft)  | 20   | 4    | 19   | 5    | 18   | 46   | 0    | 7    | 48   |
| Queue Length 95th (ft)  | 58   | 39   | 55   | 43   | 50   | 88   | 17   | 24   | 95   |
| Internal Link Dist (ft) |      | 1251 |      | 707  |      | 1308 |      |      | 912  |
| Turn Bay Length (ft)    | 100  |      | 300  |      | 150  |      | 350  | 385  |      |
| Base Capacity (vph)     | 566  | 826  | 591  | 827  | 585  | 2070 | 964  | 526  | 1953 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.17 | 0.17 | 0.15 | 0.19 | 0.33 | 0.23 | 0.10 | 0.15 | 0.28 |
| Intersection Summary    |      |      |      |      |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                                   |  |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                                | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR                       | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |   |  |       |  |  |                           |  |  |  |  |  |  |
| Traffic Volume (vph)              | 88                                                                                 | 19                                                                                | 110   | 85                                                                                | 26                                                                                | 116                       | 178                                                                                | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 132                                                                                 |
| Future Volume (vph)               | 88                                                                                 | 19                                                                                | 110   | 85                                                                                | 26                                                                                | 116                       | 178                                                                                | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 132                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                               | 1900                                                                              | 1900  | 1900                                                                              | 1900                                                                              | 1900                      | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                                | 4.0                                                                               |       | 4.0                                                                               | 4.0                                                                               |                           | 5.7                                                                                | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                               | 0.99                                                                              |       | 1.00                                                                              | 0.99                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 0.98                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                               | 0.87                                                                              |       | 1.00                                                                              | 0.88                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                               | 1.00                                                                              |       | 0.95                                                                              | 1.00                                                                              |                           | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1749                                                                               | 1638                                                                              |       | 1804                                                                              | 1634                                                                              |                           | 1805                                                                               | 3574                                                                                | 1579                                                                                | 1702                                                                                | 3446                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                               | 1.00                                                                              |       | 0.67                                                                              | 1.00                                                                              |                           | 0.40                                                                               | 1.00                                                                                | 1.00                                                                                | 0.48                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1215                                                                               | 1638                                                                              |       | 1270                                                                              | 1634                                                                              |                           | 759                                                                                | 3574                                                                                | 1579                                                                                | 859                                                                                 | 3446                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.93                                                                               | 0.93                                                                              | 0.93  | 0.93                                                                              | 0.93                                                                              | 0.93                      | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 95                                                                                 | 20                                                                                | 118   | 91                                                                                | 28                                                                                | 125                       | 191                                                                                | 477                                                                                 | 95                                                                                  | 77                                                                                  | 413                                                                                 | 142                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                  | 99                                                                                | 0     | 0                                                                                 | 105                                                                               | 0                         | 0                                                                                  | 0                                                                                   | 53                                                                                  | 0                                                                                   | 52                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 95                                                                                 | 39                                                                                | 0     | 91                                                                                | 48                                                                                | 0                         | 191                                                                                | 477                                                                                 | 42                                                                                  | 77                                                                                  | 503                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 3                                                                                  |                                                                                   | 1     | 1                                                                                 |                                                                                   | 3                         |                                                                                    |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 3%                                                                                 | 0%                                                                                | 0%    | 0%                                                                                | 0%                                                                                | 1%                        | 0%                                                                                 | 1%                                                                                  | 0%                                                                                  | 6%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Turn Type                         | Perm                                                                               | NA                                                                                |       | Perm                                                                              | NA                                                                                |                           | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  |                                                                                    | 4                                                                                 |       |                                                                                   | 8                                                                                 |                           | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                  |                                                                                   |       | 8                                                                                 |                                                                                   |                           | 2                                                                                  |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 7.3                                                                                | 7.3                                                                               |       | 7.3                                                                               | 7.3                                                                               |                           | 24.5                                                                               | 19.8                                                                                | 19.8                                                                                | 20.5                                                                                | 17.8                                                                                |                                                                                     |
| Effective Green, g (s)            | 7.3                                                                                | 7.3                                                                               |       | 7.3                                                                               | 7.3                                                                               |                           | 24.5                                                                               | 19.8                                                                                | 19.8                                                                                | 20.5                                                                                | 17.8                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.16                                                                               | 0.16                                                                              |       | 0.16                                                                              | 0.16                                                                              |                           | 0.54                                                                               | 0.44                                                                                | 0.44                                                                                | 0.45                                                                                | 0.39                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                                | 4.0                                                                               |       | 4.0                                                                               | 4.0                                                                               |                           | 5.7                                                                                | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                                | 3.0                                                                               |       | 3.0                                                                               | 3.0                                                                               |                           | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 196                                                                                | 264                                                                               |       | 205                                                                               | 263                                                                               |                           | 520                                                                                | 1565                                                                                | 691                                                                                 | 439                                                                                 | 1357                                                                                |                                                                                     |
| v/s Ratio Prot                    |                                                                                    | 0.02                                                                              |       |                                                                                   | 0.03                                                                              |                           | c0.04                                                                              | 0.13                                                                                |                                                                                     | 0.01                                                                                | 0.15                                                                                |                                                                                     |
| v/s Ratio Perm                    | c0.08                                                                              |                                                                                   |       | 0.07                                                                              |                                                                                   |                           | c0.16                                                                              |                                                                                     | 0.03                                                                                | 0.07                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.48                                                                               | 0.15                                                                              |       | 0.44                                                                              | 0.18                                                                              |                           | 0.37                                                                               | 0.30                                                                                | 0.06                                                                                | 0.18                                                                                | 0.37                                                                                |                                                                                     |
| Uniform Delay, d1                 | 17.2                                                                               | 16.3                                                                              |       | 17.1                                                                              | 16.4                                                                              |                           | 5.4                                                                                | 8.2                                                                                 | 7.3                                                                                 | 7.1                                                                                 | 9.7                                                                                 |                                                                                     |
| Progression Factor                | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 1.9                                                                                | 0.3                                                                               |       | 1.5                                                                               | 0.3                                                                               |                           | 0.4                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 |                                                                                     |
| Delay (s)                         | 19.1                                                                               | 16.5                                                                              |       | 18.6                                                                              | 16.7                                                                              |                           | 5.8                                                                                | 8.3                                                                                 | 7.4                                                                                 | 7.3                                                                                 | 9.9                                                                                 |                                                                                     |
| Level of Service                  | B                                                                                  | B                                                                                 |       | B                                                                                 | B                                                                                 |                           | A                                                                                  | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                    | 17.6                                                                              |       |                                                                                   | 17.4                                                                              |                           |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 9.6                                                                                 |                                                                                     |
| Approach LOS                      |                                                                                    | B                                                                                 |       |                                                                                   | B                                                                                 |                           |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                    |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                    |                                                                                   | 10.8  |                                                                                   |                                                                                   | HCM 2000 Level of Service |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                    |                                                                                   | 0.42  |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                    |                                                                                   | 45.2  |                                                                                   |                                                                                   | Sum of lost time (s)      |                                                                                    |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                    |                                                                                   | 55.1% |                                                                                   |                                                                                   | ICU Level of Service      |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                    |                                                                                   | 15    |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                    |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

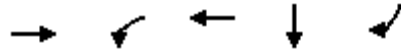
HCM 6th Signalized Intersection Summary  
5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 88                                                                                | 19                                                                                | 110                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 178                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 132                                                                                 |
| Future Volume (veh/h)        | 88                                                                                | 19                                                                                | 110                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 178                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 132                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1885                                                                              | 1900                                                                                | 1885                                                                                | 1900                                                                                | 1811                                                                                | 1885                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 95                                                                                | 20                                                                                | 118                                                                               | 91                                                                                | 28                                                                                | 125                                                                               | 191                                                                                 | 477                                                                                 | 95                                                                                  | 77                                                                                  | 413                                                                                 | 142                                                                                 |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 6                                                                                   | 1                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 367                                                                               | 54                                                                                | 321                                                                               | 384                                                                               | 69                                                                                | 308                                                                               | 496                                                                                 | 1091                                                                                | 489                                                                                 | 470                                                                                 | 695                                                                                 | 236                                                                                 |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.11                                                                                | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1221                                                                              | 238                                                                               | 1403                                                                              | 1267                                                                              | 302                                                                               | 1349                                                                              | 1810                                                                                | 3582                                                                                | 1605                                                                                | 1725                                                                                | 2621                                                                                | 891                                                                                 |
| Grp Volume(v), veh/h         | 95                                                                                | 0                                                                                 | 138                                                                               | 91                                                                                | 0                                                                                 | 153                                                                               | 191                                                                                 | 477                                                                                 | 95                                                                                  | 77                                                                                  | 281                                                                                 | 274                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1221                                                                              | 0                                                                                 | 1641                                                                              | 1267                                                                              | 0                                                                                 | 1651                                                                              | 1810                                                                                | 1791                                                                                | 1605                                                                                | 1725                                                                                | 1791                                                                                | 1721                                                                                |
| Q Serve(g_s), s              | 2.8                                                                               | 0.0                                                                               | 2.8                                                                               | 2.5                                                                               | 0.0                                                                               | 3.1                                                                               | 2.9                                                                                 | 4.2                                                                                 | 1.7                                                                                 | 1.2                                                                                 | 5.3                                                                                 | 5.4                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 0.0                                                                               | 2.8                                                                               | 5.3                                                                               | 0.0                                                                               | 3.1                                                                               | 2.9                                                                                 | 4.2                                                                                 | 1.7                                                                                 | 1.2                                                                                 | 5.3                                                                                 | 5.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.86                                                                              | 1.00                                                                              |                                                                                   | 0.82                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.52                                                                                |
| Lane Grp Cap(c), veh/h       | 367                                                                               | 0                                                                                 | 375                                                                               | 384                                                                               | 0                                                                                 | 377                                                                               | 496                                                                                 | 1091                                                                                | 489                                                                                 | 470                                                                                 | 475                                                                                 | 457                                                                                 |
| V/C Ratio(X)                 | 0.26                                                                              | 0.00                                                                              | 0.37                                                                              | 0.24                                                                              | 0.00                                                                              | 0.41                                                                              | 0.39                                                                                | 0.44                                                                                | 0.19                                                                                | 0.16                                                                                | 0.59                                                                                | 0.60                                                                                |
| Avail Cap(c_a), veh/h        | 666                                                                               | 0                                                                                 | 777                                                                               | 695                                                                               | 0                                                                                 | 782                                                                               | 585                                                                                 | 1925                                                                                | 863                                                                                 | 570                                                                                 | 908                                                                                 | 872                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.3                                                                              | 0.0                                                                               | 12.7                                                                              | 14.9                                                                              | 0.0                                                                               | 12.8                                                                              | 9.0                                                                                 | 10.9                                                                                | 10.0                                                                                | 9.1                                                                                 | 12.5                                                                                | 12.5                                                                                |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.3                                                                               | 0.0                                                                               | 0.7                                                                               | 0.5                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 1.2                                                                                 | 1.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 0.0                                                                               | 0.9                                                                               | 0.6                                                                               | 0.0                                                                               | 1.0                                                                               | 0.9                                                                                 | 1.3                                                                                 | 0.5                                                                                 | 0.4                                                                                 | 1.9                                                                                 | 1.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 15.7                                                                              | 0.0                                                                               | 13.3                                                                              | 15.2                                                                              | 0.0                                                                               | 13.5                                                                              | 9.4                                                                                 | 11.2                                                                                | 10.2                                                                                | 9.2                                                                                 | 13.7                                                                                | 13.8                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 233                                                                               |                                                                                   |                                                                                   | 244                                                                               |                                                                                   |                                                                                     | 763                                                                                 |                                                                                     |                                                                                     | 632                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 14.3                                                                              |                                                                                   |                                                                                   | 14.2                                                                              |                                                                                   |                                                                                     | 10.6                                                                                |                                                                                     |                                                                                     | 13.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.5                                                                               | 17.6                                                                              |                                                                                   | 12.9                                                                              | 10.1                                                                              | 16.1                                                                              |                                                                                     | 12.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | 5.7                                                                               |                                                                                   | 4.0                                                                               | 5.7                                                                               | 5.7                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 21.0                                                                              |                                                                                   | 18.5                                                                              | 6.3                                                                               | 19.8                                                                              |                                                                                     | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.2                                                                               | 6.2                                                                               |                                                                                   | 7.9                                                                               | 4.9                                                                               | 7.4                                                                               |                                                                                     | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               |                                                                                   | 0.8                                                                               | 0.1                                                                               | 2.8                                                                               |                                                                                     | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 12.4                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Queues  
6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021



| Lane Group              | EBT  | WBL  | WBT  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 719  | 43   | 400  | 12   | 270  |
| v/c Ratio               | 0.49 | 0.10 | 0.43 | 0.04 | 0.53 |
| Control Delay           | 9.5  | 4.8  | 6.9  | 14.4 | 7.2  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.5  | 4.8  | 6.9  | 14.4 | 7.2  |
| Queue Length 50th (ft)  | 27   | 3    | 32   | 1    | 0    |
| Queue Length 95th (ft)  | 127  | 14   | 105  | 13   | 45   |
| Internal Link Dist (ft) | 912  |      | 627  | 485  |      |
| Turn Bay Length (ft)    |      | 240  |      |      | 400  |
| Base Capacity (vph)     | 1850 | 424  | 1391 | 1034 | 1009 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.39 | 0.10 | 0.29 | 0.01 | 0.27 |
| Intersection Summary    |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 540                                                                               | 107                                                                               | 39                                                                                | 360                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 540                                                                               | 107                                                                               | 39                                                                                | 360                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Ideal Flow (vphpl)                | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                |
| Total Lost time (s)               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Lane Util. Factor                 |                                                                                   | 0.95                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Flpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.98                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 3193                                                                              |                                                                                   | 1583                                                                              | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Flt Permitted                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.27                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 3193                                                                              |                                                                                   | 453                                                                               | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 600                                                                               | 119                                                                               | 43                                                                                | 400                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 270                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 23                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 219                                                                                 |
| Lane Group Flow (vph)             | 0                                                                                 | 696                                                                               | 0                                                                                 | 43                                                                                | 400                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 51                                                                                  |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 0%                                                                                | 1%                                                                                | 2%                                                                                | 5%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Turn Type                         |                                                                                   | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             |                                                                                   | 16.9                                                                              |                                                                                   | 23.1                                                                              | 23.1                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.4                                                                                 | 7.4                                                                                 |
| Effective Green, g (s)            |                                                                                   | 16.9                                                                              |                                                                                   | 23.1                                                                              | 23.1                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.4                                                                                 | 7.4                                                                                 |
| Actuated g/C Ratio                |                                                                                   | 0.43                                                                              |                                                                                   | 0.58                                                                              | 0.58                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.19                                                                                | 0.19                                                                                |
| Clearance Time (s)                |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 1366                                                                              |                                                                                   | 313                                                                               | 1003                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 311                                                                                 | 273                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.22                                                                             |                                                                                   | 0.01                                                                              | c0.23                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.01                                                                                | c0.03                                                                               |
| v/c Ratio                         |                                                                                   | 0.51                                                                              |                                                                                   | 0.14                                                                              | 0.40                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.04                                                                                | 0.19                                                                                |
| Uniform Delay, d1                 |                                                                                   | 8.3                                                                               |                                                                                   | 4.0                                                                               | 4.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.1                                                                                | 13.5                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 0.3                                                                               |                                                                                   | 0.2                                                                               | 0.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.1                                                                                 | 0.3                                                                                 |
| Delay (s)                         |                                                                                   | 8.6                                                                               |                                                                                   | 4.2                                                                               | 4.7                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.2                                                                                | 13.8                                                                                |
| Level of Service                  |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 13.8                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.44                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 39.5                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 44.4%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

c Critical Lane Group



# HCM 6th Signalized Intersection Summary

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails

07/14/2021

| Movement                     | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL | NBT  | NBR | SBL  | SBT  | SBR  |
|------------------------------|------|------|------|------|------|------|-----|------|-----|------|------|------|
| Lane Configurations          |      | ↑↑   |      | ↑    | ↑    |      |     |      |     |      | ↑    | ↑    |
| Traffic Volume (veh/h)       | 0    | 540  | 107  | 39   | 360  | 0    | 0   | 0    | 0   | 11   | 0    | 243  |
| Future Volume (veh/h)        | 0    | 540  | 107  | 39   | 360  | 0    | 0   | 0    | 0   | 11   | 0    | 243  |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    |     |      |     | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |      |     | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |      | No   |      |      | No   |      |     |      |     |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 0    | 1736 | 1723 | 1682 | 1723 | 0    |     |      |     | 1750 | 1750 | 1723 |
| Adj Flow Rate, veh/h         | 0    | 600  | 119  | 43   | 400  | 0    |     |      |     | 12   | 0    | 270  |
| Peak Hour Factor             | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |     |      |     | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, %         | 0    | 1    | 2    | 5    | 2    | 0    |     |      |     | 0    | 0    | 2    |
| Cap, veh/h                   | 0    | 931  | 184  | 380  | 884  | 0    |     |      |     | 394  | 0    | 345  |
| Arrive On Green              | 0.00 | 0.34 | 0.34 | 0.05 | 0.51 | 0.00 |     |      |     | 0.24 | 0.00 | 0.24 |
| Sat Flow, veh/h              | 0    | 2830 | 543  | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Grp Volume(v), veh/h         | 0    | 360  | 359  | 43   | 400  | 0    |     |      |     | 12   | 0    | 270  |
| Grp Sat Flow(s), veh/h/ln    | 0    | 1650 | 1637 | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Q Serve(g_s), s              | 0.0  | 6.6  | 6.7  | 0.6  | 5.3  | 0.0  |     |      |     | 0.2  | 0.0  | 6.2  |
| Cycle Q Clear(g_c), s        | 0.0  | 6.6  | 6.7  | 0.6  | 5.3  | 0.0  |     |      |     | 0.2  | 0.0  | 6.2  |
| Prop In Lane                 | 0.00 |      | 0.33 | 1.00 |      | 0.00 |     |      |     | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 0    | 559  | 555  | 380  | 884  | 0    |     |      |     | 394  | 0    | 345  |
| V/C Ratio(X)                 | 0.00 | 0.64 | 0.65 | 0.11 | 0.45 | 0.00 |     |      |     | 0.03 | 0.00 | 0.78 |
| Avail Cap(c_a), veh/h        | 0    | 896  | 889  | 547  | 1416 | 0    |     |      |     | 998  | 0    | 874  |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |     |      |     | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 0.0  | 10.0 | 10.0 | 6.8  | 5.5  | 0.0  |     |      |     | 10.5 | 0.0  | 12.8 |
| Incr Delay (d2), s/veh       | 0.0  | 1.2  | 1.3  | 0.1  | 0.4  | 0.0  |     |      |     | 0.0  | 0.0  | 3.9  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |      |     | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 0.0  | 1.9  | 1.9  | 0.1  | 1.1  | 0.0  |     |      |     | 0.1  | 0.0  | 1.9  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |     |      |     |      |      |      |
| LnGrp Delay(d),s/veh         | 0.0  | 11.3 | 11.3 | 7.0  | 5.9  | 0.0  |     |      |     | 10.6 | 0.0  | 16.8 |
| LnGrp LOS                    | A    | B    | B    | A    | A    | A    |     |      |     | B    | A    | B    |
| Approach Vol, veh/h          |      | 719  |      |      | 443  |      |     |      |     |      | 282  |      |
| Approach Delay, s/veh        |      | 11.3 |      |      | 6.0  |      |     |      |     |      | 16.5 |      |
| Approach LOS                 |      | B    |      |      | A    |      |     |      |     |      | B    |      |
| Timer - Assigned Phs         |      |      | 3    | 4    |      | 6    |     | 8    |     |      |      |      |
| Phs Duration (G+Y+Rc), s     |      |      | 6.2  | 16.7 |      | 13.0 |     | 22.9 |     |      |      |      |
| Change Period (Y+Rc), s      |      |      | 4.5  | 4.5  |      | 4.5  |     | 4.5  |     |      |      |      |
| Max Green Setting (Gmax), s  |      |      | 5.5  | 19.5 |      | 21.5 |     | 29.5 |     |      |      |      |
| Max Q Clear Time (g_c+I1), s |      |      | 2.6  | 8.7  |      | 8.2  |     | 7.3  |     |      |      |      |
| Green Ext Time (p_c), s      |      |      | 0.0  | 3.4  |      | 0.8  |     | 2.5  |     |      |      |      |
| <b>Intersection Summary</b>  |      |      |      |      |      |      |     |      |     |      |      |      |
| HCM 6th Ctrl Delay           |      |      | 10.7 |      |      |      |     |      |     |      |      |      |
| HCM 6th LOS                  |      |      | B    |      |      |      |     |      |     |      |      |      |

| Intersection             |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-----------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 5.1    |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR  | WBL    | WBT                                                                               | WBR  | NBL    | NBT                                                                               | NBR  | SBL    | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |      |        |  |      |        |  |      |        |  |      |
| Traffic Vol, veh/h       | 0      | 40                                                                                | 18   | 40     | 43                                                                                | 0    | 57     | 0                                                                                 | 27   | 0      | 0                                                                                   | 0    |
| Future Vol, veh/h        | 0      | 40                                                                                | 18   | 40     | 43                                                                                | 0    | 57     | 0                                                                                 | 27   | 0      | 0                                                                                   | 0    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                   | 0    |
| Sign Control             | Free   | Free                                                                              | Free | Free   | Free                                                                              | Free | Stop   | Stop                                                                              | Stop | Stop   | Stop                                                                                | Stop |
| RT Channelized           | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                 | None | -      | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                 | -    | -      | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                 | -    | -      | 0                                                                                   | -    |
| Peak Hour Factor         | 79     | 79                                                                                | 79   | 79     | 79                                                                                | 79   | 79     | 79                                                                                | 79   | 79     | 79                                                                                  | 79   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 0    | 0      | 2                                                                                 | 0    | 0      | 0                                                                                 | 0    | 0      | 0                                                                                   | 0    |
| Mvmt Flow                | 0      | 51                                                                                | 23   | 51     | 54                                                                                | 0    | 72     | 0                                                                                 | 34   | 0      | 0                                                                                   | 0    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Major/Minor              | Major1 |                                                                                   |      | Major2 |                                                                                   |      | Minor1 |                                                                                   |      | Minor2 |                                                                                     |      |
| Conflicting Flow All     | 54     | 0                                                                                 | 0    | 74     | 0                                                                                 | 0    | 219    | 219                                                                               | 63   | 236    | 230                                                                                 | 54   |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 63     | 63                                                                                | -    | 156    | 156                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 156    | 156                                                                               | -    | 80     | 74                                                                                  | -    |
| Critical Hdwy            | 4.1    | -                                                                                 | -    | 4.1    | -                                                                                 | -    | 7.1    | 6.5                                                                               | 6.2  | 7.1    | 6.5                                                                                 | 6.2  |
| Critical Hdwy Stg 1      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.5                                                                               | -    | 6.1    | 5.5                                                                                 | -    |
| Critical Hdwy Stg 2      | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 6.1    | 5.5                                                                               | -    | 6.1    | 5.5                                                                                 | -    |
| Follow-up Hdwy           | 2.2    | -                                                                                 | -    | 2.2    | -                                                                                 | -    | 3.5    | 4                                                                                 | 3.3  | 3.5    | 4                                                                                   | 3.3  |
| Pot Cap-1 Maneuver       | 1564   | -                                                                                 | -    | 1538   | -                                                                                 | -    | 741    | 683                                                                               | 1007 | 723    | 673                                                                                 | 1019 |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 953    | 846                                                                               | -    | 851    | 772                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 851    | 772                                                                               | -    | 934    | 837                                                                                 | -    |
| Platoon blocked, %       |        | -                                                                                 | -    |        | -                                                                                 | -    |        |                                                                                   |      |        |                                                                                     |      |
| Mov Cap-1 Maneuver       | 1564   | -                                                                                 | -    | 1538   | -                                                                                 | -    | 722    | 660                                                                               | 1007 | 680    | 650                                                                                 | 1019 |
| Mov Cap-2 Maneuver       | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 722    | 660                                                                               | -    | 680    | 650                                                                                 | -    |
| Stage 1                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 953    | 846                                                                               | -    | 851    | 746                                                                                 | -    |
| Stage 2                  | -      | -                                                                                 | -    | -      | -                                                                                 | -    | 822    | 746                                                                               | -    | 902    | 837                                                                                 | -    |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Approach                 | EB     |                                                                                   |      | WB     |                                                                                   |      | NB     |                                                                                   |      | SB     |                                                                                     |      |
| HCM Control Delay, s     | 0      |                                                                                   |      | 3.6    |                                                                                   |      | 10.2   |                                                                                   |      | 0      |                                                                                     |      |
| HCM LOS                  |        |                                                                                   |      |        |                                                                                   |      | B      |                                                                                   |      | A      |                                                                                     |      |
|                          |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                   |      |        |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL                                                                               | EBT  | EBR    | WBL                                                                               | WBT  | WBR    | SBLn1                                                                             |      |        |                                                                                     |      |
| Capacity (veh/h)         | 794    | 1564                                                                              | -    | -      | 1538                                                                              | -    | -      | -                                                                                 |      |        |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.134  | -                                                                                 | -    | -      | 0.033                                                                             | -    | -      | -                                                                                 |      |        |                                                                                     |      |
| HCM Control Delay (s)    | 10.2   | 0                                                                                 | -    | -      | 7.4                                                                               | 0    | -      | 0                                                                                 |      |        |                                                                                     |      |
| HCM Lane LOS             | B      | A                                                                                 | -    | -      | A                                                                                 | A    | -      | A                                                                                 |      |        |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.5    | 0                                                                                 | -    | -      | 0.1                                                                               | -    | -      | -                                                                                 |      |        |                                                                                     |      |

| Intersection             |        |      |        |            |        |       |        |      |      |      |      |      |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|------|------|------|
| Int Delay, s/veh         | 3.5    |      |        |            |        |       |        |      |      |      |      |      |
| Movement                 | EBL    | EBT  | EBR    | WBL        | WBT    | WBR   | NBL    | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |        | ↕    |        |            | ↕      |       |        | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 6      | 0    | 27     | 14         | 0      | 4     | 45     | 74   | 24   | 7    | 42   | 9    |
| Future Vol, veh/h        | 6      | 0    | 27     | 14         | 0      | 4     | 45     | 74   | 24   | 7    | 42   | 9    |
| Conflicting Peds, #/hr   | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop   | Stop | Stop   | Stop       | Stop   | Stop  | Free   | Free | Free | Free | Free | Free |
| RT Channelized           | -      | -    | None   | -          | -      | None  | -      | -    | None | -    | -    | None |
| Storage Length           | -      | -    | -      | -          | -      | -     | -      | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Grade, %                 | -      | 0    | -      | -          | 0      | -     | -      | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 76     | 76   | 76     | 76         | 76     | 76    | 76     | 76   | 76   | 76   | 76   | 76   |
| Heavy Vehicles, %        | 0      | 0    | 0      | 0          | 0      | 0     | 0      | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 8      | 0    | 36     | 18         | 0      | 5     | 59     | 97   | 32   | 9    | 55   | 12   |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Major/Minor              | Minor2 |      | Minor1 |            | Major1 |       | Major2 |      |      |      |      |      |
| Conflicting Flow All     | 313    | 326  | 61     | 328        | 316    | 113   | 67     | 0    | 0    | 129  | 0    | 0    |
| Stage 1                  | 79     | 79   | -      | 231        | 231    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 234    | 247  | -      | 97         | 85     | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy            | 7.1    | 6.5  | 6.2    | 7.1        | 6.5    | 6.2   | 4.1    | -    | -    | 4.1  | -    | -    |
| Critical Hdwy Stg 1      | 6.1    | 5.5  | -      | 6.1        | 5.5    | -     | -      | -    | -    | -    | -    | -    |
| Critical Hdwy Stg 2      | 6.1    | 5.5  | -      | 6.1        | 5.5    | -     | -      | -    | -    | -    | -    | -    |
| Follow-up Hdwy           | 3.5    | 4    | 3.3    | 3.5        | 4      | 3.3   | 2.2    | -    | -    | 2.2  | -    | -    |
| Pot Cap-1 Maneuver       | 643    | 596  | 1010   | 629        | 603    | 945   | 1547   | -    | -    | 1469 | -    | -    |
| Stage 1                  | 935    | 833  | -      | 776        | 717    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 774    | 706  | -      | 914        | 828    | -     | -      | -    | -    | -    | -    | -    |
| Platoon blocked, %       |        |      |        |            |        |       |        | -    | -    |      | -    | -    |
| Mov Cap-1 Maneuver       | 617    | 568  | 1010   | 585        | 575    | 945   | 1547   | -    | -    | 1469 | -    | -    |
| Mov Cap-2 Maneuver       | 617    | 568  | -      | 585        | 575    | -     | -      | -    | -    | -    | -    | -    |
| Stage 1                  | 897    | 828  | -      | 744        | 688    | -     | -      | -    | -    | -    | -    | -    |
| Stage 2                  | 738    | 677  | -      | 877        | 823    | -     | -      | -    | -    | -    | -    | -    |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Approach                 | EB     |      | WB     |            | NB     |       | SB     |      |      |      |      |      |
| HCM Control Delay, s     | 9.2    |      | 10.9   |            | 2.3    |       | 0.9    |      |      |      |      |      |
| HCM LOS                  | A      |      | B      |            |        |       |        |      |      |      |      |      |
|                          |        |      |        |            |        |       |        |      |      |      |      |      |
| Minor Lane/Major Mvmt    | NBL    | NBT  | NBR    | EBLn1WBLn1 | SBL    | SBT   | SBR    |      |      |      |      |      |
| Capacity (veh/h)         | 1547   | -    | -      | 905        | 639    | 1469  | -      | -    |      |      |      |      |
| HCM Lane V/C Ratio       | 0.038  | -    | -      | 0.048      | 0.037  | 0.006 | -      | -    |      |      |      |      |
| HCM Control Delay (s)    | 7.4    | 0    | -      | 9.2        | 10.9   | 7.5   | 0      | -    |      |      |      |      |
| HCM Lane LOS             | A      | A    | -      | A          | B      | A     | A      | -    |      |      |      |      |
| HCM 95th %tile Q(veh)    | 0.1    | -    | -      | 0.2        | 0.1    | 0     | -      | -    |      |      |      |      |

| Intersection             |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------|-------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 2.6                                                                               |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR    | WBL   | WBT                                                                               | WBR   | NBL                                                                               | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |        |       |  |       |  |  |      |      |  |      |
| Traffic Vol, veh/h       | 15                                                                                | 0                                                                                 | 23     | 10    | 0                                                                                 | 4     | 56                                                                                | 153                                                                               | 11   | 2    | 83                                                                                  | 22   |
| Future Vol, veh/h        | 15                                                                                | 0                                                                                 | 23     | 10    | 0                                                                                 | 4     | 56                                                                                | 153                                                                               | 11   | 2    | 83                                                                                  | 22   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop   | Stop  | Stop                                                                              | Stop  | Free                                                                              | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -                                                                                 | -                                                                                 | None   | -     | -                                                                                 | None  | -                                                                                 | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 55                                                                                | -                                                                                 | -      | -     | -                                                                                 | -     | 75                                                                                | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -     | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -      | -     | 0                                                                                 | -     | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76                                                                                | 76                                                                                | 76     | 76    | 76                                                                                | 76    | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0      | 0     | 0                                                                                 | 0     | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 8    |
| Mvmt Flow                | 20                                                                                | 0                                                                                 | 30     | 13    | 0                                                                                 | 5     | 74                                                                                | 201                                                                               | 14   | 3    | 109                                                                                 | 29   |
|                          |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Major/Minor              | Minor2                                                                            |                                                                                   | Minor1 |       | Major1                                                                            |       | Major2                                                                            |                                                                                   |      |      |                                                                                     |      |
| Conflicting Flow All     | 489                                                                               | 493                                                                               | 124    | 501   | 500                                                                               | 208   | 138                                                                               | 0                                                                                 | 0    | 215  | 0                                                                                   | 0    |
| Stage 1                  | 130                                                                               | 130                                                                               | -      | 356   | 356                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 359                                                                               | 363                                                                               | -      | 145   | 144                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy            | 7.1                                                                               | 6.5                                                                               | 6.2    | 7.1   | 6.5                                                                               | 6.2   | 4.1                                                                               | -                                                                                 | -    | 4.1  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.1                                                                               | 5.5                                                                               | -      | 6.1   | 5.5                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.1                                                                               | 5.5                                                                               | -      | 6.1   | 5.5                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Follow-up Hdwy           | 3.5                                                                               | 4                                                                                 | 3.3    | 3.5   | 4                                                                                 | 3.3   | 2.2                                                                               | -                                                                                 | -    | 2.2  | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 493                                                                               | 480                                                                               | 932    | 484   | 476                                                                               | 837   | 1458                                                                              | -                                                                                 | -    | 1367 | -                                                                                   | -    |
| Stage 1                  | 878                                                                               | 792                                                                               | -      | 666   | 633                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 663                                                                               | 628                                                                               | -      | 863   | 782                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Platoon blocked, %       |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   | -                                                                                 | -    |      | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 470                                                                               | 455                                                                               | 932    | 450   | 451                                                                               | 837   | 1458                                                                              | -                                                                                 | -    | 1367 | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 470                                                                               | 455                                                                               | -      | 450   | 451                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 1                  | 833                                                                               | 790                                                                               | -      | 632   | 601                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 625                                                                               | 596                                                                               | -      | 833   | 780                                                                               | -     | -                                                                                 | -                                                                                 | -    | -    | -                                                                                   | -    |
|                          |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|                          |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Approach                 | EB                                                                                |                                                                                   | WB     |       | NB                                                                                |       | SB                                                                                |                                                                                   |      |      |                                                                                     |      |
| HCM Control Delay, s     | 10.6                                                                              |                                                                                   | 12.2   |       | 1.9                                                                               |       | 0.1                                                                               |                                                                                   |      |      |                                                                                     |      |
| HCM LOS                  | B                                                                                 |                                                                                   | B      |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|                          |                                                                                   |                                                                                   |        |       |                                                                                   |       |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL                                                                               | NBT                                                                               | NBR    | EBLn1 | EBLn2                                                                             | WBLn1 | SBL                                                                               | SBT                                                                               | SBR  |      |                                                                                     |      |
| Capacity (veh/h)         | 1458                                                                              | -                                                                                 | -      | 470   | 932                                                                               | 518   | 1367                                                                              | -                                                                                 | -    |      |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.051                                                                             | -                                                                                 | -      | 0.042 | 0.032                                                                             | 0.036 | 0.002                                                                             | -                                                                                 | -    |      |                                                                                     |      |
| HCM Control Delay (s)    | 7.6                                                                               | -                                                                                 | -      | 13    | 9                                                                                 | 12.2  | 7.6                                                                               | 0                                                                                 | -    |      |                                                                                     |      |
| HCM Lane LOS             | A                                                                                 | -                                                                                 | -      | B     | A                                                                                 | B     | A                                                                                 | A                                                                                 | -    |      |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.2                                                                               | -                                                                                 | -      | 0.1   | 0.1                                                                               | 0.1   | 0                                                                                 | -                                                                                 | -    |      |                                                                                     |      |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 10.7 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 1    | 61   | 18   | 44   | 80   | 184  | 18   | 96   | 25   | 97   | 72   | 2    |
| Future Vol, veh/h   | 1    | 61   | 18   | 44   | 80   | 184  | 18   | 96   | 25   | 97   | 72   | 2    |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 0    | 0    |
| Mvmt Flow           | 1    | 69   | 20   | 50   | 91   | 209  | 20   | 109  | 28   | 110  | 82   | 2    |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB   | NB  | SB   |
|----------------------------|-----|------|-----|------|
| Opposing Approach          | WB  | EB   | SB  | NB   |
| Opposing Lanes             | 1   | 1    | 1   | 1    |
| Conflicting Approach Left  | SB  | NB   | EB  | WB   |
| Conflicting Lanes Left     | 1   | 1    | 1   | 1    |
| Conflicting Approach Right | NB  | SB   | WB  | EB   |
| Conflicting Lanes Right    | 1   | 1    | 1   | 1    |
| HCM Control Delay          | 9.1 | 11.6 | 9.8 | 10.7 |
| HCM LOS                    | A   | B    | A   | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 13%   | 1%    | 14%   | 57%   |
| Vol Thru, %            | 69%   | 76%   | 26%   | 42%   |
| Vol Right, %           | 18%   | 23%   | 60%   | 1%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 139   | 80    | 308   | 171   |
| LT Vol                 | 18    | 1     | 44    | 97    |
| Through Vol            | 96    | 61    | 80    | 72    |
| RT Vol                 | 25    | 18    | 184   | 2     |
| Lane Flow Rate         | 158   | 91    | 350   | 194   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.23  | 0.132 | 0.456 | 0.293 |
| Departure Headway (Hd) | 5.232 | 5.225 | 4.694 | 5.437 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 686   | 686   | 774   | 661   |
| Service Time           | 3.264 | 3.257 | 2.694 | 3.469 |
| HCM Lane V/C Ratio     | 0.23  | 0.133 | 0.452 | 0.293 |
| HCM Control Delay      | 9.8   | 9.1   | 11.6  | 10.7  |
| HCM Lane LOS           | A     | A     | B     | B     |
| HCM 95th-tile Q        | 0.9   | 0.5   | 2.4   | 1.2   |





| Lane Group              | EBL  | EBT  | WBL  | WBT  | NBL  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 109  | 151  | 91   | 153  | 213  | 477  | 95   | 77   | 578  |
| v/c Ratio               | 0.39 | 0.32 | 0.32 | 0.33 | 0.37 | 0.26 | 0.11 | 0.15 | 0.37 |
| Control Delay           | 20.5 | 7.0  | 18.8 | 7.5  | 7.7  | 10.8 | 2.5  | 6.5  | 11.1 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.5 | 7.0  | 18.8 | 7.5  | 7.7  | 10.8 | 2.5  | 6.5  | 11.1 |
| Queue Length 50th (ft)  | 23   | 4    | 19   | 6    | 22   | 47   | 0    | 7    | 50   |
| Queue Length 95th (ft)  | 66   | 40   | 56   | 43   | 62   | 94   | 17   | 26   | 102  |
| Internal Link Dist (ft) |      | 1251 |      | 707  |      | 1308 |      |      | 912  |
| Turn Bay Length (ft)    | 100  |      | 300  |      | 150  |      | 350  | 385  |      |
| Base Capacity (vph)     | 568  | 834  | 587  | 831  | 576  | 1927 | 906  | 523  | 1772 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.19 | 0.18 | 0.16 | 0.18 | 0.37 | 0.25 | 0.10 | 0.15 | 0.33 |
| Intersection Summary    |      |      |      |      |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 101                                                                               | 19                                                                                | 122                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 198                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 153                                                                                 |
| Future Volume (vph)               | 101                                                                               | 19                                                                                | 122                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 198                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 153                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.98                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 0.87                                                                              |                                                                                   | 1.00                                                                              | 0.88                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1749                                                                              | 1634                                                                              |                                                                                   | 1804                                                                              | 1634                                                                              |                                                                                   | 1805                                                                                | 3574                                                                                | 1579                                                                                | 1702                                                                                | 3431                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.39                                                                                | 1.00                                                                                | 1.00                                                                                | 0.48                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1215                                                                              | 1634                                                                              |                                                                                   | 1255                                                                              | 1634                                                                              |                                                                                   | 743                                                                                 | 3574                                                                                | 1579                                                                                | 858                                                                                 | 3431                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 109                                                                               | 20                                                                                | 131                                                                               | 91                                                                                | 28                                                                                | 125                                                                               | 213                                                                                 | 477                                                                                 | 95                                                                                  | 77                                                                                  | 413                                                                                 | 165                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 109                                                                               | 0                                                                                 | 0                                                                                 | 104                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 54                                                                                  | 0                                                                                   | 64                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 109                                                                               | 42                                                                                | 0                                                                                 | 91                                                                                | 49                                                                                | 0                                                                                 | 213                                                                                 | 477                                                                                 | 41                                                                                  | 77                                                                                  | 514                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 3                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 3                                                                                 |                                                                                     |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 3%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 6%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Turn Type                         | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 7.8                                                                               | 7.8                                                                               |                                                                                   | 7.8                                                                               | 7.8                                                                               |                                                                                   | 24.7                                                                                | 20.0                                                                                | 20.0                                                                                | 20.7                                                                                | 18.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 7.8                                                                               | 7.8                                                                               |                                                                                   | 7.8                                                                               | 7.8                                                                               |                                                                                   | 24.7                                                                                | 20.0                                                                                | 20.0                                                                                | 20.7                                                                                | 18.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.17                                                                              | 0.17                                                                              |                                                                                   | 0.17                                                                              | 0.17                                                                              |                                                                                   | 0.54                                                                                | 0.44                                                                                | 0.44                                                                                | 0.45                                                                                | 0.39                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 206                                                                               | 277                                                                               |                                                                                   | 213                                                                               | 277                                                                               |                                                                                   | 508                                                                                 | 1557                                                                                | 688                                                                                 | 436                                                                                 | 1345                                                                                |                                                                                     |
| v/s Ratio Prot                    |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   | c0.04                                                                               | 0.13                                                                                |                                                                                     | 0.01                                                                                | 0.15                                                                                |                                                                                     |
| v/s Ratio Perm                    | c0.09                                                                             |                                                                                   |                                                                                   | 0.07                                                                              |                                                                                   |                                                                                   | c0.18                                                                               |                                                                                     | 0.03                                                                                | 0.07                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.53                                                                              | 0.15                                                                              |                                                                                   | 0.43                                                                              | 0.18                                                                              |                                                                                   | 0.42                                                                                | 0.31                                                                                | 0.06                                                                                | 0.18                                                                                | 0.38                                                                                |                                                                                     |
| Uniform Delay, d1                 | 17.4                                                                              | 16.2                                                                              |                                                                                   | 17.1                                                                              | 16.3                                                                              |                                                                                   | 5.6                                                                                 | 8.4                                                                                 | 7.5                                                                                 | 7.2                                                                                 | 10.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 2.4                                                                               | 0.3                                                                               |                                                                                   | 1.4                                                                               | 0.3                                                                               |                                                                                   | 0.6                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 |                                                                                     |
| Delay (s)                         | 19.8                                                                              | 16.5                                                                              |                                                                                   | 18.4                                                                              | 16.6                                                                              |                                                                                   | 6.2                                                                                 | 8.5                                                                                 | 7.5                                                                                 | 7.4                                                                                 | 10.2                                                                                |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                   | 17.3                                                                              |                                                                                   |                                                                                     | 7.8                                                                                 |                                                                                     |                                                                                     | 9.8                                                                                 |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 45.9                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 57.6%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

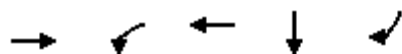
HCM 6th Signalized Intersection Summary  
5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 101                                                                               | 19                                                                                | 122                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 198                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 153                                                                                 |
| Future Volume (veh/h)        | 101                                                                               | 19                                                                                | 122                                                                               | 85                                                                                | 26                                                                                | 116                                                                               | 198                                                                                 | 444                                                                                 | 88                                                                                  | 72                                                                                  | 384                                                                                 | 153                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1885                                                                              | 1900                                                                                | 1885                                                                                | 1900                                                                                | 1811                                                                                | 1885                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 109                                                                               | 20                                                                                | 131                                                                               | 91                                                                                | 28                                                                                | 125                                                                               | 213                                                                                 | 477                                                                                 | 95                                                                                  | 77                                                                                  | 413                                                                                 | 165                                                                                 |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 6                                                                                   | 1                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 369                                                                               | 51                                                                                | 336                                                                               | 375                                                                               | 72                                                                                | 319                                                                               | 496                                                                                 | 1135                                                                                | 509                                                                                 | 470                                                                                 | 671                                                                                 | 265                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                                | 0.32                                                                                | 0.32                                                                                | 0.07                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1221                                                                              | 217                                                                               | 1421                                                                              | 1253                                                                              | 302                                                                               | 1349                                                                              | 1810                                                                                | 3582                                                                                | 1605                                                                                | 1725                                                                                | 2504                                                                                | 989                                                                                 |
| Grp Volume(v), veh/h         | 109                                                                               | 0                                                                                 | 151                                                                               | 91                                                                                | 0                                                                                 | 153                                                                               | 213                                                                                 | 477                                                                                 | 95                                                                                  | 77                                                                                  | 294                                                                                 | 284                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1221                                                                              | 0                                                                                 | 1638                                                                              | 1253                                                                              | 0                                                                                 | 1651                                                                              | 1810                                                                                | 1791                                                                                | 1605                                                                                | 1725                                                                                | 1791                                                                                | 1703                                                                                |
| Q Serve(g_s), s              | 3.4                                                                               | 0.0                                                                               | 3.2                                                                               | 2.7                                                                               | 0.0                                                                               | 3.2                                                                               | 3.4                                                                                 | 4.3                                                                                 | 1.8                                                                                 | 1.3                                                                                 | 5.9                                                                                 | 6.0                                                                                 |
| Cycle Q Clear(g_c), s        | 6.6                                                                               | 0.0                                                                               | 3.2                                                                               | 5.9                                                                               | 0.0                                                                               | 3.2                                                                               | 3.4                                                                                 | 4.3                                                                                 | 1.8                                                                                 | 1.3                                                                                 | 5.9                                                                                 | 6.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.87                                                                              | 1.00                                                                              |                                                                                   | 0.82                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.58                                                                                |
| Lane Grp Cap(c), veh/h       | 369                                                                               | 0                                                                                 | 388                                                                               | 375                                                                               | 0                                                                                 | 391                                                                               | 496                                                                                 | 1135                                                                                | 509                                                                                 | 470                                                                                 | 480                                                                                 | 456                                                                                 |
| V/C Ratio(X)                 | 0.30                                                                              | 0.00                                                                              | 0.39                                                                              | 0.24                                                                              | 0.00                                                                              | 0.39                                                                              | 0.43                                                                                | 0.42                                                                                | 0.19                                                                                | 0.16                                                                                | 0.61                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h        | 630                                                                               | 0                                                                                 | 738                                                                               | 643                                                                               | 0                                                                                 | 744                                                                               | 556                                                                                 | 1832                                                                                | 821                                                                                 | 562                                                                                 | 864                                                                                 | 821                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.0                                                                              | 0.0                                                                               | 13.2                                                                              | 15.6                                                                              | 0.0                                                                               | 13.2                                                                              | 9.3                                                                                 | 11.0                                                                                | 10.2                                                                                | 9.5                                                                                 | 13.2                                                                                | 13.2                                                                                |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.3                                                                               | 0.0                                                                               | 0.6                                                                               | 0.6                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 1.3                                                                                 | 1.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.0                                                                               | 1.0                                                                               | 0.7                                                                               | 0.0                                                                               | 1.1                                                                               | 1.1                                                                                 | 1.4                                                                                 | 0.5                                                                                 | 0.4                                                                                 | 2.1                                                                                 | 2.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 16.4                                                                              | 0.0                                                                               | 13.8                                                                              | 16.0                                                                              | 0.0                                                                               | 13.8                                                                              | 9.9                                                                                 | 11.3                                                                                | 10.4                                                                                | 9.6                                                                                 | 14.4                                                                                | 14.6                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 260                                                                               |                                                                                   |                                                                                   | 244                                                                               |                                                                                   |                                                                                     | 785                                                                                 |                                                                                     |                                                                                     | 655                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                     | 10.8                                                                                |                                                                                     |                                                                                     | 13.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.6                                                                               | 18.7                                                                              |                                                                                   | 13.7                                                                              | 10.6                                                                              | 16.7                                                                              |                                                                                     | 13.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | 5.7                                                                               |                                                                                   | 4.0                                                                               | 5.7                                                                               | 5.7                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 21.0                                                                              |                                                                                   | 18.5                                                                              | 6.3                                                                               | 19.8                                                                              |                                                                                     | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.3                                                                               | 6.3                                                                               |                                                                                   | 8.6                                                                               | 5.4                                                                               | 8.0                                                                               |                                                                                     | 7.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.0                                                                               |                                                                                   | 0.9                                                                               | 0.1                                                                               | 2.8                                                                               |                                                                                     | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 12.9                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Queues  
6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021



| Lane Group              | EBT  | WBL  | WBT  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 733  | 43   | 423  | 12   | 270  |
| v/c Ratio               | 0.49 | 0.10 | 0.46 | 0.04 | 0.53 |
| Control Delay           | 9.5  | 4.8  | 7.2  | 14.5 | 7.2  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.5  | 4.8  | 7.2  | 14.5 | 7.2  |
| Queue Length 50th (ft)  | 27   | 3    | 34   | 1    | 0    |
| Queue Length 95th (ft)  | 129  | 14   | 112  | 13   | 45   |
| Internal Link Dist (ft) | 912  |      | 627  | 485  |      |
| Turn Bay Length (ft)    |      | 240  |      |      | 400  |
| Base Capacity (vph)     | 1844 | 420  | 1389 | 1031 | 1007 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.40 | 0.10 | 0.30 | 0.01 | 0.27 |
| Intersection Summary    |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails

07/14/2021

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 540                                                                               | 120                                                                               | 39                                                                                | 381                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 540                                                                               | 120                                                                               | 39                                                                                | 381                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Ideal Flow (vphpl)                | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                |
| Total Lost time (s)               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Lane Util. Factor                 |                                                                                   | 0.95                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Flpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.97                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 3184                                                                              |                                                                                   | 1583                                                                              | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Flt Permitted                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.27                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 3184                                                                              |                                                                                   | 444                                                                               | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 600                                                                               | 133                                                                               | 43                                                                                | 423                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 270                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 27                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 220                                                                                 |
| Lane Group Flow (vph)             | 0                                                                                 | 706                                                                               | 0                                                                                 | 43                                                                                | 423                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 50                                                                                  |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 0%                                                                                | 1%                                                                                | 2%                                                                                | 5%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Turn Type                         |                                                                                   | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             |                                                                                   | 17.0                                                                              |                                                                                   | 23.2                                                                              | 23.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.4                                                                                 | 7.4                                                                                 |
| Effective Green, g (s)            |                                                                                   | 17.0                                                                              |                                                                                   | 23.2                                                                              | 23.2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.4                                                                                 | 7.4                                                                                 |
| Actuated g/C Ratio                |                                                                                   | 0.43                                                                              |                                                                                   | 0.59                                                                              | 0.59                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.19                                                                                | 0.19                                                                                |
| Clearance Time (s)                |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 1366                                                                              |                                                                                   | 309                                                                               | 1005                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 310                                                                                 | 272                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.22                                                                             |                                                                                   | 0.01                                                                              | c0.25                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.01                                                                                | c0.03                                                                               |
| v/c Ratio                         |                                                                                   | 0.52                                                                              |                                                                                   | 0.14                                                                              | 0.42                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.04                                                                                | 0.19                                                                                |
| Uniform Delay, d1                 |                                                                                   | 8.3                                                                               |                                                                                   | 4.0                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.2                                                                                | 13.6                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 0.3                                                                               |                                                                                   | 0.2                                                                               | 0.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.1                                                                                 | 0.3                                                                                 |
| Delay (s)                         |                                                                                   | 8.6                                                                               |                                                                                   | 4.2                                                                               | 4.8                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.2                                                                                | 13.9                                                                                |
| Level of Service                  |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                   | 4.7                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 13.9                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.45                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 39.6                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 45.6%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

c Critical Lane Group

# HCM 6th Signalized Intersection Summary

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails

07/14/2021

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 540                                                                               | 120                                                                               | 39                                                                                | 381                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 540                                                                               | 120                                                                               | 39                                                                                | 381                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 11                                                                                  | 0                                                                                   | 243                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1736                                                                              | 1723                                                                              | 1682                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1750                                                                                | 1750                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 600                                                                               | 133                                                                               | 43                                                                                | 423                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 12                                                                                  | 0                                                                                   | 270                                                                                 |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 1                                                                                 | 2                                                                                 | 5                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 920                                                                               | 204                                                                               | 376                                                                               | 888                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 393                                                                                 | 0                                                                                   | 344                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.34                                                                              | 0.34                                                                              | 0.05                                                                              | 0.52                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.24                                                                                | 0.00                                                                                | 0.24                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 2770                                                                              | 593                                                                               | 1602                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1667                                                                                | 0                                                                                   | 1460                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 368                                                                               | 365                                                                               | 43                                                                                | 423                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 12                                                                                  | 0                                                                                   | 270                                                                                 |
| Grp Sat Flow(s), veh/h/ln    | 0                                                                                 | 1650                                                                              | 1627                                                                              | 1602                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1667                                                                                | 0                                                                                   | 1460                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 6.8                                                                               | 6.9                                                                               | 0.6                                                                               | 5.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 6.3                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 6.8                                                                               | 6.9                                                                               | 0.6                                                                               | 5.7                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 6.3                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.36                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 566                                                                               | 558                                                                               | 376                                                                               | 888                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 393                                                                                 | 0                                                                                   | 344                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.65                                                                              | 0.65                                                                              | 0.11                                                                              | 0.48                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.03                                                                                | 0.00                                                                                | 0.78                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 888                                                                               | 876                                                                               | 541                                                                               | 1403                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 989                                                                                 | 0                                                                                   | 866                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 10.1                                                                              | 10.1                                                                              | 6.9                                                                               | 5.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.7                                                                                | 0.0                                                                                 | 13.0                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 1.3                                                                               | 0.1                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 3.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.0                                                                               | 2.0                                                                               | 0.1                                                                               | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.1                                                                                 | 0.0                                                                                 | 2.0                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 11.3                                                                              | 11.4                                                                              | 7.0                                                                               | 6.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.7                                                                                | 0.0                                                                                 | 16.9                                                                                |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | B                                                                                   | A                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 733                                                                               |                                                                                   |                                                                                   | 466                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 282                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.4                                                                              |                                                                                   |                                                                                   | 6.1                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 16.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   |                                                                                   | 6.3                                                                               | 16.9                                                                              |                                                                                   | 13.0                                                                              |                                                                                    | 23.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                    | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   |                                                                                   | 5.5                                                                               | 19.5                                                                              |                                                                                   | 21.5                                                                              |                                                                                    | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   |                                                                                   | 2.6                                                                               | 8.9                                                                               |                                                                                   | 8.3                                                                               |                                                                                    | 7.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   |                                                                                   | 0.0                                                                               | 3.4                                                                               |                                                                                   | 0.8                                                                               |                                                                                    | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 10.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



| Intersection             |        |      |      |        |       |      |        |       |      |        |      |      |
|--------------------------|--------|------|------|--------|-------|------|--------|-------|------|--------|------|------|
| Int Delay, s/veh         | 5      |      |      |        |       |      |        |       |      |        |      |      |
| Movement                 | EBL    | EBT  | EBR  | WBL    | WBT   | WBR  | NBL    | NBT   | NBR  | SBL    | SBT  | SBR  |
| Lane Configurations      |        | ↕    |      |        | ↕     |      |        | ↕     |      |        | ↕    |      |
| Traffic Vol, veh/h       | 0      | 42   | 22   | 38     | 45    | 0    | 61     | 0     | 26   | 0      | 0    | 0    |
| Future Vol, veh/h        | 0      | 42   | 22   | 38     | 45    | 0    | 61     | 0     | 26   | 0      | 0    | 0    |
| Conflicting Peds, #/hr   | 0      | 0    | 0    | 0      | 0     | 0    | 0      | 0     | 0    | 0      | 0    | 0    |
| Sign Control             | Free   | Free | Free | Free   | Free  | Free | Stop   | Stop  | Stop | Stop   | Stop | Stop |
| RT Channelized           | -      | -    | None | -      | -     | None | -      | -     | None | -      | -    | None |
| Storage Length           | -      | -    | -    | -      | -     | -    | -      | -     | -    | -      | -    | -    |
| Veh in Median Storage, # | -      | 0    | -    | -      | 0     | -    | -      | 0     | -    | -      | 0    | -    |
| Grade, %                 | -      | 0    | -    | -      | 0     | -    | -      | 0     | -    | -      | 0    | -    |
| Peak Hour Factor         | 79     | 79   | 79   | 79     | 79    | 79   | 79     | 79    | 79   | 79     | 79   | 79   |
| Heavy Vehicles, %        | 0      | 0    | 0    | 0      | 2     | 0    | 0      | 0     | 0    | 0      | 0    | 0    |
| Mvmt Flow                | 0      | 53   | 28   | 48     | 57    | 0    | 77     | 0     | 33   | 0      | 0    | 0    |
|                          |        |      |      |        |       |      |        |       |      |        |      |      |
| Major/Minor              | Major1 |      |      | Major2 |       |      | Minor1 |       |      | Minor2 |      |      |
| Conflicting Flow All     | 57     | 0    | 0    | 81     | 0     | 0    | 220    | 220   | 67   | 237    | 234  | 57   |
| Stage 1                  | -      | -    | -    | -      | -     | -    | 67     | 67    | -    | 153    | 153  | -    |
| Stage 2                  | -      | -    | -    | -      | -     | -    | 153    | 153   | -    | 84     | 81   | -    |
| Critical Hdwy            | 4.1    | -    | -    | 4.1    | -     | -    | 7.1    | 6.5   | 6.2  | 7.1    | 6.5  | 6.2  |
| Critical Hdwy Stg 1      | -      | -    | -    | -      | -     | -    | 6.1    | 5.5   | -    | 6.1    | 5.5  | -    |
| Critical Hdwy Stg 2      | -      | -    | -    | -      | -     | -    | 6.1    | 5.5   | -    | 6.1    | 5.5  | -    |
| Follow-up Hdwy           | 2.2    | -    | -    | 2.2    | -     | -    | 3.5    | 4     | 3.3  | 3.5    | 4    | 3.3  |
| Pot Cap-1 Maneuver       | 1560   | -    | -    | 1529   | -     | -    | 740    | 682   | 1002 | 722    | 670  | 1015 |
| Stage 1                  | -      | -    | -    | -      | -     | -    | 948    | 843   | -    | 854    | 775  | -    |
| Stage 2                  | -      | -    | -    | -      | -     | -    | 854    | 775   | -    | 929    | 832  | -    |
| Platoon blocked, %       |        | -    | -    |        | -     | -    |        |       |      |        |      |      |
| Mov Cap-1 Maneuver       | 1560   | -    | -    | 1529   | -     | -    | 722    | 660   | 1002 | 682    | 649  | 1015 |
| Mov Cap-2 Maneuver       | -      | -    | -    | -      | -     | -    | 722    | 660   | -    | 682    | 649  | -    |
| Stage 1                  | -      | -    | -    | -      | -     | -    | 948    | 843   | -    | 854    | 750  | -    |
| Stage 2                  | -      | -    | -    | -      | -     | -    | 827    | 750   | -    | 898    | 832  | -    |
|                          |        |      |      |        |       |      |        |       |      |        |      |      |
|                          |        |      |      |        |       |      |        |       |      |        |      |      |
| Approach                 | EB     |      |      | WB     |       |      | NB     |       |      | SB     |      |      |
| HCM Control Delay, s     | 0      |      |      | 3.4    |       |      | 10.3   |       |      | 0      |      |      |
| HCM LOS                  |        |      |      |        |       |      | B      |       |      | A      |      |      |
|                          |        |      |      |        |       |      |        |       |      |        |      |      |
| Minor Lane/Major Mvmt    | NBLn1  | EBL  | EBT  | EBR    | WBL   | WBT  | WBR    | SBLn1 |      |        |      |      |
| Capacity (veh/h)         | 788    | 1560 | -    | -      | 1529  | -    | -      | -     |      |        |      |      |
| HCM Lane V/C Ratio       | 0.14   | -    | -    | -      | 0.031 | -    | -      | -     |      |        |      |      |
| HCM Control Delay (s)    | 10.3   | 0    | -    | -      | 7.4   | 0    | -      | 0     |      |        |      |      |
| HCM Lane LOS             | B      | A    | -    | -      | A     | A    | -      | A     |      |        |      |      |
| HCM 95th %tile Q(veh)    | 0.5    | 0    | -    | -      | 0.1   | -    | -      | -     |      |        |      |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 1.2  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 0    | 0    | 0    | 14   | 0    | 4    | 0    | 83   | 24   | 7    | 53   | 0    |
| Future Vol, veh/h        | 0    | 0    | 0    | 14   | 0    | 4    | 0    | 83   | 24   | 7    | 53   | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 76   | 76   | 76   | 76   | 76   | 76   | 76   | 76   | 76   | 76   | 76   | 76   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 0    | 0    | 0    | 18   | 0    | 5    | 0    | 109  | 32   | 9    | 70   | 0    |

| Major/Minor          | Minor2 |     | Minor1 |     | Major1 |     | Major2 |   |   |      |   |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 216    | 229 | 70     | 213 | 213    | 125 | 70     | 0 | 0 | 141  | 0 | 0 |
| Stage 1              | 88     | 88  | -      | 125 | 125    | -   | -      | - | - | -    | - | - |
| Stage 2              | 128    | 141 | -      | 88  | 88     | -   | -      | - | - | -    | - | - |
| Critical Hdwy        | 7.1    | 6.5 | 6.2    | 7.1 | 6.5    | 6.2 | 4.1    | - | - | 4.1  | - | - |
| Critical Hdwy Stg 1  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - | - | -    | - | - |
| Critical Hdwy Stg 2  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - | - | -    | - | - |
| Follow-up Hdwy       | 3.5    | 4   | 3.3    | 3.5 | 4      | 3.3 | 2.2    | - | - | 2.2  | - | - |
| Pot Cap-1 Maneuver   | 745    | 674 | 998    | 748 | 688    | 931 | 1544   | - | - | 1455 | - | - |
| Stage 1              | 925    | 826 | -      | 884 | 796    | -   | -      | - | - | -    | - | - |
| Stage 2              | 881    | 784 | -      | 925 | 826    | -   | -      | - | - | -    | - | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - | - | -    | - | - |
| Mov Cap-1 Maneuver   | 738    | 670 | 998    | 744 | 684    | 931 | 1544   | - | - | 1455 | - | - |
| Mov Cap-2 Maneuver   | 738    | 670 | -      | 744 | 684    | -   | -      | - | - | -    | - | - |
| Stage 1              | 925    | 821 | -      | 884 | 796    | -   | -      | - | - | -    | - | - |
| Stage 2              | 876    | 784 | -      | 919 | 821    | -   | -      | - | - | -    | - | - |

| Approach             | EB | WB  | NB | SB  |
|----------------------|----|-----|----|-----|
| HCM Control Delay, s | 0  | 9.8 | 0  | 0.9 |
| HCM LOS              | A  | A   |    |     |

| Minor Lane/Major Mvmt | NBL  | NBT | NBR | EBLn1WBLn1 | SBL  | SBT   | SBR |
|-----------------------|------|-----|-----|------------|------|-------|-----|
| Capacity (veh/h)      | 1544 | -   | -   | -          | 779  | 1455  | -   |
| HCM Lane V/C Ratio    | -    | -   | -   | -          | 0.03 | 0.006 | -   |
| HCM Control Delay (s) | 0    | -   | -   | 0          | 9.8  | 7.5   | 0   |
| HCM Lane LOS          | A    | -   | -   | A          | A    | A     | -   |
| HCM 95th %tile Q(veh) | 0    | -   | -   | -          | 0.1  | 0     | -   |

| Intersection             |                                                                                   |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.9                                                                               |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL                                                                               | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |      |      |  |      |  |  |      |      |  |      |
| Traffic Vol, veh/h       | 22                                                                                | 0                                                                                 | 36   | 11   | 0                                                                                 | 4    | 81                                                                                | 110                                                                               | 12   | 2    | 57                                                                                  | 32   |
| Future Vol, veh/h        | 22                                                                                | 0                                                                                 | 36   | 11   | 0                                                                                 | 4    | 81                                                                                | 110                                                                               | 12   | 2    | 57                                                                                  | 32   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop | Stop | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 55                                                                                | -                                                                                 | -    | -    | -                                                                                 | -    | 75                                                                                | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                | 76   | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 8    |
| Mvmt Flow                | 29                                                                                | 0                                                                                 | 47   | 14   | 0                                                                                 | 5    | 107                                                                               | 145                                                                               | 16   | 3    | 75                                                                                  | 42   |

| Major/Minor          | Minor2 |     | Minor1 |     | Major1 |     | Major2 |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|
| Conflicting Flow All | 472    | 477 | 96     | 493 | 490    | 153 | 117    | 0 |
| Stage 1              | 102    | 102 | -      | 367 | 367    | -   | -      | - |
| Stage 2              | 370    | 375 | -      | 126 | 123    | -   | -      | - |
| Critical Hdwy        | 7.1    | 6.5 | 6.2    | 7.1 | 6.5    | 6.2 | 4.1    | - |
| Critical Hdwy Stg 1  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Critical Hdwy Stg 2  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Follow-up Hdwy       | 3.5    | 4   | 3.3    | 3.5 | 4      | 3.3 | 2.2    | - |
| Pot Cap-1 Maneuver   | 506    | 490 | 966    | 490 | 482    | 898 | 1484   | - |
| Stage 1              | 909    | 815 | -      | 657 | 626    | -   | -      | - |
| Stage 2              | 654    | 621 | -      | 883 | 798    | -   | -      | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - |
| Mov Cap-1 Maneuver   | 475    | 454 | 966    | 440 | 446    | 898 | 1484   | - |
| Mov Cap-2 Maneuver   | 475    | 454 | -      | 440 | 446    | -   | -      | - |
| Stage 1              | 844    | 813 | -      | 610 | 581    | -   | -      | - |
| Stage 2              | 603    | 576 | -      | 838 | 796    | -   | -      | - |

| Approach             | EB   | WB   | NB | SB  |
|----------------------|------|------|----|-----|
| HCM Control Delay, s | 10.5 | 12.4 | 3  | 0.2 |
| HCM LOS              | B    | B    |    |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1484  | -   | -   | 475   | 966   | 509   | 1430  | -   | -   |
| HCM Lane V/C Ratio    | 0.072 | -   | -   | 0.061 | 0.049 | 0.039 | 0.002 | -   | -   |
| HCM Control Delay (s) | 7.6   | -   | -   | 13.1  | 8.9   | 12.4  | 7.5   | 0   | -   |
| HCM Lane LOS          | A     | -   | -   | B     | A     | B     | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | 0.2   | 0.2   | 0.1   | 0     | -   | -   |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 10.9 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 1    | 68   | 21   | 46   | 90   | 166  | 23   | 111  | 27   | 85   | 83   | 2    |
| Future Vol, veh/h   | 1    | 68   | 21   | 46   | 90   | 166  | 23   | 111  | 27   | 85   | 83   | 2    |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 0    | 0    |
| Mvmt Flow           | 1    | 77   | 24   | 52   | 102  | 189  | 26   | 126  | 31   | 97   | 94   | 2    |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB   | NB   | SB   |
|----------------------------|-----|------|------|------|
| Opposing Approach          | WB  | EB   | SB   | NB   |
| Opposing Lanes             | 1   | 1    | 1    | 1    |
| Conflicting Approach Left  | SB  | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1   | 1    | 1    | 1    |
| Conflicting Approach Right | NB  | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1   | 1    | 1    | 1    |
| HCM Control Delay          | 9.3 | 11.8 | 10.3 | 10.8 |
| HCM LOS                    | A   | B    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 14%   | 1%    | 15%   | 50%   |
| Vol Thru, %            | 69%   | 76%   | 30%   | 49%   |
| Vol Right, %           | 17%   | 23%   | 55%   | 1%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 161   | 90    | 302   | 170   |
| LT Vol                 | 23    | 1     | 46    | 85    |
| Through Vol            | 111   | 68    | 90    | 83    |
| RT Vol                 | 27    | 21    | 166   | 2     |
| Lane Flow Rate         | 183   | 102   | 343   | 193   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.268 | 0.151 | 0.459 | 0.295 |
| Departure Headway (Hd) | 5.282 | 5.301 | 4.82  | 5.504 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 681   | 676   | 752   | 653   |
| Service Time           | 3.318 | 3.339 | 2.82  | 3.54  |
| HCM Lane V/C Ratio     | 0.269 | 0.151 | 0.456 | 0.296 |
| HCM Control Delay      | 10.3  | 9.3   | 11.8  | 10.8  |
| HCM Lane LOS           | B     | A     | B     | B     |
| HCM 95th-tile Q        | 1.1   | 0.5   | 2.4   | 1.2   |

Queues  
5: NW 6th St & NW Quince Ave

Canyon Trails  
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| Lane Group              | EBL  | EBT  | WBL  | WBT  | NBL  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 105  | 153  | 95   | 160  | 212  | 502  | 99   | 82   | 603  |
| v/c Ratio               | 0.39 | 0.33 | 0.34 | 0.34 | 0.37 | 0.27 | 0.11 | 0.16 | 0.38 |
| Control Delay           | 20.7 | 7.2  | 19.5 | 7.7  | 7.6  | 10.7 | 2.6  | 6.4  | 11.5 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.7 | 7.2  | 19.5 | 7.7  | 7.6  | 10.7 | 2.6  | 6.4  | 11.5 |
| Queue Length 50th (ft)  | 23   | 4    | 20   | 6    | 21   | 50   | 0    | 8    | 54   |
| Queue Length 95th (ft)  | 64   | 42   | 59   | 45   | 61   | 98   | 19   | 27   | 108  |
| Internal Link Dist (ft) |      | 1251 |      | 707  |      | 1308 |      |      | 912  |
| Turn Bay Length (ft)    | 100  |      | 300  |      | 150  |      | 350  | 385  |      |
| Base Capacity (vph)     | 563  | 834  | 584  | 832  | 569  | 1928 | 907  | 520  | 1763 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.19 | 0.18 | 0.16 | 0.19 | 0.37 | 0.26 | 0.11 | 0.16 | 0.34 |
| Intersection Summary    |      |      |      |      |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)              | 98                                                                                | 20                                                                                | 122                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 197                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 149                                                                                 |
| Future Volume (vph)               | 98                                                                                | 20                                                                                | 122                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 197                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 149                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.98                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 0.87                                                                              |                                                                                   | 1.00                                                                              | 0.88                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1749                                                                              | 1638                                                                              |                                                                                   | 1804                                                                              | 1636                                                                              |                                                                                   | 1805                                                                                | 3574                                                                                | 1579                                                                                | 1702                                                                                | 3441                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.38                                                                                | 1.00                                                                                | 1.00                                                                                | 0.47                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1207                                                                              | 1638                                                                              |                                                                                   | 1253                                                                              | 1636                                                                              |                                                                                   | 721                                                                                 | 3574                                                                                | 1579                                                                                | 838                                                                                 | 3441                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 105                                                                               | 22                                                                                | 131                                                                               | 95                                                                                | 30                                                                                | 130                                                                               | 212                                                                                 | 502                                                                                 | 99                                                                                  | 82                                                                                  | 443                                                                                 | 160                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 109                                                                               | 0                                                                                 | 0                                                                                 | 108                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 55                                                                                  | 0                                                                                   | 55                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 105                                                                               | 44                                                                                | 0                                                                                 | 95                                                                                | 52                                                                                | 0                                                                                 | 212                                                                                 | 502                                                                                 | 44                                                                                  | 82                                                                                  | 548                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 3                                                                                 |                                                                                   | 1                                                                                 | 1                                                                                 |                                                                                   | 3                                                                                 |                                                                                     |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 3%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 6%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Turn Type                         | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 7.7                                                                               | 7.7                                                                               |                                                                                   | 7.7                                                                               | 7.7                                                                               |                                                                                   | 24.9                                                                                | 20.3                                                                                | 20.3                                                                                | 21.1                                                                                | 18.4                                                                                |                                                                                     |
| Effective Green, g (s)            | 7.7                                                                               | 7.7                                                                               |                                                                                   | 7.7                                                                               | 7.7                                                                               |                                                                                   | 24.9                                                                                | 20.3                                                                                | 20.3                                                                                | 21.1                                                                                | 18.4                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.17                                                                              | 0.17                                                                              |                                                                                   | 0.17                                                                              | 0.17                                                                              |                                                                                   | 0.54                                                                                | 0.44                                                                                | 0.44                                                                                | 0.46                                                                                | 0.40                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               | 4.0                                                                               |                                                                                   | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 201                                                                               | 273                                                                               |                                                                                   | 209                                                                               | 273                                                                               |                                                                                   | 497                                                                                 | 1573                                                                                | 695                                                                                 | 434                                                                                 | 1373                                                                                |                                                                                     |
| v/s Ratio Prot                    |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   | c0.04                                                                               | 0.14                                                                                |                                                                                     | 0.01                                                                                | 0.16                                                                                |                                                                                     |
| v/s Ratio Perm                    | c0.09                                                                             |                                                                                   |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   | c0.19                                                                               |                                                                                     | 0.03                                                                                | 0.08                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.52                                                                              | 0.16                                                                              |                                                                                   | 0.45                                                                              | 0.19                                                                              |                                                                                   | 0.43                                                                                | 0.32                                                                                | 0.06                                                                                | 0.19                                                                                | 0.40                                                                                |                                                                                     |
| Uniform Delay, d1                 | 17.5                                                                              | 16.4                                                                              |                                                                                   | 17.3                                                                              | 16.5                                                                              |                                                                                   | 5.6                                                                                 | 8.4                                                                                 | 7.4                                                                                 | 7.1                                                                                 | 9.9                                                                                 |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 2.4                                                                               | 0.3                                                                               |                                                                                   | 1.6                                                                               | 0.3                                                                               |                                                                                   | 0.6                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 |                                                                                     |
| Delay (s)                         | 20.0                                                                              | 16.7                                                                              |                                                                                   | 18.9                                                                              | 16.9                                                                              |                                                                                   | 6.2                                                                                 | 8.5                                                                                 | 7.5                                                                                 | 7.3                                                                                 | 10.1                                                                                |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 18.0                                                                              |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                     | 7.8                                                                                 |                                                                                     |                                                                                     | 9.8                                                                                 |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 46.1                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 58.4%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



HCM 6th Signalized Intersection Summary  
5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

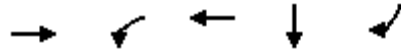
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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 98                                                                                | 20                                                                                | 122                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 197                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 149                                                                                 |
| Future Volume (veh/h)        | 98                                                                                | 20                                                                                | 122                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 197                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 149                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1885                                                                              | 1900                                                                                | 1885                                                                                | 1900                                                                                | 1811                                                                                | 1885                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 105                                                                               | 22                                                                                | 131                                                                               | 95                                                                                | 30                                                                                | 130                                                                               | 212                                                                                 | 502                                                                                 | 99                                                                                  | 82                                                                                  | 443                                                                                 | 160                                                                                 |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 6                                                                                   | 1                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 361                                                                               | 56                                                                                | 333                                                                               | 371                                                                               | 73                                                                                | 318                                                                               | 489                                                                                 | 1143                                                                                | 512                                                                                 | 465                                                                                 | 707                                                                                 | 253                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.12                                                                                | 0.32                                                                                | 0.32                                                                                | 0.07                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 1213                                                                              | 236                                                                               | 1405                                                                              | 1250                                                                              | 310                                                                               | 1343                                                                              | 1810                                                                                | 3582                                                                                | 1605                                                                                | 1725                                                                                | 2582                                                                                | 924                                                                                 |
| Grp Volume(v), veh/h         | 105                                                                               | 0                                                                                 | 153                                                                               | 95                                                                                | 0                                                                                 | 160                                                                               | 212                                                                                 | 502                                                                                 | 99                                                                                  | 82                                                                                  | 306                                                                                 | 297                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1213                                                                              | 0                                                                                 | 1641                                                                              | 1250                                                                              | 0                                                                                 | 1652                                                                              | 1810                                                                                | 1791                                                                                | 1605                                                                                | 1725                                                                                | 1791                                                                                | 1715                                                                                |
| Q Serve(g_s), s              | 3.3                                                                               | 0.0                                                                               | 3.3                                                                               | 2.9                                                                               | 0.0                                                                               | 3.4                                                                               | 3.4                                                                                 | 4.6                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 6.2                                                                                 | 6.3                                                                                 |
| Cycle Q Clear(g_c), s        | 6.7                                                                               | 0.0                                                                               | 3.3                                                                               | 6.1                                                                               | 0.0                                                                               | 3.4                                                                               | 3.4                                                                                 | 4.6                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 6.2                                                                                 | 6.3                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.86                                                                              | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.54                                                                                |
| Lane Grp Cap(c), veh/h       | 361                                                                               | 0                                                                                 | 389                                                                               | 371                                                                               | 0                                                                                 | 392                                                                               | 489                                                                                 | 1143                                                                                | 512                                                                                 | 465                                                                                 | 491                                                                                 | 470                                                                                 |
| V/C Ratio(X)                 | 0.29                                                                              | 0.00                                                                              | 0.39                                                                              | 0.26                                                                              | 0.00                                                                              | 0.41                                                                              | 0.43                                                                                | 0.44                                                                                | 0.19                                                                                | 0.18                                                                                | 0.62                                                                                | 0.63                                                                                |
| Avail Cap(c_a), veh/h        | 613                                                                               | 0                                                                                 | 730                                                                               | 631                                                                               | 0                                                                                 | 735                                                                               | 548                                                                                 | 1808                                                                                | 810                                                                                 | 549                                                                                 | 852                                                                                 | 816                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.2                                                                              | 0.0                                                                               | 13.4                                                                              | 15.9                                                                              | 0.0                                                                               | 13.4                                                                              | 9.3                                                                                 | 11.2                                                                                | 10.3                                                                                | 9.4                                                                                 | 13.2                                                                                | 13.3                                                                                |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.4                                                                               | 0.0                                                                               | 0.7                                                                               | 0.6                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 1.3                                                                                 | 1.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.8                                                                               | 0.0                                                                               | 1.1                                                                               | 0.7                                                                               | 0.0                                                                               | 1.1                                                                               | 1.1                                                                                 | 1.5                                                                                 | 0.6                                                                                 | 0.4                                                                                 | 2.2                                                                                 | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 16.7                                                                              | 0.0                                                                               | 14.0                                                                              | 16.3                                                                              | 0.0                                                                               | 14.1                                                                              | 9.9                                                                                 | 11.5                                                                                | 10.5                                                                                | 9.6                                                                                 | 14.5                                                                                | 14.7                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | A                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 258                                                                               |                                                                                   |                                                                                   | 255                                                                               |                                                                                   |                                                                                     | 813                                                                                 |                                                                                     |                                                                                     | 685                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 15.1                                                                              |                                                                                   |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                     | 11.0                                                                                |                                                                                     |                                                                                     | 14.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.8                                                                               | 19.0                                                                              |                                                                                   | 13.9                                                                              | 10.6                                                                              | 17.1                                                                              |                                                                                     | 13.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | 5.7                                                                               |                                                                                   | 4.0                                                                               | 5.7                                                                               | 5.7                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 21.0                                                                              |                                                                                   | 18.5                                                                              | 6.3                                                                               | 19.8                                                                              |                                                                                     | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 6.6                                                                               |                                                                                   | 8.7                                                                               | 5.4                                                                               | 8.3                                                                               |                                                                                     | 8.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.2                                                                               |                                                                                   | 0.9                                                                               | 0.1                                                                               | 2.9                                                                               |                                                                                     | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   |                                                                                   | 13.0                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## 6: US 97 SB Ramp &amp; NW 6th St

Canyon Trails

07/14/2021



| Lane Group              | EBT  | WBL  | WBT  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 764  | 44   | 439  | 13   | 288  |
| v/c Ratio               | 0.51 | 0.11 | 0.47 | 0.04 | 0.55 |
| Control Delay           | 9.8  | 4.9  | 7.4  | 14.5 | 7.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.8  | 4.9  | 7.4  | 14.5 | 7.3  |
| Queue Length 50th (ft)  | 29   | 3    | 36   | 1    | 0    |
| Queue Length 95th (ft)  | 138  | 15   | 120  | 13   | 47   |
| Internal Link Dist (ft) | 912  |      | 627  | 485  |      |
| Turn Bay Length (ft)    |      | 240  |      |      | 400  |
| Base Capacity (vph)     | 1817 | 411  | 1394 | 1027 | 1011 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.42 | 0.11 | 0.31 | 0.01 | 0.28 |
| Intersection Summary    |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails

07/14/2021

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 569                                                                               | 119                                                                               | 40                                                                                | 395                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 569                                                                               | 119                                                                               | 40                                                                                | 395                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Ideal Flow (vphpl)                | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                               | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                |
| Total Lost time (s)               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Lane Util. Factor                 |                                                                                   | 0.95                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Flpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.97                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 3189                                                                              |                                                                                   | 1583                                                                              | 1716                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Flt Permitted                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.25                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 3189                                                                              |                                                                                   | 421                                                                               | 1716                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 632                                                                               | 132                                                                               | 44                                                                                | 439                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 13                                                                                  | 0                                                                                   | 288                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 25                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 234                                                                                 |
| Lane Group Flow (vph)             | 0                                                                                 | 739                                                                               | 0                                                                                 | 44                                                                                | 439                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 13                                                                                  | 54                                                                                  |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 0%                                                                                | 1%                                                                                | 2%                                                                                | 5%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                 | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Turn Type                         |                                                                                   | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             |                                                                                   | 17.1                                                                              |                                                                                   | 23.3                                                                              | 23.3                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 7.5                                                                                 | 7.5                                                                                 |
| Effective Green, g (s)            |                                                                                   | 17.1                                                                              |                                                                                   | 23.3                                                                              | 23.3                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 7.5                                                                                 | 7.5                                                                                 |
| Actuated g/C Ratio                |                                                                                   | 0.43                                                                              |                                                                                   | 0.59                                                                              | 0.59                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.19                                                                                | 0.19                                                                                |
| Clearance Time (s)                |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 1370                                                                              |                                                                                   | 296                                                                               | 1004                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 313                                                                                 | 274                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.23                                                                             |                                                                                   | 0.01                                                                              | c0.26                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.01                                                                                | c0.04                                                                               |
| v/c Ratio                         |                                                                                   | 0.54                                                                              |                                                                                   | 0.15                                                                              | 0.44                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.04                                                                                | 0.20                                                                                |
| Uniform Delay, d1                 |                                                                                   | 8.4                                                                               |                                                                                   | 4.1                                                                               | 4.6                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 13.2                                                                                | 13.6                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 0.4                                                                               |                                                                                   | 0.2                                                                               | 0.3                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 0.1                                                                                 | 0.4                                                                                 |
| Delay (s)                         |                                                                                   | 8.8                                                                               |                                                                                   | 4.3                                                                               | 4.9                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 13.3                                                                                | 14.0                                                                                |
| Level of Service                  |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 8.8                                                                               |                                                                                   |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 13.9                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.47                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 39.8                                                                              |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 47.5%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 6th Signalized Intersection Summary

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                              |  |      |      |      |      |      |     |      |     |      |      |      |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|-----|------|-----|------|------|------|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL | NBT  | NBR | SBL  | SBT  | SBR  |
| Lane Configurations          |                                                                                    | ↑↑   |      | ↑    | ↑    |      |     |      |     |      | ↑    | ↑    |
| Traffic Volume (veh/h)       | 0                                                                                  | 569  | 119  | 40   | 395  | 0    | 0   | 0    | 0   | 12   | 0    | 259  |
| Future Volume (veh/h)        | 0                                                                                  | 569  | 119  | 40   | 395  | 0    | 0   | 0    | 0   | 12   | 0    | 259  |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    |     |      |     | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 |     |      |     | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        |                                                                                    | No   |      |      | No   |      |     |      |     |      | No   |      |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1736 | 1723 | 1682 | 1723 | 0    |     |      |     | 1750 | 1750 | 1723 |
| Adj Flow Rate, veh/h         | 0                                                                                  | 632  | 132  | 44   | 439  | 0    |     |      |     | 13   | 0    | 288  |
| Peak Hour Factor             | 0.90                                                                               | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |     |      |     | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, %         | 0                                                                                  | 1    | 2    | 5    | 2    | 0    |     |      |     | 0    | 0    | 2    |
| Cap, veh/h                   | 0                                                                                  | 939  | 196  | 361  | 885  | 0    |     |      |     | 415  | 0    | 363  |
| Arrive On Green              | 0.00                                                                               | 0.35 | 0.35 | 0.05 | 0.51 | 0.00 |     |      |     | 0.25 | 0.00 | 0.25 |
| Sat Flow, veh/h              | 0                                                                                  | 2803 | 566  | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Grp Volume(v), veh/h         | 0                                                                                  | 383  | 381  | 44   | 439  | 0    |     |      |     | 13   | 0    | 288  |
| Grp Sat Flow(s), veh/h/ln    | 0                                                                                  | 1650 | 1632 | 1602 | 1723 | 0    |     |      |     | 1667 | 0    | 1460 |
| Q Serve(g_s), s              | 0.0                                                                                | 7.5  | 7.5  | 0.6  | 6.3  | 0.0  |     |      |     | 0.2  | 0.0  | 7.0  |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 7.5  | 7.5  | 0.6  | 6.3  | 0.0  |     |      |     | 0.2  | 0.0  | 7.0  |
| Prop In Lane                 | 0.00                                                                               |      | 0.35 | 1.00 |      | 0.00 |     |      |     | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 570  | 564  | 361  | 885  | 0    |     |      |     | 415  | 0    | 363  |
| V/C Ratio(X)                 | 0.00                                                                               | 0.67 | 0.67 | 0.12 | 0.50 | 0.00 |     |      |     | 0.03 | 0.00 | 0.79 |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 849  | 841  | 516  | 1342 | 0    |     |      |     | 946  | 0    | 829  |
| HCM Platoon Ratio            | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |      |     | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 0.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 |     |      |     | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 10.6 | 10.6 | 7.2  | 6.0  | 0.0  |     |      |     | 10.8 | 0.0  | 13.3 |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 1.4  | 1.4  | 0.1  | 0.4  | 0.0  |     |      |     | 0.0  | 0.0  | 3.9  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |      |     | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 2.2  | 2.2  | 0.1  | 1.4  | 0.0  |     |      |     | 0.1  | 0.0  | 2.2  |
| Unsig. Movement Delay, s/veh |                                                                                    |      |      |      |      |      |     |      |     |      |      |      |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 11.9 | 12.0 | 7.4  | 6.4  | 0.0  |     |      |     | 10.8 | 0.0  | 17.2 |
| LnGrp LOS                    | A                                                                                  | B    | B    | A    | A    | A    |     |      |     | B    | A    | B    |
| Approach Vol, veh/h          |                                                                                    | 764  |      |      | 483  |      |     |      |     |      | 301  |      |
| Approach Delay, s/veh        |                                                                                    | 12.0 |      |      | 6.5  |      |     |      |     |      | 17.0 |      |
| Approach LOS                 |                                                                                    | B    |      |      | A    |      |     |      |     |      | B    |      |
| Timer - Assigned Phs         |                                                                                    |      | 3    | 4    |      | 6    |     | 8    |     |      |      |      |
| Phs Duration (G+Y+Rc), s     |                                                                                    |      | 6.4  | 17.6 |      | 13.9 |     | 23.9 |     |      |      |      |
| Change Period (Y+Rc), s      |                                                                                    |      | 4.5  | 4.5  |      | 4.5  |     | 4.5  |     |      |      |      |
| Max Green Setting (Gmax), s  |                                                                                    |      | 5.5  | 19.5 |      | 21.5 |     | 29.5 |     |      |      |      |
| Max Q Clear Time (g_c+I1), s |                                                                                    |      | 2.6  | 9.5  |      | 9.0  |     | 8.3  |     |      |      |      |
| Green Ext Time (p_c), s      |                                                                                    |      | 0.0  | 3.5  |      | 0.8  |     | 2.7  |     |      |      |      |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |     |      |     |      |      |      |
| HCM 6th Ctrl Delay           |                                                                                    |      | 11.2 |      |      |      |     |      |     |      |      |      |
| HCM 6th LOS                  |                                                                                    |      | B    |      |      |      |     |      |     |      |      |      |

| Intersection             |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Int Delay, s/veh         | 5.3  |      |      |      |      |      |      |      |      |      |      |      |
| Movement                 | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations      |      | ↕    |      |      | ↕    |      |      | ↕    |      |      | ↕    |      |
| Traffic Vol, veh/h       | 0    | 42   | 22   | 47   | 45   | 0    | 61   | 0    | 32   | 0    | 0    | 0    |
| Future Vol, veh/h        | 0    | 42   | 22   | 47   | 45   | 0    | 61   | 0    | 32   | 0    | 0    | 0    |
| Conflicting Peds, #/hr   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Sign Control             | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized           | -    | -    | None | -    | -    | None | -    | -    | None | -    | -    | None |
| Storage Length           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Veh in Median Storage, # | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Grade, %                 | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    | -    | 0    | -    |
| Peak Hour Factor         | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   | 79   |
| Heavy Vehicles, %        | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Mvmt Flow                | 0    | 53   | 28   | 59   | 57   | 0    | 77   | 0    | 41   | 0    | 0    | 0    |

| Major/Minor          | Major1 |   |   | Major2 |   |   | Minor1 |     |      | Minor2 |     |      |
|----------------------|--------|---|---|--------|---|---|--------|-----|------|--------|-----|------|
| Conflicting Flow All | 57     | 0 | 0 | 81     | 0 | 0 | 242    | 242 | 67   | 263    | 256 | 57   |
| Stage 1              | -      | - | - | -      | - | - | 67     | 67  | -    | 175    | 175 | -    |
| Stage 2              | -      | - | - | -      | - | - | 175    | 175 | -    | 88     | 81  | -    |
| Critical Hdwy        | 4.1    | - | - | 4.1    | - | - | 7.1    | 6.5 | 6.2  | 7.1    | 6.5 | 6.2  |
| Critical Hdwy Stg 1  | -      | - | - | -      | - | - | 6.1    | 5.5 | -    | 6.1    | 5.5 | -    |
| Critical Hdwy Stg 2  | -      | - | - | -      | - | - | 6.1    | 5.5 | -    | 6.1    | 5.5 | -    |
| Follow-up Hdwy       | 2.2    | - | - | 2.2    | - | - | 3.5    | 4   | 3.3  | 3.5    | 4   | 3.3  |
| Pot Cap-1 Maneuver   | 1560   | - | - | 1529   | - | - | 716    | 663 | 1002 | 694    | 651 | 1015 |
| Stage 1              | -      | - | - | -      | - | - | 948    | 843 | -    | 832    | 758 | -    |
| Stage 2              | -      | - | - | -      | - | - | 832    | 758 | -    | 925    | 832 | -    |
| Platoon blocked, %   | -      | - | - | -      | - | - | -      | -   | -    | -      | -   | -    |
| Mov Cap-1 Maneuver   | 1560   | - | - | 1529   | - | - | 694    | 636 | 1002 | 645    | 625 | 1015 |
| Mov Cap-2 Maneuver   | -      | - | - | -      | - | - | 694    | 636 | -    | 645    | 625 | -    |
| Stage 1              | -      | - | - | -      | - | - | 948    | 843 | -    | 832    | 728 | -    |
| Stage 2              | -      | - | - | -      | - | - | 799    | 728 | -    | 888    | 832 | -    |

| Approach             | EB | WB  | NB   | SB |
|----------------------|----|-----|------|----|
| HCM Control Delay, s | 0  | 3.8 | 10.5 | 0  |
| HCM LOS              |    |     | B    | A  |

| Minor Lane/Major Mvmt | NBLn1 | EBL  | EBT | EBR | WBL   | WBT | WBR | SBLn1 |
|-----------------------|-------|------|-----|-----|-------|-----|-----|-------|
| Capacity (veh/h)      | 776   | 1560 | -   | -   | 1529  | -   | -   | -     |
| HCM Lane V/C Ratio    | 0.152 | -    | -   | -   | 0.039 | -   | -   | -     |
| HCM Control Delay (s) | 10.5  | 0    | -   | -   | 7.5   | 0   | -   | 0     |
| HCM Lane LOS          | B     | A    | -   | -   | A     | A   | -   | A     |
| HCM 95th %tile Q(veh) | 0.5   | 0    | -   | -   | 0.1   | -   | -   | -     |

| Intersection             |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
|--------------------------|--------|-----------------------------------------------------------------------------------|--------|------------|-----------------------------------------------------------------------------------|-------|--------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.3    |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL    | EBT                                                                               | EBR    | WBL        | WBT                                                                               | WBR   | NBL    | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |        |  |        |            |  |       |        |  |      |      |  |      |
| Traffic Vol, veh/h       | 6      | 0                                                                                 | 27     | 14         | 0                                                                                 | 4     | 45     | 83                                                                                | 24   | 7    | 53                                                                                  | 9    |
| Future Vol, veh/h        | 6      | 0                                                                                 | 27     | 14         | 0                                                                                 | 4     | 45     | 83                                                                                | 24   | 7    | 53                                                                                  | 9    |
| Conflicting Peds, #/hr   | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0     | 0      | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop   | Stop                                                                              | Stop   | Stop       | Stop                                                                              | Stop  | Free   | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -      | -                                                                                 | None   | -          | -                                                                                 | None  | -      | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | -      | -                                                                                 | -      | -          | -                                                                                 | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -      | 0                                                                                 | -      | -          | 0                                                                                 | -     | -      | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76     | 76                                                                                | 76     | 76         | 76                                                                                | 76    | 76     | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0      | 0                                                                                 | 0      | 0          | 0                                                                                 | 0     | 0      | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Mvmt Flow                | 8      | 0                                                                                 | 36     | 18         | 0                                                                                 | 5     | 59     | 109                                                                               | 32   | 9    | 70                                                                                  | 12   |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
| Major/Minor              | Minor2 |                                                                                   | Minor1 |            | Major1                                                                            |       | Major2 |                                                                                   |      |      |                                                                                     |      |
| Conflicting Flow All     | 340    | 353                                                                               | 76     | 355        | 343                                                                               | 125   | 82     | 0                                                                                 | 0    | 141  | 0                                                                                   | 0    |
| Stage 1                  | 94     | 94                                                                                | -      | 243        | 243                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 246    | 259                                                                               | -      | 112        | 100                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy            | 7.1    | 6.5                                                                               | 6.2    | 7.1        | 6.5                                                                               | 6.2   | 4.1    | -                                                                                 | -    | 4.1  | -                                                                                   | -    |
| Critical Hdwy Stg 1      | 6.1    | 5.5                                                                               | -      | 6.1        | 5.5                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Critical Hdwy Stg 2      | 6.1    | 5.5                                                                               | -      | 6.1        | 5.5                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Follow-up Hdwy           | 3.5    | 4                                                                                 | 3.3    | 3.5        | 4                                                                                 | 3.3   | 2.2    | -                                                                                 | -    | 2.2  | -                                                                                   | -    |
| Pot Cap-1 Maneuver       | 618    | 575                                                                               | 991    | 604        | 583                                                                               | 931   | 1528   | -                                                                                 | -    | 1455 | -                                                                                   | -    |
| Stage 1                  | 918    | 821                                                                               | -      | 765        | 708                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 762    | 697                                                                               | -      | 898        | 816                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Platoon blocked, %       |        |                                                                                   |        |            |                                                                                   |       |        | -                                                                                 | -    |      | -                                                                                   | -    |
| Mov Cap-1 Maneuver       | 592    | 547                                                                               | 991    | 561        | 555                                                                               | 931   | 1528   | -                                                                                 | -    | 1455 | -                                                                                   | -    |
| Mov Cap-2 Maneuver       | 592    | 547                                                                               | -      | 561        | 555                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 1                  | 879    | 816                                                                               | -      | 733        | 678                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
| Stage 2                  | 726    | 668                                                                               | -      | 861        | 811                                                                               | -     | -      | -                                                                                 | -    | -    | -                                                                                   | -    |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
| Approach                 | EB     |                                                                                   | WB     |            | NB                                                                                |       | SB     |                                                                                   |      |      |                                                                                     |      |
| HCM Control Delay, s     | 9.3    |                                                                                   | 11.1   |            | 2.2                                                                               |       | 0.8    |                                                                                   |      |      |                                                                                     |      |
| HCM LOS                  | A      |                                                                                   | B      |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
|                          |        |                                                                                   |        |            |                                                                                   |       |        |                                                                                   |      |      |                                                                                     |      |
| Minor Lane/Major Mvmt    | NBL    | NBT                                                                               | NBR    | EBLn1WBLn1 | SBL                                                                               | SBT   | SBR    |                                                                                   |      |      |                                                                                     |      |
| Capacity (veh/h)         | 1528   | -                                                                                 | -      | 883        | 615                                                                               | 1455  | -      | -                                                                                 |      |      |                                                                                     |      |
| HCM Lane V/C Ratio       | 0.039  | -                                                                                 | -      | 0.049      | 0.039                                                                             | 0.006 | -      | -                                                                                 |      |      |                                                                                     |      |
| HCM Control Delay (s)    | 7.5    | 0                                                                                 | -      | 9.3        | 11.1                                                                              | 7.5   | 0      | -                                                                                 |      |      |                                                                                     |      |
| HCM Lane LOS             | A      | A                                                                                 | -      | A          | B                                                                                 | A     | A      | -                                                                                 |      |      |                                                                                     |      |
| HCM 95th %tile Q(veh)    | 0.1    | -                                                                                 | -      | 0.2        | 0.1                                                                               | 0     | -      | -                                                                                 |      |      |                                                                                     |      |



| Intersection             |                                                                                   |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|------|-------------------------------------------------------------------------------------|------|
| Int Delay, s/veh         | 3.4                                                                               |                                                                                   |      |      |                                                                                   |      |                                                                                   |                                                                                   |      |      |                                                                                     |      |
| Movement                 | EBL                                                                               | EBT                                                                               | EBR  | WBL  | WBT                                                                               | WBR  | NBL                                                                               | NBT                                                                               | NBR  | SBL  | SBT                                                                                 | SBR  |
| Lane Configurations      |  |  |      |      |  |      |  |  |      |      |  |      |
| Traffic Vol, veh/h       | 22                                                                                | 0                                                                                 | 37   | 11   | 0                                                                                 | 4    | 83                                                                                | 155                                                                               | 12   | 2    | 84                                                                                  | 32   |
| Future Vol, veh/h        | 22                                                                                | 0                                                                                 | 37   | 11   | 0                                                                                 | 4    | 83                                                                                | 155                                                                               | 12   | 2    | 84                                                                                  | 32   |
| Conflicting Peds, #/hr   | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 0    |
| Sign Control             | Stop                                                                              | Stop                                                                              | Stop | Stop | Stop                                                                              | Stop | Free                                                                              | Free                                                                              | Free | Free | Free                                                                                | Free |
| RT Channelized           | -                                                                                 | -                                                                                 | None | -    | -                                                                                 | None | -                                                                                 | -                                                                                 | None | -    | -                                                                                   | None |
| Storage Length           | 55                                                                                | -                                                                                 | -    | -    | -                                                                                 | -    | 75                                                                                | -                                                                                 | -    | -    | -                                                                                   | -    |
| Veh in Median Storage, # | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Grade, %                 | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                 | -    | -                                                                                 | 0                                                                                 | -    | -    | 0                                                                                   | -    |
| Peak Hour Factor         | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                | 76   | 76                                                                                | 76                                                                                | 76   | 76   | 76                                                                                  | 76   |
| Heavy Vehicles, %        | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                 | 0    | 0                                                                                 | 0                                                                                 | 0    | 0    | 0                                                                                   | 8    |
| Mvmt Flow                | 29                                                                                | 0                                                                                 | 49   | 14   | 0                                                                                 | 5    | 109                                                                               | 204                                                                               | 16   | 3    | 111                                                                                 | 42   |

| Major/Minor          | Minor2 |     | Minor1 |     | Major1 |     | Major2 |   |
|----------------------|--------|-----|--------|-----|--------|-----|--------|---|
| Conflicting Flow All | 571    | 576 | 132    | 593 | 589    | 212 | 153    | 0 |
| Stage 1              | 138    | 138 | -      | 430 | 430    | -   | -      | - |
| Stage 2              | 433    | 438 | -      | 163 | 159    | -   | -      | - |
| Critical Hdwy        | 7.1    | 6.5 | 6.2    | 7.1 | 6.5    | 6.2 | 4.1    | - |
| Critical Hdwy Stg 1  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Critical Hdwy Stg 2  | 6.1    | 5.5 | -      | 6.1 | 5.5    | -   | -      | - |
| Follow-up Hdwy       | 3.5    | 4   | 3.3    | 3.5 | 4      | 3.3 | 2.2    | - |
| Pot Cap-1 Maneuver   | 435    | 431 | 923    | 420 | 423    | 833 | 1440   | - |
| Stage 1              | 870    | 786 | -      | 607 | 587    | -   | -      | - |
| Stage 2              | 605    | 582 | -      | 844 | 770    | -   | -      | - |
| Platoon blocked, %   |        |     |        |     |        |     |        | - |
| Mov Cap-1 Maneuver   | 407    | 397 | 923    | 374 | 390    | 833 | 1440   | - |
| Mov Cap-2 Maneuver   | 407    | 397 | -      | 374 | 390    | -   | -      | - |
| Stage 1              | 804    | 784 | -      | 561 | 542    | -   | -      | - |
| Stage 2              | 556    | 538 | -      | 798 | 768    | -   | -      | - |

| Approach             | EB   | WB   | NB  | SB  |
|----------------------|------|------|-----|-----|
| HCM Control Delay, s | 11.1 | 13.6 | 2.6 | 0.1 |
| HCM LOS              | B    | B    |     |     |

| Minor Lane/Major Mvmt | NBL   | NBT | NBR | EBLn1 | EBLn2 | WBLn1 | SBL   | SBT | SBR |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|-----|-----|
| Capacity (veh/h)      | 1440  | -   | -   | 407   | 923   | 438   | 1361  | -   | -   |
| HCM Lane V/C Ratio    | 0.076 | -   | -   | 0.071 | 0.053 | 0.045 | 0.002 | -   | -   |
| HCM Control Delay (s) | 7.7   | -   | -   | 14.5  | 9.1   | 13.6  | 7.7   | 0   | -   |
| HCM Lane LOS          | A     | -   | -   | B     | A     | B     | A     | A   | -   |
| HCM 95th %tile Q(veh) | 0.2   | -   | -   | 0.2   | 0.2   | 0.1   | 0     | -   | -   |

| Intersection              |      |
|---------------------------|------|
| Intersection Delay, s/veh | 12.1 |
| Intersection LOS          | B    |

| Movement            | EBL  | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations |      | ↔    |      |      | ↔    |      |      | ↔    |      |      | ↔    |      |
| Traffic Vol, veh/h  | 1    | 68   | 21   | 46   | 90   | 207  | 23   | 117  | 27   | 110  | 86   | 2    |
| Future Vol, veh/h   | 1    | 68   | 21   | 46   | 90   | 207  | 23   | 117  | 27   | 110  | 86   | 2    |
| Peak Hour Factor    | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Heavy Vehicles, %   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 5    | 0    | 0    |
| Mvmt Flow           | 1    | 77   | 24   | 52   | 102  | 235  | 26   | 133  | 31   | 125  | 98   | 2    |
| Number of Lanes     | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    | 0    | 1    | 0    |

| Approach                   | EB  | WB   | NB   | SB   |
|----------------------------|-----|------|------|------|
| Opposing Approach          | WB  | EB   | SB   | NB   |
| Opposing Lanes             | 1   | 1    | 1    | 1    |
| Conflicting Approach Left  | SB  | NB   | EB   | WB   |
| Conflicting Lanes Left     | 1   | 1    | 1    | 1    |
| Conflicting Approach Right | NB  | SB   | WB   | EB   |
| Conflicting Lanes Right    | 1   | 1    | 1    | 1    |
| HCM Control Delay          | 9.6 | 13.4 | 10.8 | 11.9 |
| HCM LOS                    | A   | B    | B    | B    |

| Lane                   | NBLn1 | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|-------|
| Vol Left, %            | 14%   | 1%    | 13%   | 56%   |
| Vol Thru, %            | 70%   | 76%   | 26%   | 43%   |
| Vol Right, %           | 16%   | 23%   | 60%   | 1%    |
| Sign Control           | Stop  | Stop  | Stop  | Stop  |
| Traffic Vol by Lane    | 167   | 90    | 343   | 198   |
| LT Vol                 | 23    | 1     | 46    | 110   |
| Through Vol            | 117   | 68    | 90    | 86    |
| RT Vol                 | 27    | 21    | 207   | 2     |
| Lane Flow Rate         | 190   | 102   | 390   | 225   |
| Geometry Grp           | 1     | 1     | 1     | 1     |
| Degree of Util (X)     | 0.29  | 0.158 | 0.531 | 0.356 |
| Departure Headway (Hd) | 5.508 | 5.546 | 4.908 | 5.694 |
| Convergence, Y/N       | Yes   | Yes   | Yes   | Yes   |
| Cap                    | 651   | 644   | 733   | 630   |
| Service Time           | 3.554 | 3.599 | 2.947 | 3.738 |
| HCM Lane V/C Ratio     | 0.292 | 0.158 | 0.532 | 0.357 |
| HCM Control Delay      | 10.8  | 9.6   | 13.4  | 11.9  |
| HCM Lane LOS           | B     | A     | B     | B     |
| HCM 95th-tile Q        | 1.2   | 0.6   | 3.2   | 1.6   |

Queues  
5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021



| Lane Group              | EBL  | EBT  | WBL  | WBT  | NBL  | NBT  | NBR  | SBL  | SBT  |
|-------------------------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph)   | 119  | 166  | 95   | 160  | 233  | 502  | 99   | 82   | 626  |
| v/c Ratio               | 0.41 | 0.33 | 0.32 | 0.33 | 0.42 | 0.27 | 0.11 | 0.16 | 0.39 |
| Control Delay           | 20.8 | 6.8  | 19.0 | 7.4  | 8.6  | 11.1 | 2.7  | 6.7  | 11.5 |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 20.8 | 6.8  | 19.0 | 7.4  | 8.6  | 11.1 | 2.7  | 6.7  | 11.5 |
| Queue Length 50th (ft)  | 26   | 4    | 20   | 6    | 25   | 51   | 0    | 8    | 56   |
| Queue Length 95th (ft)  | 72   | 43   | 59   | 44   | 70   | 101  | 19   | 28   | 113  |
| Internal Link Dist (ft) |      | 1251 |      | 707  |      | 1308 |      |      | 912  |
| Turn Bay Length (ft)    | 100  |      | 300  |      | 150  |      | 350  | 385  |      |
| Base Capacity (vph)     | 583  | 864  | 598  | 857  | 554  | 1998 | 935  | 515  | 1827 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.20 | 0.19 | 0.16 | 0.19 | 0.42 | 0.25 | 0.11 | 0.16 | 0.34 |
| Intersection Summary    |      |      |      |      |      |      |      |      |      |

# HCM Signalized Intersection Capacity Analysis

## 5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                                   |  |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                                | EBT                                                                               | EBR   | WBL                                                                               | WBT                                                                               | WBR                       | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |   |  |       |  |  |                           |  |  |  |  |  |  |
| Traffic Volume (vph)              | 111                                                                                | 20                                                                                | 134   | 88                                                                                | 28                                                                                | 121                       | 217                                                                                | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 170                                                                                 |
| Future Volume (vph)               | 111                                                                                | 20                                                                                | 134   | 88                                                                                | 28                                                                                | 121                       | 217                                                                                | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 170                                                                                 |
| Ideal Flow (vphpl)                | 1900                                                                               | 1900                                                                              | 1900  | 1900                                                                              | 1900                                                                              | 1900                      | 1900                                                                               | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                | 1900                                                                                |
| Total Lost time (s)               | 4.0                                                                                | 4.0                                                                               |       | 4.0                                                                               | 4.0                                                                               |                           | 5.7                                                                                | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                               | 0.99                                                                              |       | 1.00                                                                              | 0.99                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 0.98                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                               | 0.87                                                                              |       | 1.00                                                                              | 0.88                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 0.85                                                                                | 1.00                                                                                | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                               | 1.00                                                                              |       | 0.95                                                                              | 1.00                                                                              |                           | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1749                                                                               | 1634                                                                              |       | 1804                                                                              | 1636                                                                              |                           | 1805                                                                               | 3574                                                                                | 1579                                                                                | 1702                                                                                | 3427                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                               | 1.00                                                                              |       | 0.65                                                                              | 1.00                                                                              |                           | 0.36                                                                               | 1.00                                                                                | 1.00                                                                                | 0.47                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1207                                                                               | 1634                                                                              |       | 1238                                                                              | 1636                                                                              |                           | 685                                                                                | 3574                                                                                | 1579                                                                                | 838                                                                                 | 3427                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.93                                                                               | 0.93                                                                              | 0.93  | 0.93                                                                              | 0.93                                                                              | 0.93                      | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Adj. Flow (vph)                   | 119                                                                                | 22                                                                                | 144   | 95                                                                                | 30                                                                                | 130                       | 233                                                                                | 502                                                                                 | 99                                                                                  | 82                                                                                  | 443                                                                                 | 183                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                  | 119                                                                               | 0     | 0                                                                                 | 107                                                                               | 0                         | 0                                                                                  | 0                                                                                   | 56                                                                                  | 0                                                                                   | 68                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 119                                                                                | 47                                                                                | 0     | 95                                                                                | 53                                                                                | 0                         | 233                                                                                | 502                                                                                 | 43                                                                                  | 82                                                                                  | 558                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 3                                                                                  |                                                                                   | 1     | 1                                                                                 |                                                                                   | 3                         |                                                                                    |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 3%                                                                                 | 0%                                                                                | 0%    | 0%                                                                                | 0%                                                                                | 1%                        | 0%                                                                                 | 1%                                                                                  | 0%                                                                                  | 6%                                                                                  | 1%                                                                                  | 0%                                                                                  |
| Turn Type                         | Perm                                                                               | NA                                                                                |       | Perm                                                                              | NA                                                                                |                           | pm+pt                                                                              | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  |                                                                                    | 4                                                                                 |       |                                                                                   | 8                                                                                 |                           | 5                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                  |                                                                                   |       | 8                                                                                 |                                                                                   |                           | 2                                                                                  |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 8.1                                                                                | 8.1                                                                               |       | 8.1                                                                               | 8.1                                                                               |                           | 24.5                                                                               | 19.9                                                                                | 19.9                                                                                | 20.5                                                                                | 17.9                                                                                |                                                                                     |
| Effective Green, g (s)            | 8.1                                                                                | 8.1                                                                               |       | 8.1                                                                               | 8.1                                                                               |                           | 24.5                                                                               | 19.9                                                                                | 19.9                                                                                | 20.5                                                                                | 17.9                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.18                                                                               | 0.18                                                                              |       | 0.18                                                                              | 0.18                                                                              |                           | 0.53                                                                               | 0.43                                                                                | 0.43                                                                                | 0.45                                                                                | 0.39                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                                | 4.0                                                                               |       | 4.0                                                                               | 4.0                                                                               |                           | 5.7                                                                                | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 | 5.7                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                                | 3.0                                                                               |       | 3.0                                                                               | 3.0                                                                               |                           | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 212                                                                                | 287                                                                               |       | 217                                                                               | 288                                                                               |                           | 476                                                                                | 1546                                                                                | 683                                                                                 | 422                                                                                 | 1333                                                                                |                                                                                     |
| v/s Ratio Prot                    |                                                                                    | 0.03                                                                              |       |                                                                                   | 0.03                                                                              |                           | c0.05                                                                              | 0.14                                                                                |                                                                                     | 0.01                                                                                | 0.16                                                                                |                                                                                     |
| v/s Ratio Perm                    | c0.10                                                                              |                                                                                   |       | 0.08                                                                              |                                                                                   |                           | c0.21                                                                              |                                                                                     | 0.03                                                                                | 0.08                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.56                                                                               | 0.17                                                                              |       | 0.44                                                                              | 0.18                                                                              |                           | 0.49                                                                               | 0.32                                                                                | 0.06                                                                                | 0.19                                                                                | 0.42                                                                                |                                                                                     |
| Uniform Delay, d1                 | 17.3                                                                               | 16.1                                                                              |       | 16.9                                                                              | 16.1                                                                              |                           | 5.9                                                                                | 8.6                                                                                 | 7.6                                                                                 | 7.4                                                                                 | 10.3                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                               | 1.00                                                                              |       | 1.00                                                                              | 1.00                                                                              |                           | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 3.4                                                                                | 0.3                                                                               |       | 1.4                                                                               | 0.3                                                                               |                           | 0.8                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.2                                                                                 | 0.2                                                                                 |                                                                                     |
| Delay (s)                         | 20.7                                                                               | 16.4                                                                              |       | 18.3                                                                              | 16.4                                                                              |                           | 6.7                                                                                | 8.7                                                                                 | 7.6                                                                                 | 7.7                                                                                 | 10.5                                                                                |                                                                                     |
| Level of Service                  | C                                                                                  | B                                                                                 |       | B                                                                                 | B                                                                                 |                           | A                                                                                  | A                                                                                   | A                                                                                   | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                    | 18.2                                                                              |       |                                                                                   | 17.1                                                                              |                           |                                                                                    | 8.0                                                                                 |                                                                                     |                                                                                     | 10.1                                                                                |                                                                                     |
| Approach LOS                      |                                                                                    | B                                                                                 |       |                                                                                   | B                                                                                 |                           |                                                                                    | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                    |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                    |                                                                                   | 11.3  |                                                                                   |                                                                                   | HCM 2000 Level of Service |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                    |                                                                                   | 0.54  |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                    |                                                                                   | 46.0  |                                                                                   |                                                                                   | Sum of lost time (s)      |                                                                                    |                                                                                     | 15.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                    |                                                                                   | 60.9% |                                                                                   |                                                                                   | ICU Level of Service      |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                    |                                                                                   | 15    |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                    |                                                                                   |       |                                                                                   |                                                                                   |                           |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

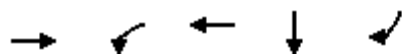
HCM 6th Signalized Intersection Summary  
5: NW 6th St & NW Quince Ave

Canyon Trails  
07/14/2021

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 111                                                                               | 20                                                                                | 134                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 217                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 170                                                                                 |
| Future Volume (veh/h)        | 111                                                                               | 20                                                                                | 134                                                                               | 88                                                                                | 28                                                                                | 121                                                                               | 217                                                                                 | 467                                                                                 | 92                                                                                  | 76                                                                                  | 412                                                                                 | 170                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1856                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1900                                                                              | 1885                                                                              | 1900                                                                                | 1885                                                                                | 1900                                                                                | 1811                                                                                | 1885                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 119                                                                               | 22                                                                                | 144                                                                               | 95                                                                                | 30                                                                                | 130                                                                               | 233                                                                                 | 502                                                                                 | 99                                                                                  | 82                                                                                  | 443                                                                                 | 183                                                                                 |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 3                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 1                                                                                   | 0                                                                                   | 6                                                                                   | 1                                                                                   | 0                                                                                   |
| Cap, veh/h                   | 363                                                                               | 53                                                                                | 348                                                                               | 362                                                                               | 76                                                                                | 329                                                                               | 489                                                                                 | 1185                                                                                | 531                                                                                 | 465                                                                                 | 684                                                                                 | 280                                                                                 |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.13                                                                                | 0.33                                                                                | 0.33                                                                                | 0.07                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 1214                                                                              | 217                                                                               | 1421                                                                              | 1236                                                                              | 310                                                                               | 1343                                                                              | 1810                                                                                | 3582                                                                                | 1605                                                                                | 1725                                                                                | 2476                                                                                | 1013                                                                                |
| Grp Volume(v), veh/h         | 119                                                                               | 0                                                                                 | 166                                                                               | 95                                                                                | 0                                                                                 | 160                                                                               | 233                                                                                 | 502                                                                                 | 99                                                                                  | 82                                                                                  | 319                                                                                 | 307                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1214                                                                              | 0                                                                                 | 1638                                                                              | 1236                                                                              | 0                                                                                 | 1652                                                                              | 1810                                                                                | 1791                                                                                | 1605                                                                                | 1725                                                                                | 1791                                                                                | 1698                                                                                |
| Q Serve(g_s), s              | 4.0                                                                               | 0.0                                                                               | 3.7                                                                               | 3.1                                                                               | 0.0                                                                               | 3.5                                                                               | 3.9                                                                                 | 4.8                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 6.9                                                                                 | 7.0                                                                                 |
| Cycle Q Clear(g_c), s        | 7.5                                                                               | 0.0                                                                               | 3.7                                                                               | 6.8                                                                               | 0.0                                                                               | 3.5                                                                               | 3.9                                                                                 | 4.8                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 6.9                                                                                 | 7.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.87                                                                              | 1.00                                                                              |                                                                                   | 0.81                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 363                                                                               | 0                                                                                 | 401                                                                               | 362                                                                               | 0                                                                                 | 404                                                                               | 489                                                                                 | 1185                                                                                | 531                                                                                 | 465                                                                                 | 495                                                                                 | 469                                                                                 |
| V/C Ratio(X)                 | 0.33                                                                              | 0.00                                                                              | 0.41                                                                              | 0.26                                                                              | 0.00                                                                              | 0.40                                                                              | 0.48                                                                                | 0.42                                                                                | 0.19                                                                                | 0.18                                                                                | 0.65                                                                                | 0.65                                                                                |
| Avail Cap(c_a), veh/h        | 580                                                                               | 0                                                                                 | 693                                                                               | 583                                                                               | 0                                                                                 | 699                                                                               | 520                                                                                 | 1721                                                                                | 771                                                                                 | 541                                                                                 | 811                                                                                 | 769                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 16.9                                                                              | 0.0                                                                               | 13.9                                                                              | 16.7                                                                              | 0.0                                                                               | 13.8                                                                              | 9.7                                                                                 | 11.4                                                                                | 10.4                                                                                | 9.8                                                                                 | 13.9                                                                                | 14.0                                                                                |
| Incr Delay (d2), s/veh       | 0.5                                                                               | 0.0                                                                               | 0.7                                                                               | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.7                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 0.2                                                                                 | 1.4                                                                                 | 1.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 0.0                                                                               | 1.2                                                                               | 0.8                                                                               | 0.0                                                                               | 1.2                                                                               | 1.3                                                                                 | 1.6                                                                                 | 0.6                                                                                 | 0.5                                                                                 | 2.5                                                                                 | 2.4                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 17.5                                                                              | 0.0                                                                               | 14.6                                                                              | 17.1                                                                              | 0.0                                                                               | 14.4                                                                              | 10.4                                                                                | 11.6                                                                                | 10.6                                                                                | 10.0                                                                                | 15.4                                                                                | 15.5                                                                                |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | B                                                                                 | B                                                                                   | B                                                                                   | B                                                                                   | A                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 285                                                                               |                                                                                   |                                                                                   | 255                                                                               |                                                                                   |                                                                                     | 834                                                                                 |                                                                                     |                                                                                     | 708                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   | 15.4                                                                              |                                                                                   |                                                                                     | 11.2                                                                                |                                                                                     |                                                                                     | 14.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.9                                                                               | 20.2                                                                              |                                                                                   | 14.7                                                                              | 11.2                                                                              | 17.8                                                                              |                                                                                     | 14.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | 5.7                                                                               |                                                                                   | 4.0                                                                               | 5.7                                                                               | 5.7                                                                               |                                                                                     | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.1                                                                               | 21.0                                                                              |                                                                                   | 18.5                                                                              | 6.3                                                                               | 19.8                                                                              |                                                                                     | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 6.8                                                                               |                                                                                   | 9.5                                                                               | 5.9                                                                               | 9.0                                                                               |                                                                                     | 8.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 3.2                                                                               |                                                                                   | 0.9                                                                               | 0.0                                                                               | 2.9                                                                               |                                                                                     | 0.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Queues  
6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021



| Lane Group              | EBT  | WBL  | WBT  | SBT  | SBR  |
|-------------------------|------|------|------|------|------|
| Lane Group Flow (vph)   | 779  | 44   | 462  | 13   | 288  |
| v/c Ratio               | 0.52 | 0.11 | 0.49 | 0.04 | 0.55 |
| Control Delay           | 9.7  | 4.8  | 7.6  | 14.6 | 7.3  |
| Queue Delay             | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| Total Delay             | 9.7  | 4.8  | 7.6  | 14.6 | 7.3  |
| Queue Length 50th (ft)  | 30   | 3    | 38   | 2    | 0    |
| Queue Length 95th (ft)  | 141  | 15   | 129  | 13   | 47   |
| Internal Link Dist (ft) | 912  |      | 627  | 485  |      |
| Turn Bay Length (ft)    |      | 240  |      |      | 400  |
| Base Capacity (vph)     | 1796 | 407  | 1393 | 1015 | 1003 |
| Starvation Cap Reductn  | 0    | 0    | 0    | 0    | 0    |
| Spillback Cap Reductn   | 0    | 0    | 0    | 0    | 0    |
| Storage Cap Reductn     | 0    | 0    | 0    | 0    | 0    |
| Reduced v/c Ratio       | 0.43 | 0.11 | 0.33 | 0.01 | 0.29 |
| Intersection Summary    |      |      |      |      |      |



# HCM Signalized Intersection Capacity Analysis

## 6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (vph)              | 0                                                                                 | 569                                                                               | 132                                                                               | 40                                                                                | 416                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Future Volume (vph)               | 0                                                                                 | 569                                                                               | 132                                                                               | 40                                                                                | 416                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Ideal Flow (vphpl)                | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                              | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                | 1750                                                                                |
| Total Lost time (s)               |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Lane Util. Factor                 |                                                                                   | 0.95                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Flpb, ped/bikes                   |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Frt                               |                                                                                   | 0.97                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.85                                                                                |
| Flt Protected                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (prot)                 |                                                                                   | 3180                                                                              |                                                                                   | 1583                                                                              | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Flt Permitted                     |                                                                                   | 1.00                                                                              |                                                                                   | 0.25                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 1.00                                                                                |
| Satd. Flow (perm)                 |                                                                                   | 3180                                                                              |                                                                                   | 413                                                                               | 1716                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1662                                                                                | 1458                                                                                |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 0                                                                                 | 632                                                                               | 147                                                                               | 44                                                                                | 462                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 13                                                                                  | 0                                                                                   | 288                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 234                                                                                 |
| Lane Group Flow (vph)             | 0                                                                                 | 751                                                                               | 0                                                                                 | 44                                                                                | 462                                                                               | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 13                                                                                  | 54                                                                                  |
| Confl. Peds. (#/hr)               |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Heavy Vehicles (%)                | 0%                                                                                | 1%                                                                                | 2%                                                                                | 5%                                                                                | 2%                                                                                | 0%                                                                                | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Turn Type                         |                                                                                   | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     | Perm                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases                  |                                                                                   | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     | 6                                                                                   |
| Actuated Green, G (s)             |                                                                                   | 17.4                                                                              |                                                                                   | 23.6                                                                              | 23.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.5                                                                                 | 7.5                                                                                 |
| Effective Green, g (s)            |                                                                                   | 17.4                                                                              |                                                                                   | 23.6                                                                              | 23.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 7.5                                                                                 | 7.5                                                                                 |
| Actuated g/C Ratio                |                                                                                   | 0.43                                                                              |                                                                                   | 0.59                                                                              | 0.59                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.19                                                                                | 0.19                                                                                |
| Clearance Time (s)                |                                                                                   | 4.5                                                                               |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4.5                                                                                 | 4.5                                                                                 |
| Vehicle Extension (s)             |                                                                                   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Lane Grp Cap (vph)                |                                                                                   | 1379                                                                              |                                                                                   | 292                                                                               | 1009                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 310                                                                                 | 272                                                                                 |
| v/s Ratio Prot                    |                                                                                   | c0.24                                                                             |                                                                                   | 0.01                                                                              | c0.27                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   |                                                                                   | 0.08                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.01                                                                                | c0.04                                                                               |
| v/c Ratio                         |                                                                                   | 0.54                                                                              |                                                                                   | 0.15                                                                              | 0.46                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.04                                                                                | 0.20                                                                                |
| Uniform Delay, d1                 |                                                                                   | 8.4                                                                               |                                                                                   | 4.1                                                                               | 4.6                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.4                                                                                | 13.8                                                                                |
| Progression Factor                |                                                                                   | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                |
| Incremental Delay, d2             |                                                                                   | 0.4                                                                               |                                                                                   | 0.2                                                                               | 0.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.1                                                                                 | 0.4                                                                                 |
| Delay (s)                         |                                                                                   | 8.9                                                                               |                                                                                   | 4.3                                                                               | 5.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 13.4                                                                                | 14.1                                                                                |
| Level of Service                  |                                                                                   | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | B                                                                                   | B                                                                                   |
| Approach Delay (s)                |                                                                                   | 8.9                                                                               |                                                                                   |                                                                                   | 4.9                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 14.1                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.48                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 40.1                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 13.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 48.7%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

c Critical Lane Group

HCM 6th Signalized Intersection Summary  
6: US 97 SB Ramp & NW 6th St

Canyon Trails  
07/14/2021

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |                                                                                   |  |  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |  |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 569                                                                               | 132                                                                               | 40                                                                                | 416                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 569                                                                               | 132                                                                               | 40                                                                                | 416                                                                               | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 12                                                                                  | 0                                                                                   | 259                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1736                                                                              | 1723                                                                              | 1682                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1750                                                                                | 1750                                                                                | 1723                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 632                                                                               | 147                                                                               | 44                                                                                | 462                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 13                                                                                  | 0                                                                                   | 288                                                                                 |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 1                                                                                 | 2                                                                                 | 5                                                                                 | 2                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 928                                                                               | 216                                                                               | 358                                                                               | 889                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 414                                                                                 | 0                                                                                   | 363                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.35                                                                              | 0.35                                                                              | 0.05                                                                              | 0.52                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.25                                                                                | 0.00                                                                                | 0.25                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 2743                                                                              | 617                                                                               | 1602                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1667                                                                                | 0                                                                                   | 1460                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 392                                                                               | 387                                                                               | 44                                                                                | 462                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 13                                                                                  | 0                                                                                   | 288                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1650                                                                              | 1623                                                                              | 1602                                                                              | 1723                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 1667                                                                                | 0                                                                                   | 1460                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 7.8                                                                               | 7.8                                                                               | 0.6                                                                               | 6.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 7.1                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 7.8                                                                               | 7.8                                                                               | 0.6                                                                               | 6.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 7.1                                                                                 |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 577                                                                               | 567                                                                               | 358                                                                               | 889                                                                               | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 414                                                                                 | 0                                                                                   | 363                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.68                                                                              | 0.68                                                                              | 0.12                                                                              | 0.52                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.03                                                                                | 0.00                                                                                | 0.79                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 841                                                                               | 828                                                                               | 510                                                                               | 1329                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 937                                                                                 | 0                                                                                   | 821                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 10.6                                                                              | 10.6                                                                              | 7.3                                                                               | 6.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.9                                                                                | 0.0                                                                                 | 13.4                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.4                                                                               | 1.5                                                                               | 0.2                                                                               | 0.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 4.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 2.3                                                                               | 2.3                                                                               | 0.1                                                                               | 1.5                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.1                                                                                 | 0.0                                                                                 | 2.2                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 12.0                                                                              | 12.1                                                                              | 7.4                                                                               | 6.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 10.9                                                                                | 0.0                                                                                 | 17.4                                                                                |
| LnGrp LOS                    | A                                                                                 | B                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                    |                                                                                     |                                                                                     | B                                                                                   | A                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 779                                                                               |                                                                                   |                                                                                   | 506                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 301                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 12.0                                                                              |                                                                                   |                                                                                   | 6.7                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 17.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Timer - Assigned Phs         |                                                                                   |                                                                                   | 3                                                                                 | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   |                                                                                   | 6.4                                                                               | 17.9                                                                              |                                                                                   | 14.0                                                                              |                                                                                    | 24.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   |                                                                                   | 4.5                                                                               | 4.5                                                                               |                                                                                   | 4.5                                                                               |                                                                                    | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   |                                                                                   | 5.5                                                                               | 19.5                                                                              |                                                                                   | 21.5                                                                              |                                                                                    | 29.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   |                                                                                   | 2.6                                                                               | 9.8                                                                               |                                                                                   | 9.1                                                                               |                                                                                    | 8.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   |                                                                                   | 0.0                                                                               | 3.5                                                                               |                                                                                   | 0.8                                                                               |                                                                                    | 2.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           |                                                                                   |                                                                                   | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

After Recording Return To:  
 City of Redmond  
 411 SW 9<sup>th</sup> Street  
 Redmond, OR 97756

## ANNEXATION AGREEMENT

This Annexation Agreement is made and entered into this \_\_\_\_ day of March \_\_\_\_, 2021, by and between the City of Redmond, Oregon, an Oregon municipal corporation (hereinafter "City") and Nicko Properties, LLC (hereinafter "Owner").

### WITNESSETH

**WHEREAS**, Owner is the record owner of the property legally described on Exhibit A attached hereto and incorporated herein (hereinafter referred to as the "Property"); and

**WHEREAS**, the Property is within the City's urban growth boundary and is proposed to be annexed to the City; and

**WHEREAS**, Owner desires to have the Property annexed to the City; and

**WHEREAS**, Owner has submitted a petition for annexation and provided the City with all required consents for annexation; and

**WHEREAS**, the City is willing to annex the Property on the terms and conditions, and subject to the provisions, of this Agreement; and

**WHEREAS**, the City will initiate ultimate urban zoning upon the successful annexation of this property by resolution to the City of Redmond, and

**NOW, THEREFORE**, in consideration of the representations, promises and mutual covenants contained herein, the City and Owner agree as follows:

1. **RECITALS**: The foregoing recitals are incorporated herein as is fully set forth in this Section.
2. **ANNEXATION**:
  - a. City agrees that it will initiate a resolution annexing the Property into the City once all required consents and a signed Annexation Agreement have been received by the City. This agreement is void if the Property is not annexed to the City of Redmond within 12 months after the effective date of this Agreement.
  - b. Owner may terminate this Agreement by serving written notice to the City. The notice must be received by the City at least 60 days prior to the public hearings for council consideration of the annexation. If the City receives such notice, this Agreement terminates as of the effective date of the notice. After the annexation resolution is adopted by the City, this Agreement may only be terminated or amended by written consent of Owner and City.
3. **COMPREHENSIVE PLAN/ZONING**: Prior to development and annexation of the property, the Owner is required to receive master plan approval for the property in compliance with the Redmond Comprehensive Plan and Redmond Development Code. The master plan will identify Comprehensive Plan and Zoning designations, subject to City Council review and approval.

Upon adoption of the master plan, successful annexation, and a Comprehensive Plan Map/Zone Map adoption, the City will apply the Comprehensive Plan and Zoning designations identified in the Master Plan.

4. **DEVELOPMENT:** Owner agrees as follows:

- a. Owner shall waive and shall not assert any claim against the City that may now exist or that may accrue through the date of annexation of the Property that it may claim due to its ownership of the Property. This includes any claim arising out of any land use regulation or under Measure 37 (ORS 197.352), Measure 49, and Measure 56 (ORS 227.186).
- b. Owner agrees that any development of the property will comply with the applicable approved Area Plan and master plan for the property, except as modified consistent with City requirements.
- c. Owner agrees to incorporate and follow the City's Great Neighborhood Principles as found in the Redmond Comprehensive Plan, City Engineering Requirements, and Redmond Development Code as applicable. The Community Development Director or Hearings Body shall determine the applicability of the Great Neighborhood Principles to the subject property. All development must comply with federal, state and city regulations.
- d. Owner agrees that it will, without any cost to the City, dedicate the necessary rights-of-way or easements for all Planned Improvements identified in the City's Public Facilities Plan.
- e. Owner shall remove all additional Central Oregon Irrigation District (COID) irrigation water rights from Property, unless use is otherwise approved by the Redmond City Council and COID.
- f. Owner shall remove all ground water rights from Property unless partial use is otherwise approved by the Redmond City Council. If required, Owner is directed to remove water rights via sale or transfer to the City. Removal shall occur prior to the platting of the first phase of development.
- g. Owner agrees to not remonstrate against the formation of a local improvement district or reimbursement district created for funding public improvements that will serve the Property. This waiver applies to the Property until all utility service and all required infrastructure that will service or benefit the Property is completed and accepted by City. If the property is developed in phases, the waiver may be removed on a phase-by-phase basis if all utility service and all required infrastructure that will service or benefit the Property is completed and accepted by City.
- h. Owner agrees to donate funds to the Redmond Committee for Art in Public Places for public art to be purchased and installed in the development. \$100 will be charged per housing unit and paid in lump sum at the time of plat approval for the property. These funds will be set aside for a future public art installation within the property. The future Homeowners Association/Owner will be invited to participate in the art selection.

5. **AMENDMENT:** This Agreement and any exhibits attached hereto may be amended only by the mutual written consent of both parties.

6. **SEVERABILITY:** If any provision, covenant or portion of this Agreement or its application to any person, entity, property or portion of property is held invalid, or if any ordinance or resolution adopted pursuant to this Agreement or its application to any person, entity, property or portion of property is held invalid, such invalidity shall not affect the application or validity of any other provisions, covenants or portions of this Agreement or other ordinances or resolutions passed

pursuant hereto, and to that end, all provisions, covenants, and portions of this Agreement and of the ordinances and resolutions adopted pursuant hereto are declared to be severable.

7. **NO WAIVER OF RIGHT TO ENFORCE AGREEMENT:** Failure of any party to this Agreement to insist upon the strict and prompt performance of the terms, covenants, agreements, and conditions herein contained, or any of them, upon any other party imposed, shall not constitute or be construed as a waiver or relinquishment of any party's right thereafter to enforce any such term, covenant, agreement or condition, but the same shall continue in full force and effect.
8. **ENTIRE AGREEMENT:** This Agreement supersedes all prior agreements, negotiations and exhibits and is a full integration of the entire agreement of the parties relating to the subject matter hereof. The parties shall have no obligations other than specifically stated in this Agreement except those of general applicability.
9. **SURVIVAL:** The provisions contained in this Agreement shall survive the annexation of the property and shall not be merged or expunged by the annexation of the property or any part thereof to the City.
10. **SUCCESSORS AND ASSIGNS:** This Agreement shall run with the land described on Exhibit A and inure to the benefit of, and be binding upon, the successors in title of the Owners and their respective successors, grantees, lessees, and assigns, and upon successor corporate authorities of the City and successor municipalities.
11. **TERM OF AGREEMENT:** This Agreement shall be binding upon the parties and their respective successors and assigns for twenty (20) years, commencing as of the date of this Agreement.
12. **ENFORCEMENT:** Owner agrees that if it fails to perform as required under this Agreement, the City Council may, at the Council's option, de-annex and that Owner will not object or oppose such de-annexation in any manner or any forum.
13. **ATTORNEY FEES:** In any proceeding to enforce, apply or interpret this Agreement, each party shall bear its own attorneys' fees and costs.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date first above written.

CITY

OWNER

\_\_\_\_\_  
Keith Witcosky, City Manager

\_\_\_\_\_  
Nicko Properties, LLC Owner

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder

STATE OF OREGON            )  
                                          ) ss.  
County of Deschutes        )

Keith Witcosky, City Manager, on behalf of the City of Redmond, who acknowledged that he had authority to sign on behalf of the City of Redmond and this instrument to be the City's voluntary act and deed, acknowledged this instrument before me this \_\_\_\_\_ day of \_\_\_\_\_ 2021.

\_\_\_\_\_  
Notary Public for Oregon

STATE OF OREGON            )  
                                          ) ss.  
County of Deschutes        )

This instrument was acknowledged before me this 11<sup>th</sup> day of March 2021, by Kathryn Post, owner of the Nicko Properties, LLC who acknowledged this instrument to be his/her voluntary act and deed.



\_\_\_\_\_  
Notary Public for Oregon



## Exhibit "A"

Description of a parcel of land situated in a portion of the Northeast Quarter of the Southwest Quarter (NE-1/4 SW-1/4) of Section Thirty (30), Township Fifteen (15) South, Range Thirteen (13), East of the Willamette Meridian, Deschutes County, Oregon, and now to be more particularly described as follows:

Commencing at a 3/4 inch pipe at the West quarter corner of Section 30, T. 15 S., R. 13, E.W.M., the initial point; thence South 89°48'56" East along the North line of the South Half of said Section 30, 1322.80 feet to the C-W 1/16 corner and the point of beginning; thence South 89°48'56" East along the North line of the Northeast Quarter of the Southwest Quarter of said Section 30, 262.69 feet to a point on the centerline of Lateral B; thence South 25°34'38" East along the centerline of said Lateral B, 428.10 feet to a point on the centerline of a 30 foot access easement; thence South 80°33'01" East along the centerline of said access easement, 887.27 feet to a point on the East line of said Northeast Quarter of the Southwest Quarter; thence South 0°00'18" West along the East line of said Northeast Quarter of the Southwest Quarter, 797.77 feet to the C-S 1/16 corner; thence North 89°55'22" West along the South line of said Northeast Quarter of the Southwest Quarter, 1325.59 feet to the Southwest 1/16 corner; thence North 0°07'32" East along the West line of said Northeast Quarter of the Southwest Quarter, 1328.65 feet to the point of beginning.

EXCEPTING THEREFROM the following: Commencing at a 3/4" pipe at the West One-Quarter corner of Section 30, T. 15 S., R. 13, E.W.M., the initial point; thence South 89°48'56" East along the North line of the South 1/2 of said Section 30, 1322.80 feet to the C-W 1/16 corner; thence South 89°48'56" East along the North line of the Northeast Quarter of the Southwest Quarter of said Section 30, 262.69 feet to a point on centerline of Lateral B; thence South 25°34'38" East along the centerline of said Lateral B, 428.10 feet to the true point of beginning; thence South 80°33'01" East, 887.27 feet to a point on the East line of the Northeast Quarter of the Southwest Quarter, Section 30, T. 15 S., R. 13, E.W.M.; thence South 0°00'18" West along the East line of said Northeast Quarter of the Southwest Quarter, 797.77 feet to the C-S 1/16 corner; thence North 89°55'22" West along the South line of said Northeast Quarter of the Southwest Quarter to the centerline of said Lateral B; thence Northerly along the said centerline of Lateral B, 997 feet M/L to the true point of beginning.

AND FURTHER EXCEPTING the following:

Beginning at the 5/8 inch pin marking the Northwest corner of Section Thirty (30), Township Fifteen (15) South, Range Thirteen (13) East of the Willamette Meridian, in Deschutes County, Oregon; thence South 0°15'08" West, 2634.96 feet along the West line of said Section 30, Township 15 South, Range 13, E.W.M., to a 3/4 inch pipe marking the Northwest corner of the Southwest Quarter (SW-1/4) of said Section 30; thence South 89°48'56" East, 1322.80 feet to a 3/4 inch pipe, and the true point of beginning of the herein described tract; thence continuing South 89°48'56" East, 245 feet; thence South 0°07'32" West, 9.0 feet; thence in a Southwesterly direction to a point which bears South 0°07'32" West, 15.00 feet from the true point of beginning; thence North 0°07'32" East, 15.00 feet to the true point of beginning, all in Section 30, Township 15 South, Range 13 East of the Willamette Meridian, Deschutes County, Oregon.



# CANYON TRAILS

## A RESIDENTIAL MASTER DEVELOPMENT PLAN

### #711-21-000192-194-PLNG

REDMOND CITY COUNCIL  
JANUARY 11, 2022

---

SLIDE / 1





# PROXIMITY: NORTH REDMOND NORTH OF MIDDLE & ELEMENTARY SCHOOLS







## ACTIONS:

# LAND USE APPROVAL REQUESTS

## ANNEXATION AGREEMENT – MARCH 2021

ANNEXATION WILL REQUIRE AN APPROVED MASTER PLAN

01

### MASTER DEVELOPMENT PLAN

FROM: UH-10 (DESIGNATED R-4 BY COMP PLAN)

TO: R-4 (GENERAL RESIDENTIAL) - 19.23 ACRES

02

### TENTATIVE 75-LOT RESIDENTIAL SUBDIVISION

PHASE 1 & 2: SINGLE-FAMILY DWELLINGS

VARIED LOT SIZES: 5,500 – 10,240 SQ. FT.

03

### COTTAGE DEVELOPMENT

PHASE 3: 17 COTTAGE UNIT LOTS W/ OPEN SPACE



# PROPOSAL:

75 LOTS, R-4 ZONING

SINGLE-FAMILY

17 COTTAGE UNIT  
LOTS

9,000 SQ. FT.  
OPEN SPACE

MULTI-USE TRAILS

SLIDE / 4

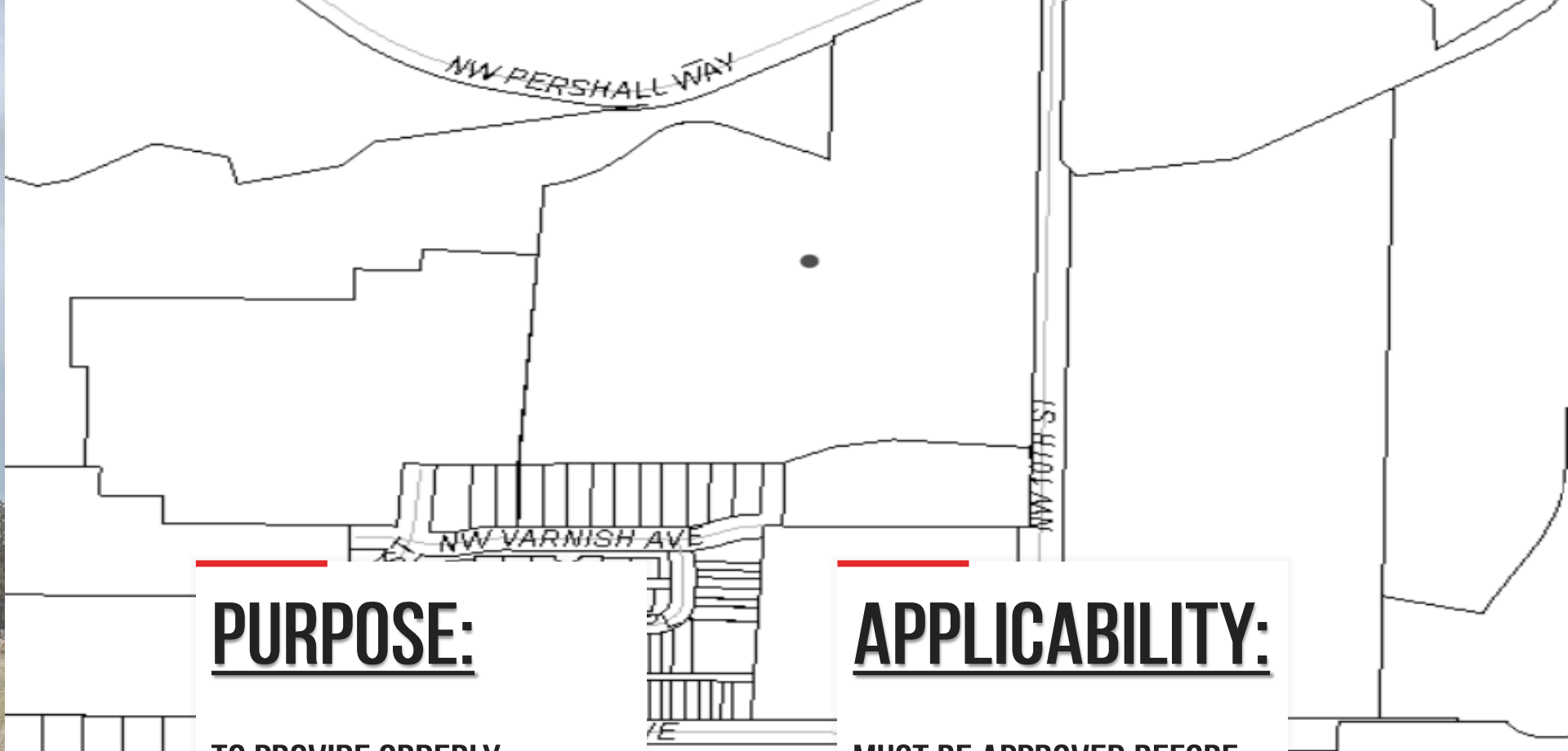


## R-4 (General Residential)

| <u>Phase No.</u>  | <u>No. of Lots</u> | <u>Range of Lot Sizes</u> |
|-------------------|--------------------|---------------------------|
| Phase 1, SF       | 40                 | 5,500 – 8,312 sq. ft.     |
| Phase 2, SF       | 35                 | 5,500 – 10,240 sq. ft.    |
| Phase 3, Cottages | 17                 | 2,240 – 2,892 sq. ft.     |



# MASTER DEVELOPMENT PLAN



## PURPOSE:

TO PROVIDE ORDERLY  
DEVELOPMENT CONSISTENT  
WITH FRAMEWORK PLAN  
AND AREA PLANS.

## APPLICABILITY:

MUST BE APPROVED BEFORE  
DEVELOPMENT AND  
CONCURRENT WITH  
REZONING FROM UH-10 AND  
ANNEXATION.





# MASTER DEVELOPMENT PLAN

## REVIEW CRITERIA

**01** GENERALLY CONSISTENT  
WITH FRAMEWORK PLAN &  
COMPREHENSIVE PLAN &  
ANNEXATION  
REQUIREMENTS

**02** WHETHER THE PLAN IS  
SUITABLE FOR THE AREA  
PROPOSED

**03** WHETHER THE PLAN IS  
INTEGRATED WITH  
DEVELOPED AREAS

**04** MEETS THE GREAT  
NEIGHBORHOOD  
PRINCIPLES



# MASTER DEVELOPMENT PLAN

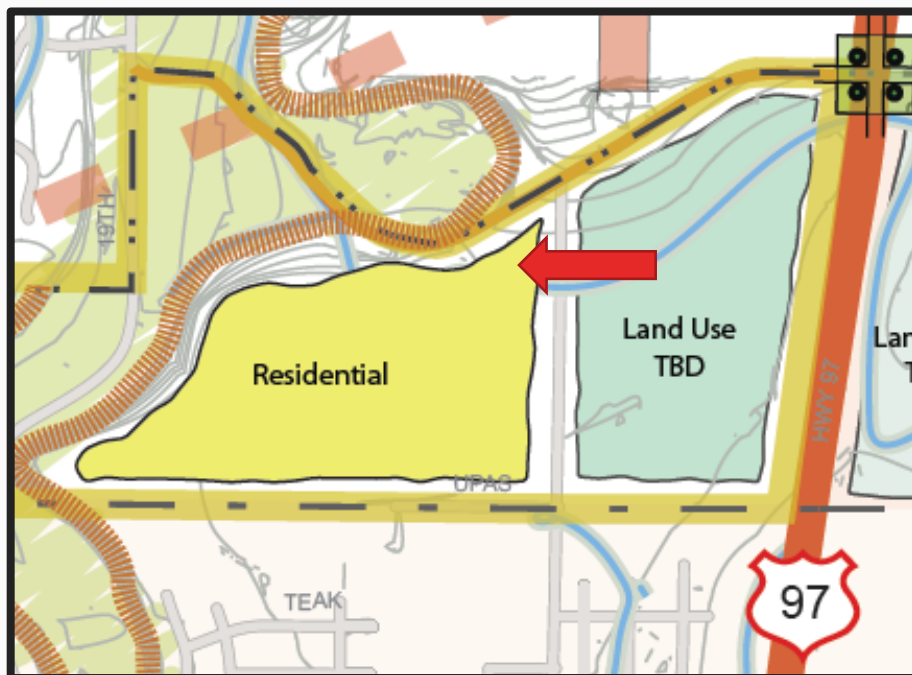
## REVIEW CRITERIA

SLIDE 7 / 7

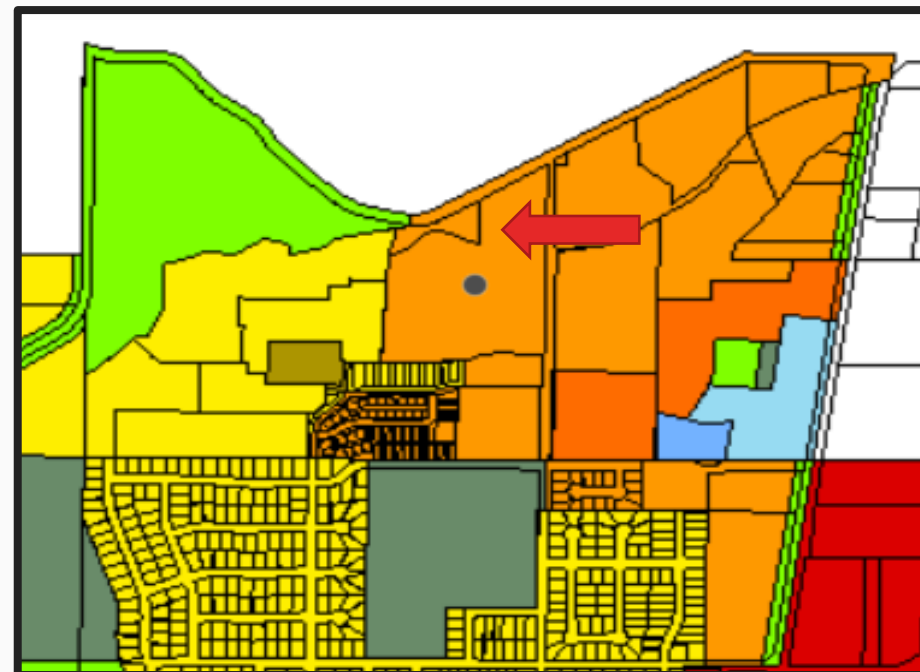
**01** GENERALLY CONSISTENT  
WITH FRAMEWORK PLAN &  
COMPREHENSIVE PLAN &  
ANNEXATION  
REQUIREMENTS

**02** WHETHER THE PLAN IS  
SUITABLE FOR THE AREA  
PROPOSED

FRAMEWORK PLAN



COMP PLAN







# MASTER DEVELOPMENT PLAN

## REVIEW CRITERIA

SLIDE / 3

### 03 WHETHER THE PLAN IS INTEGRATED WITH DEVELOPED AREAS





# MASTER DEVELOPMENT PLAN

## REVIEW CRITERIA

SLIDE / 9

### 04 MEETS THE GREAT NEIGHBORHOOD PRINCIPLES

#### SEC. 8.0300 (C) (13), REDMOND DEV. CODE:

- |                                       |                                     |
|---------------------------------------|-------------------------------------|
| 1. TRANSPORTATION                     | <input checked="" type="checkbox"/> |
| 2. HOUSING                            | <input checked="" type="checkbox"/> |
| 3. OPEN SPACES, GREENWAYS, RECREATION | <input checked="" type="checkbox"/> |
| 4. INTEGRATED DESIGN ELEMENTS         | <input checked="" type="checkbox"/> |
| 5. DIVERSE MIX OF ACTIVITIES          | <input checked="" type="checkbox"/> |
| 6. PUBLIC ART                         | <input checked="" type="checkbox"/> |
| 7. SCENIC VIEWS                       | <input checked="" type="checkbox"/> |
| 8. URBAN-RURAL INTERFACE              | <input checked="" type="checkbox"/> |
| 9. 'MINI' PARKS IN NEIGHBORHOODS      | <input checked="" type="checkbox"/> |
| 10. CANAL TRAILS                      | <input checked="" type="checkbox"/> |
| 11. GREEN DESIGN                      | <input checked="" type="checkbox"/> |





# GREAT NEIGHBORHOOD PRINCIPLES TRANSPORTATION

-EXTENDED STREET  
NETWORK

-NW WALNUT AVE. — EAST-  
WEST CONNECTION

-CONNECTIVITY

SLIDE / 10







LOT SIZES ARE VARIED:  
5,500 – 10,240 SQ. FT.

**-17 COTTAGE UNITS**

-AVG. LOT SIZE: 2,332 SQ FT  
-COTTAGES <1,250 SQ FT

Page 241 of 337



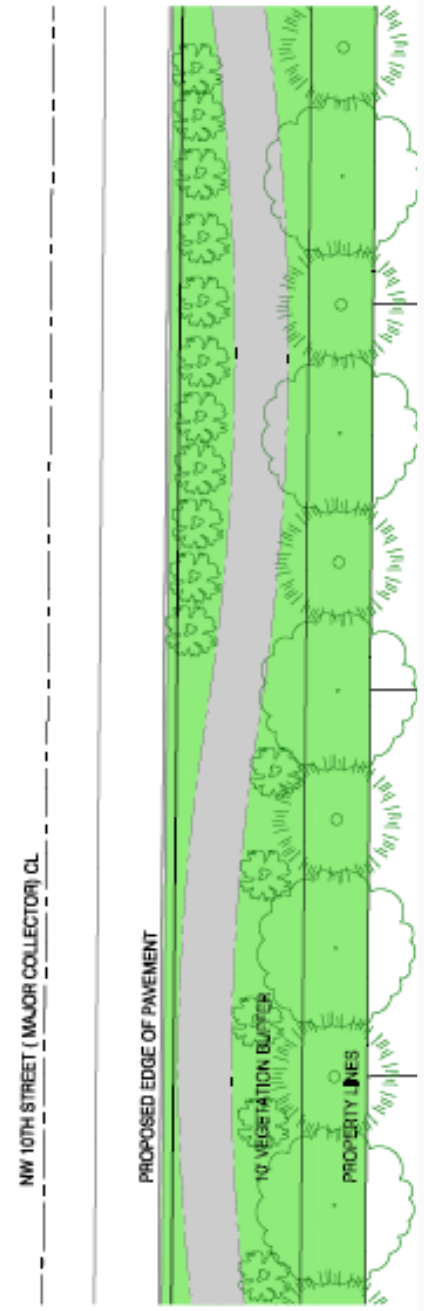


# GREAT NEIGHBORHOOD PRINCIPLES OPEN SPACES, GREENWAYS, REC.

-2 OPEN SPACE TRACTS:  
9,000 SQ. FT.

-MULTI-USE PATH ALONG  
EASTERN BOUNDARY

SLIDE / 12





# GREAT NEIGHBORHOOD PRINCIPLES INTEGRATED DESIGN ELEMENTS

NEIGHBORHOODS SHALL  
ESTABLISH A COHERENT &  
DISTINCT CHARACTER



HOUSING TYPE A



HOUSING TYPE B



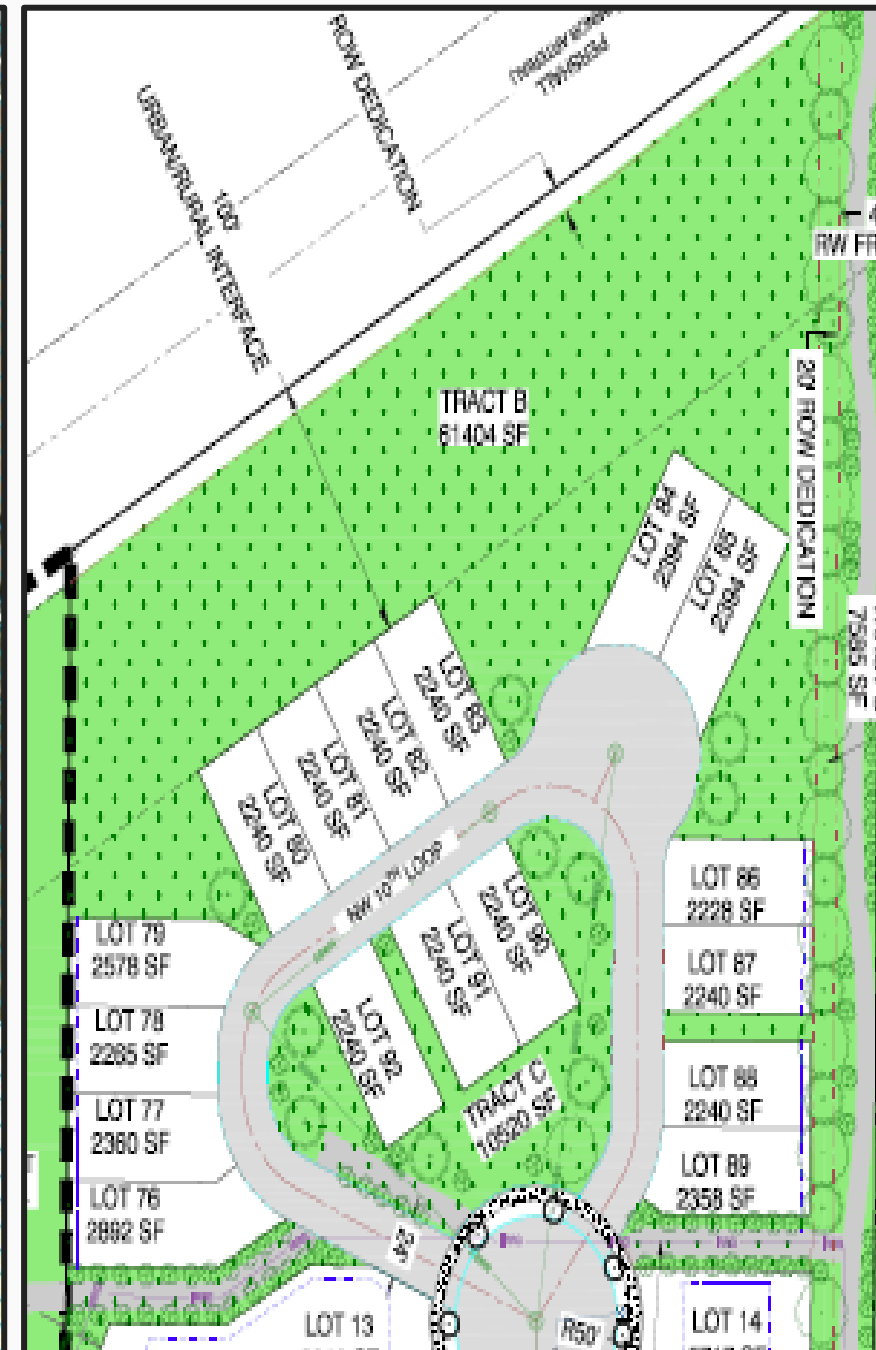
COTTAGE EXAMPLE





URBAN DEVELOPMENT TO  
INTERFACE W/ OPEN SPACE  
BUFFERS OR BE  
TRANSITIONED FROM  
HIGHER DENSITY  
DEVELOPMENT TO LOWER  
DENSITY DEVELOPMENT

SLIDE / 14



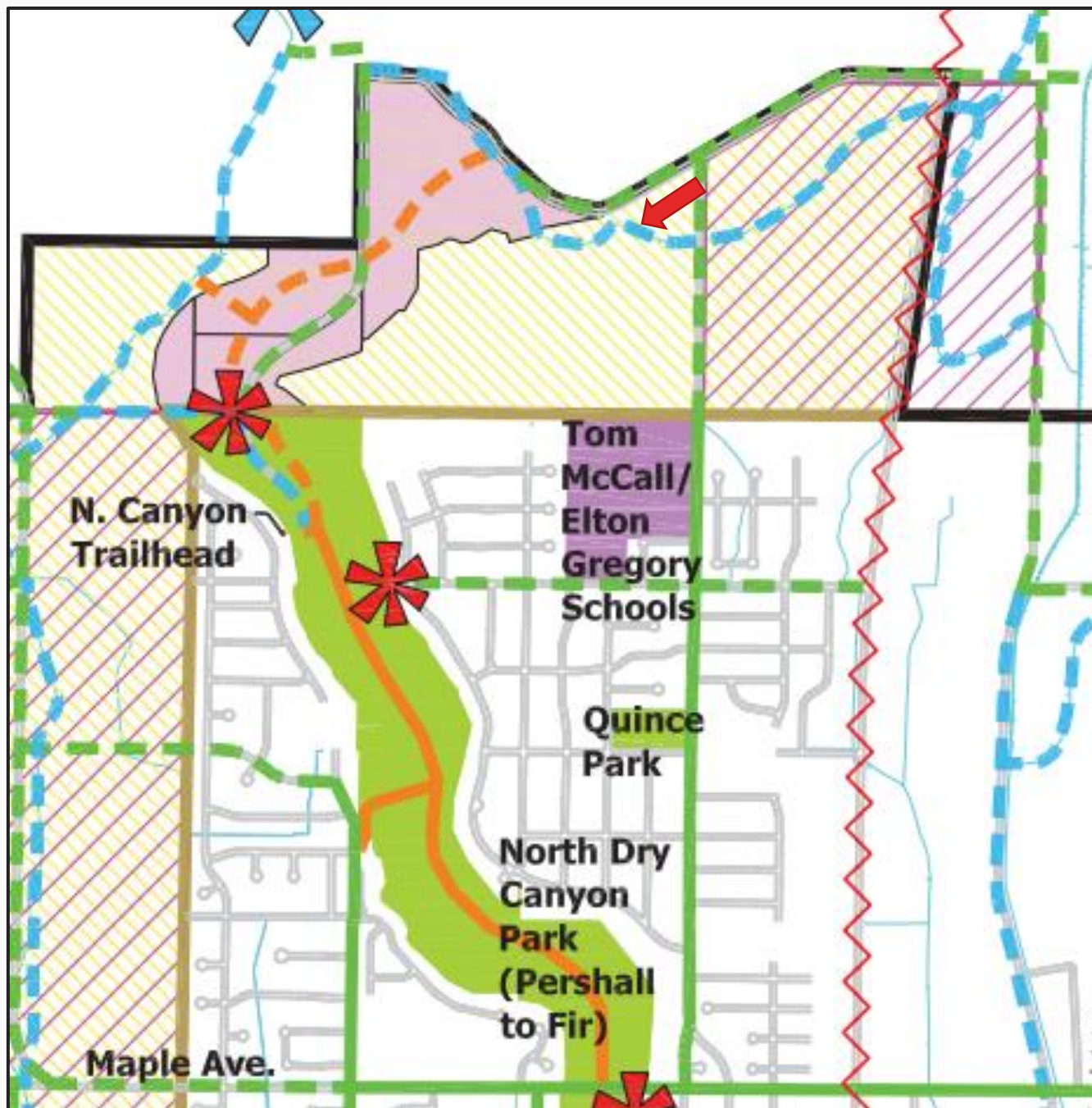




# GREAT NEIGHBORHOOD PRINCIPLES CANAL TRAILS

IF CANALS OR LATERALS  
ARE PRESENT, MULTI-USE  
TRAILS AT LEAST 10 FEET  
WIDE SHALL BE PROVIDED

SLIDE / 15





# STAFF & UAPC RECOMMENDATION

## APPROVAL, SUBJECT TO 18 CONDITIONS

01

### MASTER DEVELOPMENT PLAN

FROM: UH-10 (DESIGNATED R-4 BY COMP PLAN)

TO: R-4 (GENERAL RESIDENTIAL) - 19.23 ACRES

02

### TENTATIVE 75-LOT RESIDENTIAL SUBDIVISION

03

### COTTAGE DEVELOPMENT

17 COTTAGE UNIT LOTS W/ OPEN SPACE





# CONDITIONS OF APPROVAL

- **COTTAGE DEVELOPMENT:** A NUMBER OF CRITERIA WAS NOT MET, AND THEREFORE, APPLICANT MUST SUBMIT REQUIRED INFORMATION PER CONDITIONS 3-6
- **CET BUS STOP:** REQUEST FOR 8' X 5' CONCRETE PAD FOR BUS STOP
- **PUBLIC ART:** APPLICANT MUST SUBMIT PLANS FOR INCORPORATING PUBLIC ART INTO THE DEVELOPMENT.
- **OPEN SPACE TRACTS:** DETAILED LANDSCAPING & AMENITIES PLAN MUST BE SUBMITTED & THESE TRACTS MUST BE PRIVATELY MAINTAINED.
- **COID EASEMENT & PIPING:** PUBLIC ACCESS EASEMENT NEEDED FOR COID TRAIL THAT WILL TRAVERSE PROPERTY. APPLICANT MUST CONTACT COID TO DISCUSS EASEMENT & PIPING PLANS.



# QUESTIONS







## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** Redmond City Council  
**THROUGH:** Keith Witcosky, City Manager  
John Roberts, Deputy City Manager  
**FROM:** Kyle Roberts, Senior Planner  
**SUBJECT:** Ordinance #2021-12: An Ordinance to amend the Redmond Sites of Historical Interest Inventory in the City of Redmond Historic Preservation Plan (McCaffery House).

---

### Addresses Council Goal:

7. COMPREHENSIVE PLANNING: Enhance the quality of life through adoption of programs, policies, and standards that manage growth while maintaining Redmond's small-town feel.

### Report in Brief:

This item requests City Council approving Ordinance #2021-12, amending the City of Redmond Historic Preservation Plan, Existing Resources adding the McCaffery house, located at 726 NW Birch Avenue, to the Locally Designated Properties of Historical Interest. This is a continuation of a public hearing. The public hearing was opened at the December 14, 2021, City Council meeting and continued to January 11, 2022. The applicant requested the hearing be rescheduled due to unforeseen circumstances.

### Background:

The Statewide Planning Program Goal 5 focuses on the conservation of open spaces, historic, cultural and natural resources. The methodology of achieving this goal as it pertains to historical and cultural resources is to adopt a local landmarks program that identifies and preserves buildings, structures, objects, sites or districts in the community that are of historic and cultural significance for present and future generations. To this end, the Redmond City Council established the Redmond Historic Landmarks Commission in February 2011.

In 2015, the Landmarks Commission developed and adopted the 'City of Redmond, OR Historic Preservation Plan'. The plan supports the 2040 Redmond Comprehensive Plan. The plan outlines the essential components for a viable preservation program as an integral part of Redmond's community planning. It also serves as a guiding document that identifies the community's priorities for the preservation of historic resources and sets forth related goals, policies, and action steps toward their implementation.

The Redmond Development Code (Chapter 8) helps implement the Historic Preservation Plan and allows for two types of historical designations: 1) Historic Local Landmark Designation, and 2) Site of Historical Interest Designation. A Historic Local Landmark Designation recognizes a property as being of historical importance based upon past or present use and architectural significance. A Historical Interest Designation is of historical interest to the City, but does not meet the criteria for designation as a Historic Landmark and is not protected by the regulations of the Redmond Development Code. A summary of each designation is as follows:

Historic Local Landmark Designation (Redmond has twenty historic properties designated on the Local Historic Landmark Register)

- **Value of Designation:** Honorific, increased property value, protection of the asset for future generations. A local landmark designation officially declares a property as valuable to the community, representing the history and heritage of the community and worthy of being preserved as such for future generations.
- **Financial Impact:** Studies show the designation raises property values. Tax incentives are available for properties listed on the National Register of Historic Places (Oregon's Special Assessment of Historic Properties and the Federal Tax Credit).

- **Protection of Property:** Exterior alterations and new construction that is attached to the property designated are reviewed by the Redmond Historic Landmarks Commission for consistency in maintaining the historic integrity of the building. Maintenance of the structure, such as painting, is not regulated by the Redmond Development Code.

#### Historical Interest Designation (Redmond has eight properties designated as Historical Interest)

- **Value of Designation:** Honorific and brings attention to the history of the property and the significance of the property; does not protect the property from alterations and changes that will preserve its integrity for future generations.
- **Protection of Property:** There is no regulatory review or application of criteria identified in the Redmond Development Code.

#### **Discussion:**

The applicant, owners of the McCaffery House, submitted a Historic Resources Application requesting designation of their house to the Local Landmark Register (Exhibit C). The McCaffery Craftsman Bungalow is located in downtown Redmond at 726 NW Birch Avenue. Existing on the roughly 6,100 square foot lot is the 1,913 square foot house as well as a 624 square foot outbuilding. The house was built in 1929 and has been located in two locations. The house was purchased in 1938 by Frank and Minnie McCaffery and was occupied by the McCaffery family until 1986.

The Redmond Historic Landmarks Commission held a public hearing on September 23 and October 28 to consider the request. The discussions focused on whether the McCaffery House met the Redmond Development Code criteria for Local Landmark Designation. Ultimately, it was recommended the Commission not approve the request to have the house listed on the Local Landmark Register.

In order to make the determination that the building is a historical landmark, it must meet all criteria listed in Section 8.0855(1) of the Redmond Development Code. The request met three of the four criteria. The applicant has owned the house since 2014 and modifications have been made to the exterior that include vinyl siding and windows. In 2006, a major alteration was made to the house, which included a one-story addition. The addition is out of scale and the massing takes away from the original structure. Thus, there was a major alteration to the home encumbering the historical integrity.

The Redmond Historic Landmarks Commission voted unanimously not to approve the request, but suggested the house could be listed on the Sites of Historical Interest. Exhibit B of Ordinance #2021-12 contains the staff findings supporting this decision.

As required, notices regarding this public hearing were posted in three places (the Library, the Police Department, and the Redmond Chamber of Commerce) in addition to City Hall on December 7, 2021, and January 4, 2022, and three copies of the ordinance were available for review at City Hall.

#### **Fiscal Impact:**

There is no anticipated fiscal impact.

#### **Alternative Courses of Action:**

After conducting the public hearing and considering all the evidence and testimony:

1. Accept the Historic Landmarks Commission recommendation to not approve adding the McCaffery House to the Local Landmark Register, but add the house to the Sites of Historical Interest (Ordinance #2021-12).
2. Continue the public hearing and leave the written record open to request additional information.
3. Deny the Historic Landmarks Commission recommendation and approve adding the McCaffery House to the Local Landmark Register.

#### **Recommendation / Suggested Motion:**

"I move to have a first and second reading of Ordinance #2021-12 by title only." (Voice vote)

(City Attorney will read ordinance by title only, twice.)

"I move to approve Ordinance #2021-12." (Roll call vote)

**CITY OF REDMOND  
ORDINANCE NO. 2021-12**

**AN ORDINANCE TO AMEND THE REDMOND SITES OF HISTORICAL INTEREST INVENTORY IN THE CITY OF REDMOND HISTORIC PRESERVATION PLAN.**

**WHEREAS**, the State of Oregon requires all cities and counties to address State Land Use Planning Goal 5, Open Spaces, Scenic and Historic Areas, and Natural Resources; and

**WHEREAS**, the City of Redmond has adopted a Comprehensive Plan Goal of preserving and retaining historic structures, areas, sites and cultural resources throughout the City; and

**WHEREAS**, the City of Redmond adopted the City of Redmond, OR Historic Preservation Plan in August 2015 serving as support plan to the 2020 Redmond Comprehensive Plan; and

**WHEREAS**, the City of Redmond has an adopted policy that it will foster and encourage the preservation, management and enhancement of buildings, structures, objects, sites and/or districts that are of historic and cultural significance; and

**WHEREAS**, preservation of historic and cultural resources is a local value of the community that would best be served by a commission of volunteers dedicated to historic preservation efforts specific to the City of Redmond; and

**WHEREAS**, the City of Redmond is interested in strengthening its historic preservation program and utilizing historic preservation as a community and economic development tool; and

**WHEREAS**, the Redmond Historic Landmarks Commission held a public hearing on September 23 and October 28, 2021, and, after reviewing the record and gathering public testimony, has recommended that the City Council not approve the request to add the McCaffery House to the Redmond Local Landmarks Register; and

**WHEREAS**, the City Council opened a public hearing on December 14, 2021, and continued the hearing to January 11, 2022, to consider the recommendation of the Redmond Historic Landmarks Commission, review the existing record and gather additional evidence and public testimony; and

**WHEREAS**, the City Council has received the Historic Landmarks Commission's recommendation and, after receiving additional evidence and testimony, determined that the request to add the McCaffery House to the Redmond Local Landmarks Register is not in compliance with all the required criteria of the Redmond Development Code, but can be designated a building of historical interest.

**NOW, THEREFORE, THE CITY OF REDMOND ORDAINS AS FOLLOWS:**

**SECTION ONE:** The City of Redmond hereby amends the City of Redmond Historic Preservation Plan, Existing Resources, to add the McCaffery House to the Locally Designated Properties of "Historical Interest," per Exhibit A.

**SECTION TWO:** The McCaffery House does meet the criteria to be identified on the Historic Local Landmark Register, per Exhibit B.



**SECTION THREE: SEVERABILITY.** The provisions of this Ordinance are severable. The invalidity of any section, clause, sentence, or provision of this Ordinance shall not affect the validity of any other part of this Ordinance, which can be given without such invalid part, or parts.

**PASSED** by the City Council and **APPROVED** by the Mayor this 11<sup>th</sup> day of January 2022.

---

George Endicott, Mayor

ATTEST:

---

Kelly Morse, City Recorder

## EXHIBIT A:

### City of Redmond, OR Historic Preservation Plan – Amendment

**Historic Preservation Plan Amendment to Existing Resources (pages 12-13)** (new text is **red**; deleted text is ~~struckthrough~~, unless otherwise stated):

#### EXISTING RESOURCES

Redmond boasts numerous properties important to local, state and national history. While a number of them have been listed locally, the community has very few National Register designated properties. The following summarizes the status of designated historic resources in Redmond, as well as those eligible for designation.

#### Locally Designated Properties – Historic Landmarks

Redmond has twenty locally designated properties.

- Elliot, Jack, House, 303 NW Canyon Drive\*
- Redmond Passenger Depot, 3716 SW 21<sup>st</sup> Place\*\*
- Redmond Freight Depot, 778 NE 11<sup>th</sup> Street\*\*
- Holmes, Robert (Roy), House, 349 SW 12<sup>th</sup> Street\*\*
- Lloyd, J. Sidney and Lizzie, House, 135 SW 6th Street
- Roberts, John, House, 111 N 8th Street
- East Whited Farmstead, 2087 SW Helmholtz
- Atkinson, Fred, Building, 535-537 S. 6th St.
- Butler, J.D., Building, 453 S. 6th St.
- Beogher, Theron, Cottage, 422 SW 13th St.
- Presbyterian Community Church, 641 SW Cascade Ave.
- Ehret Brothers Store, 251 S. 6th St.
- McMickle, B.H. & A.T., House, 614 NW Cedar Ave.
- Odem, Milton, House, 623 SW 12th St.
- Redmond Union High School, 437 SW 9th St.
- Smith, Lew A., House, 1329 SW Evergreen
- The New Redmond Hotel, 521 S. 6th St.
- WWII Airport Hangar, Sisters Avenue, Roberts Airfield
- Carpenter, Roy, House, 342 SW Canyon Drive
- C.O. Cooperative Creamery, 640 SW Evergreen Ave

#### Locally Designated Properties “of Historical Interest”

In addition to local landmark properties, nine Redmond properties are designated as of “historical interest.” These resources are not required to comply with the requirements of the Historic Preservation code (i.e. review by the Landmarks Commission) except in the event of a demolition or major alteration. In those cases, the only requirement is that the property owner provide the City with 10 days notification to allow for adequate documentation prior to alteration/demolition. Buildings designated as such are as follows.

- McCaffery, Frank & Minnie, House, 726 NW Birch Avenue
- Allen, Francis McCormack, House, 655 SW 7th St.
- Hosch, John F., House, 511 SW 12th St.
- Landaker, Fritz, Building, 457 S. 6th St.
- Redmond Schoolhouse, 1429 W. Antler Ave.
- House, 145 SW 6th Street
- Redmond Homestead Site, Public Right of Way, Homestead Park
- Jessie Hill School, 827 NW Deschutes Ave
- Gibbs House, 861 N 17th Street

### **National Register-listed Properties**

Only four individual properties in Redmond are listed in the National Register of Historic Places.

- New Redmond Hotel, 521 SW 6th Street. Listed 1980
- Odem, Milton, House, 623 SW 12th Street. Listed 1997
- First Presbyterian Church of Redmond, 641 SW Cascade Avenue. Listed 2001
- Pilot Butte Canal, NW Canal Blvd. from approximately NW Quince Ave. on the north to NW Dogwood Ave. on the south. Listed 2017

\*Added via Ord. 2016-12

\*\*Added via Ord. 2015-14

## EXHIBIT B:

### Frank & Minnie McCaffery House, 726 NW Birch Avenue

Location:



### Background:

Jon and Judy Fessler, owners of the McCaffery House, submitted a Historic Resources Application requesting designation of the historic building to the Local Landmark Register.

The McCaffery Craftsman Bungalow is located in downtown Redmond at 726 NW Birch Avenue. Existing on the roughly 6,100 square foot lot is the 1,913 square foot house as well as a 624 square foot outbuilding. The house was built in 1929 and has been located in two locations. According to the applicant, the house was originally located at 539 SW B Street (Black Butte Blvd.), Block 5, Lot 7 of the Townsite of Redmond. It was later moved to its current location between 1972-1974. The house was purchased in 1938 by Frank and Minnie McCaffery and was occupied by the McCaffery family until 1986.

The Fesslers have owned the house since 2014. Modifications have been made to the exterior that include vinyl siding and windows. In 2006, a major alteration was made to the house that included a one-story addition.

**Discussion:**

In order to make the determination that the building is a historical landmark, the City Council must determine that it meets all criteria listed in Section 8.0855(1) of the RDC, as presented below:

- A. The property is located within the boundaries of the City of Redmond.
- B. The property is over fifty (50) years of age or of exceptional importance, or in the case of a locally designated district, the majority of the properties are over fifty (50) years old or have exceptional significance.
- C. The property possesses sufficient historic integrity, in that there are no major alterations or additions that have obscured or destroyed the significant historic features. Major alterations that may destroy the historic integrity include, but are not limited to, changes in pitch of the main roof, enlargement or enclosure of windows on principal facades, addition of upper stories or the removal of original upper stories, covering the exterior walls with non-historic materials, moving the resource from its original location to one that is dissimilar to the original, additions which significantly detract from or obscure the form and appearance of the historic resource when viewed from the public right-of-way.
- D. The property has historic significance as demonstrated by meeting at least one of the following criterion:
  - 1. Association with events that have made a significant contribution to the broad patterns of our history; and/or
  - 2. Association with the lives or persons significant in our past; and/or
  - 3. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
  - 4. Have yielded, or may be likely to yield, information important in prehistory or history.

After review of the available information about the residence, staff finds the house meets criteria A, B, and D. The location of the house is located within the boundaries of the city of Redmond and was built in 1929, making it over 50 years of age. Based upon the historical research presented by the applicant, staff concurs that the house meets the historic significance criteria 1 and 2 of criterion D.

Staff finds the house does not meet criterion C listed above. The applicant stated that an additional bedroom – a one-story addition – was built in about 2004. Staff verified that a one-story addition was completed in 2006. The addition is out of scale and the massing takes away from the original structure. In response, the applicant believes a precedent had been established with regard to the Historic Landmarks Commission approving the rooftop bar addition to the Redmond Historic Hotel (New Redmond Hotel – Rooftop Bar findings and decision report is included in Exhibit C). The hotel, listed on the Local Landmark Register and National Register for decades, underwent a major alteration in 2019 when the owners were approved to add a rooftop bar in 2018.

The applicant called attention to the second “siting” design review guideline on page 6 of the New Redmond Hotel – Rooftop Bar staff report. The guideline states that “[N]ew additions shall be sited so that the impact to the primary façade(s) is kept to a minimum. Additions shall generally be located at the rear portions of the property or in such locations where they have the least visual impact from public ways.” Staff’s response in the report was that the proposed addition was sited in a manner that made it not visible and minimally visible from the hotel’s two



primary facades. As an aside, it should be noted that the design review guidelines presented in the hotel staff report are merely guidelines. They are not criteria that require findings used to make a decision.

In relation to the McCaffery House, criterion C of the criteria for designating historic resources to the Local Landmark Register states, major alterations that *may* destroy the building's historic integrity include additions of upper stories and additions that significantly detract from or obscure the form and appearance of the historic resource when viewed from the public right-of-way. As mentioned previously, staff believes the upper story addition to the house is out of scale and the massing takes away from the original structure. Furthermore, the addition is visible from the public right-of-way as shown in Figure 1 on the following page.

Finally, in referencing the 2017 *Craftsman Bungalows of Redmond* survey, the author, Preservation Solutions, LLC, had designated the house as not eligible/non-contributing. Reasoning for the designation was due to "The combination of secondary vinyl siding, replacement of the original wood windows with vinyl units, and loss of the historic window casing trim profile compromise this dwelling's ability to clearly convey its historic associations." The applicant stated that the vinyl siding and windows can all be reversed to achieve the original exterior. On that note, the survey stated, "If the vinyl siding were removed and the original materials found intact below, the building could be reevaluated for potential eligibility." However, given the current condition, the house does not have an eligible/contributing status.

#### **Recommendation:**

Because the applicant's request does not meet all four required criteria of Section 8.0855(1) of the Redmond Development Code, staff does not support the request to designate the house as a historic building on the Local Landmark Register.

The Historic Landmarks Commission held a public hearing on September 23<sup>rd</sup> and October 28<sup>th</sup> and voted unanimously in support of staff's recommendation. However, it was suggested that because the historic house meets three of the four required criteria, it could be listed on the list of Redmond's sites of historical interest. Such listing would be supported by the Commission and staff.

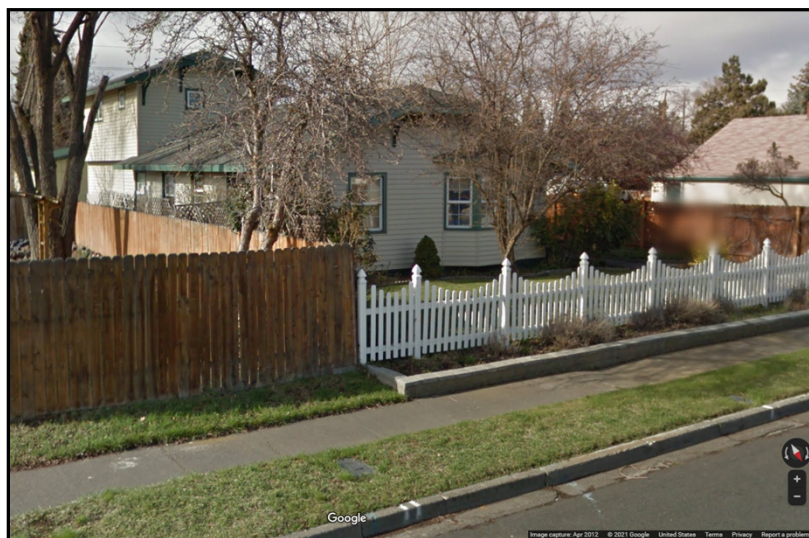


Figure 1 – View of McCaffery House from NW Birch Avenue. Source: Google Maps

# EXHIBIT C

## Frank and Minnie McCaffery Family History

### Redmond and Central Oregon

The McCaffery's family history began when Frank and Minnie and son Fred, left Moscow, New York in 1905 and arrived by covered wagon to Central Oregon . For Frank, it was a life changing or even life saving journey as he was suffering from asthma and seeking a drier climate and better quality of life for all of his family.

The McCaffery family was not unlike other families making their journey to Redmond. They were able to pull together and purchase 40 acres with their last \$300.00 to buy land near Cline Falls and built a cabin that sounds like what I would call a "Hard Scrabble " daily life. Frank worked various jobs including the Deschutes Irrigation and Power which later became Central Oregon Canal System. He also sold agricultural and became the first real estate man in the area thus gaining the title of "Land Man" a copy of his advertisement is included in this application. Note, in researching this property for nomination, there were many McCaffery transactions made in his name.

The first generation, Frank, Minnie and son Jack continued to pave the way for introducing a later important trademark for Central Oregon. Frank introduced the Crops of Potatoes and later mint. These were for many years the main agricultural crop in Central Oregon. They shared both rural and city roots of property in Powell Butte and of course Redmond.

While attending school in Prineville, Fred met and fell in love and married Neva Weigand. Her family settled and lived in LaMonta. The town of LaMonta located on the east side of Graybutte ( Smith Rock Area). Lamonta was a thriving community.. Farmers invested in dry farming mostly wheat and later able to grow beans, corn and squash associated with more moisture and of course water. But in 7 years of drought, the town struggled and many homesteaders left the area. In 1905, Joe Weigand started and operated a freight line offering his homestead home for overnight state passengers. Today, there are essentially no structures left in Lamonta. There has been interest in a heritage orchard that was dicouvered a few years ago. Possibly some orchards that where once productive in the LaMonta area/

Fred in Neva married in 1922. She sold her share of the family acreage in Lamonta and they bought land in Powell Butte to begin farming. They raised 3 children, Doris, Lois and Jack.

Tragedy struck Neva McCaffery when Fred was killed near Powell Butte in 1940. It is thought by her daughter Lois that Neva then moved in to take care of Frank and Minnie as they where getting older.

In 1938, Deschutes County Deed Records show that Frank and Minnie McCaffery purchased this house located at 539 SW B Street (Black Butte) Block 5 Lot 7 in Redmond original township.

The footprint of the home appears on the September 1928 Sanborn Map. These maps were produced by The Fire Insurance Company for cities for fire reference. Even what it was Res, Stable, sometimes names of businesses. The Sanborn map included in this document includes the foundation footprint and location of the front door and the two projected windows casings. The footprint is correct to footprint of this house..

This house's location has been witnessed by Granddaughter and Daughter Lois as she visited her grandparents. She even remembers the bedroom they stayed in as Neva cared for her inlaws. Neva McCaffery took care of them in the house located at the corner of Black Butte and 6<sup>th</sup> until the death of Minnie in 1971.

#### McCaffery Family Births and Deaths

Frank McCaffery      1871-1955

And

Minnie McCaffery -- 1877-1971

Fred McCaffery--      1899-1940

And

Neva McCaffery—      1899-1986

Siblings: Lois Maddox McCaffery, Doris Nolan McCaffery, and Jack McCaffery

Frank, Minnie, Fred and Neva all at the Redmond Memorial Cemetery



### **Historic Significance and Architectural Integrity to Local Landmark Register:**

This Historic residence meets the requirements of being in the City of Redmond in 1928 when it was on Black Butte (B Street) and present 2021. Making this resource at least 93 years old.

The McCaffery house exterior type of style can be described primarily as an English Cottage Bungalow. The curb side roof line with a graduated pitch. The roof overhanging both front and back are supported with large Brackets. The overhang of the roof, that created the extension of the roof is milled bead board with rafter tails also supporting the roof. The Front Porch which projects out also has large Brackets. It has the original front door and sidelights. The front door is full-light beveled glass. The front porch ceiling is slightly coved with milled bead board.

The McCaffery House has been located in two locations 539 SW Black Butte (B) Street Block 5 Lot 7 in original Redmond Township (see Sanborn Map) and presently located at 726 NW Birch Avenue (Ellingers Addition 193.PT.4) This home was occupied by the McCaffery Family for 49 years. Evidence that the McCaffery Family owned this home for the majority of its existence.

Beyond the significant historical documentation of the McCaffery Family, This home does not meet all of the criteria set by the Redmond Landmarks Commission. Its existence is proof the fact it is a survivor.

Looking back on the economic and social situations in 1929 this house survived the great depression. It could have fallen into disrepair, etc through financial woes in the USA at that time. Previous owners are documented in attached information, until the Frank and Minnie McCaffery bought this home in 1937. They lived at its original location until they died. Neva McCaffery, the daughter in law, then moved the home to its present address between 1972-74 and lived in the house until she died in 1986.

Even though it was moved to the current location, the curb side view of the house is depicted in the same direction as it was at 6<sup>th</sup> and Black Butte. The front bay windows and the Entrance to the home are depicted at its current location in relationship with the public right away. The lot the house was located on is now 1<sup>st</sup> Interstate Bank. A very tall spruce tree still growing on Black Butte. It may possible that it was planted by owner of this home. Perhaps, research could be done on this tree.

The outside of this home does not meet the pure definition visual historic materials as it has Vinyl Siding and Vinyl Windows but underneath the Vinyl Siding and Soffits is the original exterior shell of the home. The present vinyl windows appear to also be the same configuration and size of openings except for the octagon window almost to the rear of the house and are is not a prominent feature from the street. The configuration and size of the windows including the bay windows on the North side and west side, are original to the house.

The addition of a bedroom to the house: A one story addition was built in about 2004. It is a one bedroom suite matching the original pitch of the roof and located at the very rear of the house. This addition's appearance is sub-ordinate to the overall appearance of the historic architecture resource as seen at the curb. Special note: Secretary of State recommendations for historic standards that any

addition to the resource does not need to exactly match the original . In many cases, the distinction reflects the evolution of the resource.

The modifications: vinyl siding and vinyl windows can all be reversed to achieve the original exterior look of this home. We have lived in 4 historic homes and restored 3 of them and we will say that this home's interior is indeed unique which include coved ceilings that has the textured look of staligtights, original wood work in majority of interior; lathe & plaster; Doors , casings and baseboards; beveled full light front door with sidelights ; door hardware, including hinges and glass knob door knobs, and oak flooring in the living room, dining room and downstairs bedrooms. As are, other architectural features ll present and represent its 1928 age. (See interior pictures)

Enclosed please find pictures courtesy of the Deschutes County Assessors office will be the visual proof of the exterior in 1986.

We also including recent pictures of the work being done of just caulking, painting of the original overhang with the rafter tails. We have matched the color with the exposed original siding and transition to the vinyl siding.

As you can see the vinyl siding can be reversed.

Even though this home has had modifications through its 93 years, the recognizable bones of this home are very true to its past.

#### **In Conclusion;**

Even more significant, is the fact that multi- generations of McCafferyis lived in this home .The Spokesman obituary credited him with a number of firsts for Redmond and Central Oregon in almost many,kinds of business and agricultural endeavors .One of his first endeavors, was bringing potatoes and mint to this arid climate. For many years he bought and sold land timber etc. He was known as THE LAND MAN (see advertisement) ( Redmond Spokesman,1913). He and his family stayed in the City Redmond in later years.Frank's son ,Fred ,kept the ranch near Powell Butte until he died in accident at age of 41. Neva Weigand McCaffery , Daughter of Joe and Rosa Belle Weigand were some of first settlers of Lamonta (Near Gray Butte). This family also made many contributions to this region.

The McCaffery Family still can be found as they were laid to rest in the Redmond Memorial Cemetary

We feel that McCaffery Home and their life history meets historical significance Criteria D in at least 1,2. And is eligible for Redmond Local Landmark Designation.

We would certainly recommend that you approve this home for the Redmond Local Landmark Historic Designation.

Thank You

Jon and Judy Fessler



726 NW Birch Avenue

Redmond, Or 97756

Acknowledgements:

Deschutes County Deeds and Records

Redmond Spokesman – Redmond Local Legacies published 2005

Lois Madin McCaffery- Oral History Created in 2020

Library of Congress- Sanborn Fire Insurance Map- Redmond Oregon

### **History of Property Owners**

**Neva Weigand McCaffery- 1971-1986**

**Frank & Minnie McCaffery- 1937-1971**

**George Rex & Eleanor Putnam to Frank & Minnie McCaffery 1937**

**WH Hobbs & Edna Hobbs to George Rex and Eleanor Putnam- 1930**

**Sherman Weisberger to Edna Hobbs 1928**

**Jared Moore to Sherman Weisberger- 2-22-1923**

**The last entry Moore to Weisberger needs further research as all Deeds do not indicate whether these were just Lots without a structure. Lois Madin McCaffery thought that her grandfather bought the house from Weisberger. It could have been on a previous owners contract, etc.**

### **Recent Property Owners**

**Gregg & Jeanette Gile 1991-2014**

**Jon & Judy Fessler- 2014- Present**

IF YOU ARE LOOKING FOR

## Any Kind of Land

in Redmond or  
the Redmond District

.....BE SURE TO SEE.....

## F. W. McCAFFERY

THE LAND MAN  
of Redmond

He has all kinds of property listed--IRRI-  
GATED LAND. DRY FARMING LAND.  
TIMBER LAND. HOMESTEADS, CITY  
and RESIDENCE PROPERTY in RED-  
MOND and other parts of Crook County.

**The Garden Spot of Central Oregon**

Redmond Spokesman, March 20, 1913

GEORGE REX I PUTNAM, et ux

T O

FRANK W. McCaffery, et ux

Filed August 16, A. D. 1944  
1:47 o'clock P. M.

Helen M. Dacey, County Clerk  
By Opal Sprague, Deputy

KNOW ALL MEN BY THESE PRESENTS, That we George Rex I Putnam and Eleanor Putnam, husband and wife, of Albany, State of Oregon, in consideration of Ten dollars and other good consideration - Dollars, to them paid by Frank W. and Minnie McCaffery, husband and wife, of Redmond Oregon State of Oregon, have bargained and sold, and by these presents do grant, bargain, sell and convey unto said Frank W. and Minnie McCaffery, their heirs and assigns, all the following bounded and described real property, situated in the County of Deschutes and State of Oregon:

Lot Numbered seven in Block numbered five of the original  
Townsite of Redmond, Oregon according to the  
official map and plat thereof.

(\$4.40 U. S. I. R. Stamps affixed and cancelled:)

together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and also all our estate, right, title and interest in and to the same, including dower and claim of dower.

TO HAVE AND TO HOLD, the above described and granted premises unto the said Frank W. and Minnie McCaffery, their heirs and assigns forever. And we George Rex I. Putnam and Eleanor Putnam, husband and wife, grantors above named do covenant to and with Frank W. and Minnie McCaffery the above named grantees, their heirs and assigns that we are lawfully seized in fee simple of the above granted premises, that the above granted premises are free from all incumbrances save and except a certain mortgage to World War Veterans State Aid Commission of Oregon, which the grantees assume and agree to pay, and that we will and our heirs, executors and administrators, shall warrant and forever defend the above granted premises, and every part and parcel thereof, against the lawful claims and demands of all persons whomsoever, except for the mortgage above referred to.

IN WITNESS WHEREOF, we the grantors above named, have hereunto set our hands and seals this 12 day of January, 1937

Executed in the presence of  
Shirley Bates  
Name not legible

ELEANOR PUTNAM (SEAL)  
GEORGE REX I. PUTNAM (SEAL)

310

STATE OF OREGON }  
County of Linn } SS

BE IT REMEMBERED, That on this 12 day of January A. D. 1937 before me, the undersigned, a Notary Public in and for said County and State, personally appeared the within named George Rex I Putnam and Eleanor Putnam, husband and wife, who are known to me to be the identical persons described in and who executed the within instrument, and acknowledged to me that they executed the same freely and voluntarily.

IN TESTIMONY WHEREOF, I have hereunto set my hand and Notarial seal the day and year last above written.

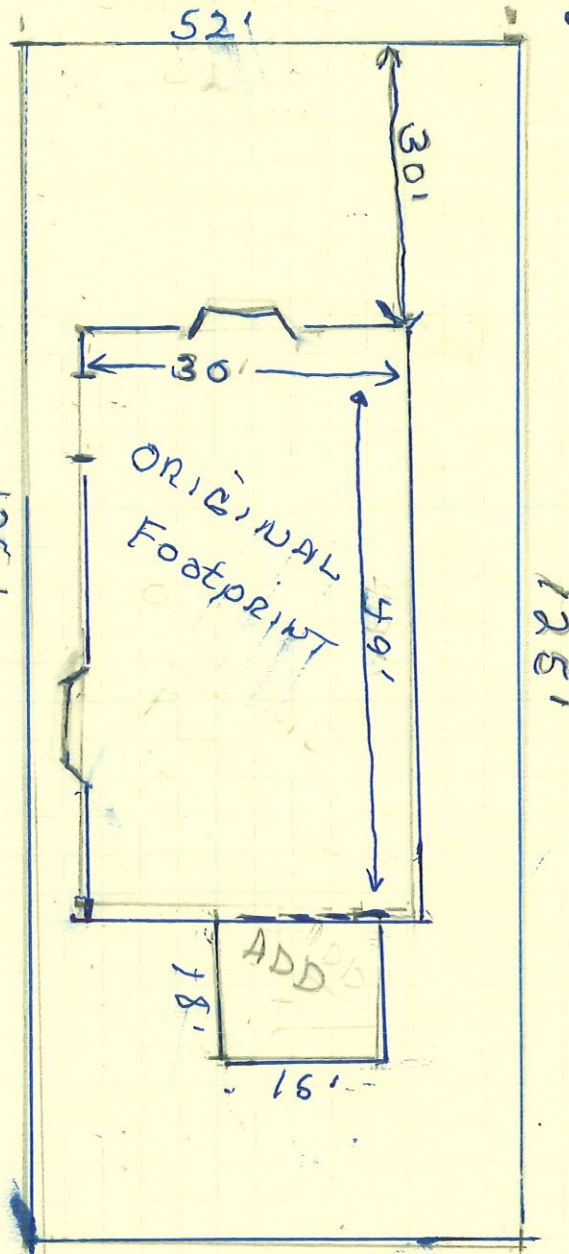
(Notarial Seal)

FRANCES STRUCKMEIER  
My Commission expires 2-12-40

FESSLER, Jon + Judy  
McCAFFERY HOUSE  
726 NW BIRCH

N  
1" = 20'

BIRCH AVE.



ALLEY  
7' - 8'



2-7-74

1068 8901

326

31









SEPT. 1928  
REDMOND  
ORE.



# REAL PROPERTY TAX STATEMENT

JULY 1, 2020 TO JUNE 30, 2021

DESCHUTES COUNTY, OREGON - 1300 NW WALL ST STE 203, BEND, OR 97703

74133-246\*\*G50\*\*06375\*\*14\*\*\*\*\*AUTO5-DIGIT 97756

FESSLER, JON L & JUDITH L

726 NW BIRCH AVE

REDMOND OR 97756-1746



## PROPERTY DESCRIPTION

CODE: 2001 MAP: 151309-DC-08901 CLASS: 101

SITUS ADDRESS: 726 NW BIRCH AVE REDMOND

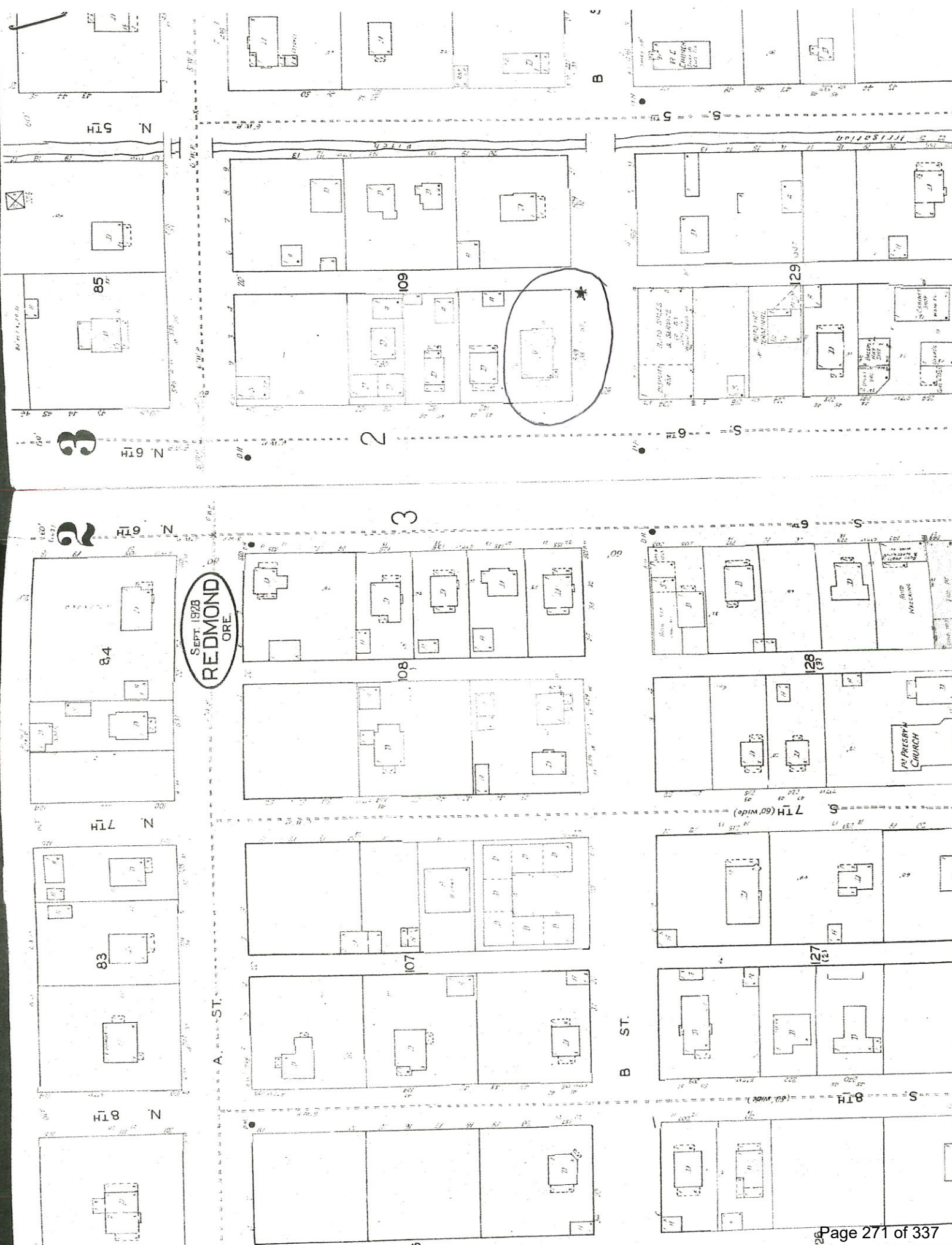
## TAX BY DISTRICT

|                                  |          |
|----------------------------------|----------|
| SCHOOL DISTRICT #2J              | 590.30   |
| HIGH DESERT LSD                  | 11.33    |
| C.O.C.C.                         | 72.88    |
| EDUCATION TOTAL:                 | 674.51   |
| DESCHUTES COUNTY                 | 143.12   |
| COUNTY LIBRARY                   | 64.62    |
| COUNTYWIDE LAW ENFORCEMENT       | 126.87   |
| COUNTY EXTENSION/MI              | 2.64     |
| 9 1 1                            | 42.51    |
| CITY OF REDMOND                  | 518.05   |
| REDMOND DOWN TOWN URBAN REDEV    | 168.09   |
| REDMOND FIRE & RESCUE LOCAL OPTI | 34.64    |
| REDMOND FIRE & RESCUE            | 206.07   |
| REDMOND AREA PARK & REC DISTRICT | 43.66    |
| GENERAL GOVT TOTAL:              | 1,350.27 |
| SCHOOL #2J BOND 2004             | 106.29   |
| SCHOOL #2J BOND 2008             | 190.54   |

SEPT 1923  
REDMOND  
ORE.

A. ST.

B. ST.



















































# Architectural Survey Data for Craftsman Bungalows of Redmond

## Oregon State Historic Preservation Office

| Address/<br>Property Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Ht | Eval/<br>NR | Yr(s)<br>Built | Materials                          | Arch Classifs/Styles         | Orig. Use/<br>Plan (Type)   | RLS / ILS<br>Dates | Listed<br>Date |                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------|----------------|------------------------------------|------------------------------|-----------------------------|--------------------|----------------|---------------------------------------------------------------------------------------|
| 1730 W Antler Ave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1  | NC          | 1927           | Cement Fiber Siding                | Bungalow (Type)              | Single Dwelling<br>Bungalow | 2/21/2017          |                |    |
| <p>Comments: There is no Sanborn map coverage for this part of Redmond. The county assessor dates this building to 1927. Though this dwelling might be eligible under other criteria related to rural residential/agricultural development on the outskirts of Redmond, it does not retain sufficient Craftsman-style elements to qualify under the countywide MPDF for Craftsman Bungalows.</p>                                                                                                                                                                                                                                                                                                  |    |             |                |                                    |                              |                             |                    |                |                                                                                       |
| 726 NW Birch Ave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    | NC          | 1929           | Vinyl Siding                       | Bungalow (Type)<br>Craftsman | Single Dwelling<br>Bungalow | 2/21/2017          |                |    |
| <p>Comments: There is no Sanborn map coverage for this part of Redmond. The county assessor dates this building to 1929. Local sources indicate this dwelling was moved to this location from elsewhere in Redmond (location as yet undetermined). The combination of secondary vinyl siding, replacement of the original wood windows with vinyl units, and loss of the historic window casing trim profile compromise this dwelling's ability to clearly convey its historic associations. If the vinyl siding were removed and the original materials found intact below, the building could be reevaluated for potential eligibility.</p>                                                     |    |             |                |                                    |                              |                             |                    |                |                                                                                       |
| 341 SW Black Butte Blvd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1  | ES          | 1925           | Horizontal Board                   | Bungalow (Type)<br>Craftsman | Single Dwelling<br>Bungalow | 2/21/2017          |                |    |
| <p>Comments: This dwelling appears on the 1956 Sanborn map. The county assessor dates this building to 1925. Despite the replacement windows and incompatible unfinished wood access ramp, this dwelling retains the key, character-defining clipped-gable roofs, open eaves with exposed rafter tails and knee brackets, as well as the original thin-profile wood clapboard siding, and it clearly communicates its Craftsman Bungalow associations. As such, the dwelling appears to meet the Craftsman Bungalows in Deschutes County MPDF registration requirements for eligibility that state it "should retain sufficient integrity to evoke the character of their style and subtype."</p> |    |             |                |                                    |                              |                             |                    |                |                                                                                       |
| 905 SW Black Butte Blvd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1  | EC          | 1930           | Synthetic Wood Siding              | Bungalow (Type)<br>Craftsman | Single Dwelling<br>Bungalow | 2/21/2017          |                |    |
| <p>Comments: The county assessor dates this building to 1930. This location appears vacant on the 1956 Sanborn map, suggesting the dwelling was moved to this location after 1956. This building might contribute to a surrounding historic district. However, it does not exhibit sufficient integrity of Craftsman-style elements to qualify for the countywide MPDF for Craftsman Bungalows.</p>                                                                                                                                                                                                                                                                                               |    |             |                |                                    |                              |                             |                    |                |                                                                                       |
| 529 NW Canal Blvd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1  | EC          | 1920           | Horizontal Board<br>Vertical Board | Bungalow (Type)<br>Craftsman | Single Dwelling<br>Bungalow | 2/21/2017          |                |   |
| <p>Comments: This dwelling appears on the 1956 Sanborn map, the first to cover this part of Redmond. The county assessor dates this building to 1920. Though this dwelling retains key character-defining features (e.g. open eaves, exposed rafter tails, knee brackets, thin reveal clapboards), the enclosure of the porch hinders its integrity. It is as yet undetermined if the dwelling retains sufficient integrity to be individually eligible under the countywide MPDF for Craftsman Bungalows; SHPO consultaion pending. If a residential historic district were present, it would contribute.</p>                                                                                    |    |             |                |                                    |                              |                             |                    |                |                                                                                       |
| 2621 SW Canal Blvd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1  | NC          | c.1935         | Horizontal Board<br>Shingle        | Bungalow (Type)<br>Craftsman | Single Dwelling<br>Bungalow | 2/24/2017          |                |  |
| <p>Comments: There is no Sanborn map coverage for this part of Redmond. The county assessor dates this building to 1948. The nonhistoric siding and windows, as well as replacement porch elements and entrance door, leave this dwelling with few original Craftsman Bungalow elements to clearly communicate its historic associations.</p>                                                                                                                                                                                                                                                                                                                                                     |    |             |                |                                    |                              |                             |                    |                |                                                                                       |

To: Redmond Landmark Commission- Please read into record or include in testimony

From: Jon & Judy Fessler (owners of McCaffery Home).

Hearing September 23, 2021 4:30PM Redmond City Hall

We would like to respond to the City Staff Report and recommendations to Redmond Historic Landmark Commission

We do agree with Staff on findings for Criteria A, B, C and Significant Criteria 1 and 2 and D Findings of Staff.

“Staff finds the house does not meet all 4 Criteria C listed above”

We would like to offer additional information since the application date of this nomination.

We met with Jeanette Gile, the previous owner of this home. They were the couple that did the exterior modifications including the vinyl windows and siding. She volunteered the information that this being the first home they even owned or remodeled. She indicated that in hindsight, they would have repaired original windows and worked to paint the original siding. But their budget and time went the way of doing it that way.

She shared and gave us many pictures of the home in progress, etc. It certainly filled in some blanks. This history will stay with this home.

This summer, we removed all 4 sides vinyl soffit as well as the fascia along the sides of the house. As you can see by the pictures of this house in 1984, these are original rafter tails that were hiding under the soffit. When the vinyl soffit was removed, the vinyl dropped so far down on the vertical body of the house's original siding was exposed. In some places 1-2 rows of the siding is now revealed in some locations. It has been painted the same color as the rafter tails and matches the current remainder of the vinyl siding (.enclosed pictures) the vinyl siding below the original clap board is so close to the same width as the original siding. By removing the vinyl soffit, we also exposed the original double Dutch bead board which just needed prep and paint to match the rafter tails.

1. Vinyl Windows-
2. Installing of vinyl windows appear to be retrofitted as to NOT taking out all interior trim. The interior trim on all windows appears to be original and not disturbed in the installation.
3. As we stated in our assessment of the exterior,. Very common to have the Asbestos, Stucco and Vinyl Siding salesperson come through town. We have taken off non- friable Asbestos; even comp shingles and firtex on two of our 4 homes we restored and in both instances we found the original siding that was in tack, it is our conclusion that both Windows and siding can be reversed. It just takes dollars.

## CRITERIA FOR DESIGNATION TO LOCAL LANDMARK REGISTER

It was the staff's Decision that this resource DOES NOT meet ALL of the Criteria notably the addition at the back of the original footprint of the house.

I would like to interject some president in decision for new additions in subordinate locations of buildings. One example I can recall was the approval of the roof top restaurant addition to the New Redmond Hotel. Granted it is listed with National Landmark designation but it still allowed and to, my knowledge was not removed from National or Local status of Landmark Status. I would also like to add the First National Bank Building also under Contributing for the National Historic District.

I would assume that National and or local commissions decided that they adhered to the Secretary of Interiors Standards for Rehabilitation and Guidelines. As Quoted Below:

*"New Additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size and scale, and architectural features to protect the historic integrity of the property and its environment"*

*New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of historic property and its environment would be unimpaired."*

We feel that the reference to the upstairs addition to this house being at the very rear of this house as well as being a small percentage for the original roof mass of the structure, does not and did not destroy the majority of the historic materials and features of this house from the Curb on Birch Avenue. It could probably be removed in its entirety but it could also be penalized in creating a 20<sup>th</sup> Century amenities that future owner families that wish to have 3 bedrooms and 2 Bathrooms As this addition only added a Master Bedroom, Bathroom and closet.

In Conclusion,

If this commission grants Local Historic Designation we would be not only happy for this historic resource to be recognized for 3 of the 4 criteria for designation. ALL CURRENT and FUTURE Local Historic Designated properties in Redmond could be afforded to receive the following benefits as listed and quoted in: Redmond Historic Resources Designation application of Section 8.0855.



Section 8.0855 cont

I am un-aware #4- A, B, C and D is being included in the benefits of Historic Designation but we have not been informed of E and F being available. Especially for residential properties.

*"E- Property owners of Landmarks may seek technical and financial assistance from the Commission in applying for grants or tax incentives for rehabilitating their properties as resources and funds are available.*

*F- Property owners of Landmarks are eligible to receive City-funded grants and loans to assist with the preservation of their buildings as resources and funds are available."*

If the Redmond Landmarks Commission and the Redmond City Council does not approve this application for Landmark Designation , we would like to recommend that all historic data provided by us be placed in City Historic File so that the history and research not be lost to the next property owners of the McCaffery House and know it is not just a 93year old home with no significant history.

Thank you,

Jon & Judy Fessler

726 NW Birch Ave

Redmond, Or 97756

October 15, 2021

To: Redmond Landmark Commission

From: Jon & Judy Fessler

Re: Continuation of September 23, 2021 Hearing

Re: McCaffery House

During the public hearing there was a request for more information. We hope we can provide closure on that request.

The primary concern was the subordinate addition to the back of the house. I also asked for information on possible precedental rulings by either the RLC or SHPO and/ or City for the roof top addition on the Redmond Hotel.

Staff did respond to request of decision of the roof top application. Jon & I reviewed the case with the rooftop addition to the National Historic Redmond Hotel. The Hotel also needed to have input by SHPO as the hotel also applied for tax incentives through the Federal Program.

I will go through some of the quotes from the staff report in relationship of the exterior alteration of the hotel's roof top alteration.

Redmond Planning Staff

Exterior Alteration and Finding and Decision

July 30, 2018

New Redmond Hotel

521 SW 6<sup>th</sup> St

Redmond

The applicant was requesting approval for an addition to the New Redmond Hotel to add a rooftop bar.

*From Page 6 - Design Review Guidelines Alterations/Additions*

*2. New Additions shall be sited so that the impact to the primary façade(s) is kept to a minimum. Additions shall generally be located at the rear portions of the property or in such locations where they have the least visual impact from public ways"*

*Staff Response: The additions is sited so that the impact to the primary facades is not visible at all, in this case, where it is visible it is kept to a minimum. ... ..Based on this evidence, staff finds that the*

*additions are located where they have the least visual impact from public ways and thus complies with this guideline.*

*Where the structure is visible- on west side as viewed on 7<sup>th</sup> Street and from other areas to the west, this view is on the back of the building which is along the alley, is partially screened with power lines and does not include the architectural adornment found on the east and north facades. Because of this, staff does not consider these to be primary facades. Staff has required that the structure be painted a color to match the façade so that it blends into existed building and fades into the background."*

Enclosed please find full staff report .

In conclusion, I hope we have fulfilled your inquiries from the hearing. It appears from our stand point that the alterations on the McCaffery House as well as the New Redmond Hotel are very similar as to placement and impact to the primary façade and indeed secondary to the overall exterior for both candidates. Thus we believe the New Redmond Hotel decision becomes precedent setting decision.

Vinyl Siding and Windows to original footprint of the house:

As we mentioned in our testimony at the hearing, these departures from being historic are reversible. Several rows of original siding was revealed this summer then the vinyl soffit vents were exposed as well as the rafter tails, the double dutch overhang (our pictures show the reveal.) As to the vinyl windows, it appears they were installed in the original sized window openings where the double sash wood windows existed. As we made the comment, It just takes a lot of private funds.

The commission must know that history is uncovered every day and I was very surprised that the McCaffery house had been surveyed by SHPO. Even though it was listed as NC (non contributing ) at the printed date of 2017, the survey data noted that if the siding and windows were removed and original materials intact below, the building could be re-evaluated for potential eligibility .

Design; Alterations and Historic Significance are truly a balance in determining the history versus the current physical historic integrity for nomination to Redmond Landmark Commission .This is the case for the McCaffery house and future nominations for Redmond Landmark Designation.

Research and oral testimony by Lois Maddox; Sanborn Map and title search verified the location and transfer of ownership . We were also able to uncover more history for this Family and the House.

This house has survived for 93 years and 2 generations of McCaffery s.

Thank you ,  
  
Judy & Jon Fessler

Att: 1 new photo of McCaffery House – Taken across the street at sidewalk elevation .







LOOKING AT BACK PART OF HOME







**CITY OF REDMOND**  
Community Development Department

411 SW 9<sup>th</sup> Street  
Redmond, OR 97756  
(541) 923-7721  
Fax: (541) 548-0706  
[www.ci.redmond.or.us](http://www.ci.redmond.or.us)

**REDMOND PLANNING STAFF**  
**FINDINGS AND DECISION**  
Exterior Alteration  
711-18-000129-HLS  
New Redmond Hotel – Rooftop Bar

**DATE:** July 30, 2018

**APPLICANT:** AWI Deschutes, LLC  
101 S. El Camino Real, Suite 202  
San Clemente, CA 92672

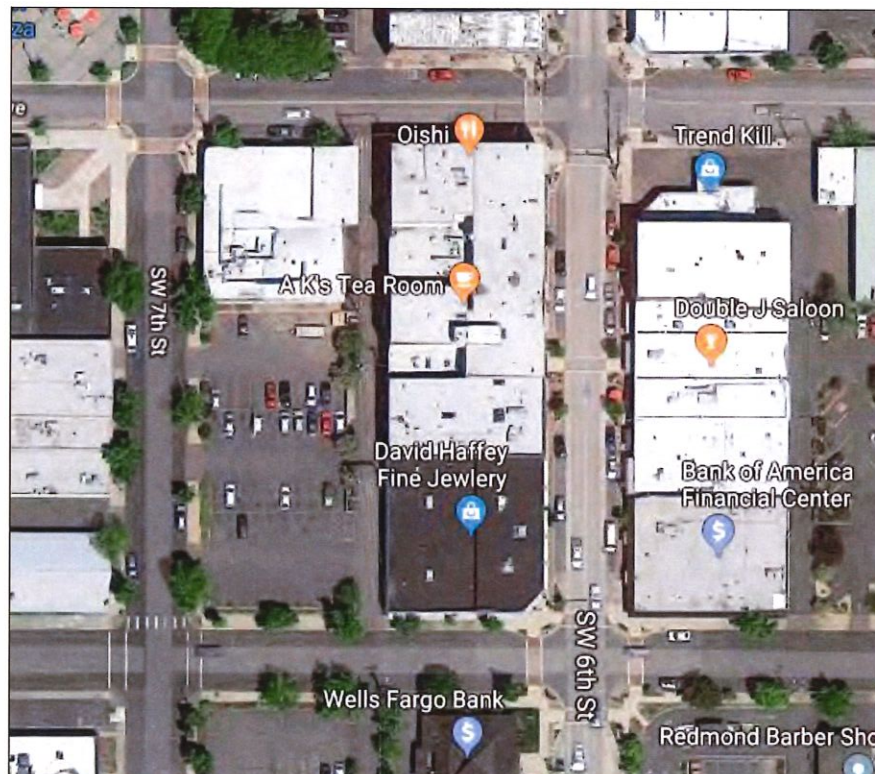
**OWNER:** Same as above

**STAFF:** Scott Woodford, Senior Planner

**REQUEST:** The applicant is requesting approval for an Addition to the New Redmond Hotel to add a rooftop bar. The hotel is on the local Redmond Inventory of Historic Buildings.

**LOCATION:** 521 SW 6<sup>th</sup> Street in Redmond, Oregon. The subject property is also identified as 151316AC00100 of the Deschutes County Tax Assessor's Map.

**Aerial Photograph**



**Summary:**

The New Redmond Hotel is planned to open as a hotel in the near future. The first step of its remodel is to add a rooftop bar and patio area (the applicant will follow up with an additional historic landmark application request for any changes to the facades of the building). The hotel is on the Local Redmond Historic Landmarks Inventory and on the National Register of Historic Places and therefore is required to request a Certificate of Approval from the City of Redmond for any exterior changes.

Project site plan, floor plans, and building elevations are provided in Exhibit B and information regarding the original landmark designation for the Redmond Hotel is in Exhibit C.

**Background:**

A three story "Georgian" brick masonry building, the New Redmond Hotel was opened in 1928. It has been operated as a hotel off and on since then but has been vacant for over 15-20 years. The building was designated a local Historic Landmark Building by the Redmond City Council on July 22, 1986 after a recommendation from the Deschutes County Historic Landmarks Commission and was placed on the National Register of Historic Places in 1980.

The applicant submitted plans that included a parapet roof on the rooftop bar. After further review and in consultation with the State Historic Preservation Office, the parapet roof has been removed from the plans to reduce the visual impact.

**Proposal:**

The proposal is for a 739-square foot addition to the roof of the hotel for a bar, storage, elevator structure, secondary emergency access enclosure (at the northwest corner of the building), and outdoor seating area.

**Comments:**

Public notice of the neighbors is not required in Section 8.0855 of the Redmond Development Code (Exterior Alteration and New Construction), therefore no public comments from noticed neighbors were solicited or received by the Planning Department.

**Exhibits:**

The following exhibits are on-file and make up the record in this matter:

1. Application, site plan, building elevations and other miscellaneous information.

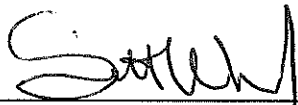
**Attachments:**

Exhibit A – Staff Findings  
Exhibit B – Site Plan, Floor Plan and Building Elevations  
Exhibit C – Historic Building Designation Documentation  
Exhibit D – Info on Hotel Operations

**Decision:**

In all land use proceedings, the "burden of proof" rests with the applicant to demonstrate compliance with the land use regulations. After reviewing all available evidence submitted by the applicant, staff concludes that the request complies fully with the Redmond Development Code standards and criteria. Based on the preceding findings, staff grants **approval with conditions** for the Exterior Alterations request for a rooftop bar and other improvements on the roof for the New Redmond Hotel, City File #711-18-0000129-HLA, subject to the following conditions:

1. Final paint colors shall be approved by the City of Redmond Planning Department prior to issuance of a Certificate of Occupancy for the rooftop bar and other associated structures.
2. Any changes to the approved plans will require review and approval by the City of Redmond Planning Department prior to construction.

  
\_\_\_\_\_  
Scott Woodford  
Senior Planner

8/2/18  
\_\_\_\_\_  
Date

MAILED BY: \_\_\_\_\_

Date \_\_\_\_\_

cc: Historic Landmark Commissioners  
David Pilling, Engineering  
Pamela Thomas, Building  
Deborah McMahon, Planning Manager  
Applicant: AWI Deschutes, LLC, 101 S. El Camino Real, Suite 202, San Clemente, CA 92672



## **EXHIBIT A – STAFF FINDINGS**

For exterior alterations of structures and/or buildings in a historic district or a designated historic structure and/or building, the criteria to be used by the Landmarks Commission in reaching its decision on the certificate of approval shall include the following:

### **A. Provisions of the Redmond Urban Area Comprehensive Plan.**

- **Staff Finding:** Staff has examined the record in this matter and finds the applicant has met the criteria. The applicable portions of the Comprehensive Plan are found in Chapter 5 – Open Spaces, Scenic and Historic Areas, and Natural Resources, Historical and Cultural section, as follows:

34. *The City shall foster and encourage the preservation, management and enhancement of buildings, structures, objects, sites and/or districts that are of historic or cultural significance.*
35. *Emphasis shall be placed on the preservation of the site and/or exterior appearance of historic and cultural resources. Site and exterior changes proposed for designated historical landmarks shall be approved by the Deschutes County Historical Landmarks Commission prior to the commencement of any work.*
36. *The City shall protect all historic and cultural resources of statewide significance through preservation regulations, regardless of whether those resources are designated as local landmarks.*
37. *Areas of high archeological site potential shall be appropriately examined prior to ground disturbing activities or the designation for other uses.*
38. *The City shall ensure the preservation of designated historic and cultural resources through the land use process.*
39. *The City should encourage public knowledge, understanding, and appreciation of the City's past.*
40. *The City shall foster community pride and a sense of identity based on the recognition and use of City owned historic and cultural resources.*
41. *The exterior of historic buildings in the core area should be rehabilitated to their original, architectural quality with careful application of design standards relating to signage, architectural detail and ornamentation.*
42. *The City shall encourage compatible exterior architectural designs of new structures within the downtown core.*
43. *Through the land use process, the City should inform property owners of potential historical importance and encourage them to maintain the existing exterior appearance of historical structures.*
44. *The Deschutes County Historical Landmarks Commission, with City representation, shall oversee the preservation, rehabilitation and restoration of historic and cultural resources within the City.*

- **Staff Finding:** The subject application for the rooftop addition to the historic structure will help it be adapted for reuse as a hotel, provide an amenity to the community, and help revitalize downtown. Helping to facilitate a successful business in this historic structure will help provide for its long-term maintenance and preservation, which are at the core of the Comprehensive Plan provisions above.

### **B. The reasonableness of the proposed alteration and the relationship to public interest in the structure's and/or building's preservation or renovation.**

- **Staff Finding:** Staff has examined the record in this matter and finds the applicant has met the criteria.

The proposed addition will provide a community amenity for the publicly accessed rooftop bar and open the mountain and City views to the public. The addition will also help facilitate the long-term maintenance of the historic structure, including future repair/replacement of the windows and touching up the brick mortar work and extensive interior improvements. These are all in the public interest.

C. The value and significance of the structure and/or building.

- **Staff Finding:** Staff has examined the record in this matter and finds the applicant has met the criteria.

The value and significance of the New Redmond Hotel is of high importance in the community, as it has served as a significant presence for nearly 100 years. The value of the architecture is also significant in that it is on the National Historic Register of Historic Buildings.

D. The physical condition of the structure and/or building.

- **Staff Finding:** According to the applicant, the building is in good condition overall and worth the investment they are making to update it into a new hotel.

E. The general compatibility of exterior design, arrangement, proportion, detail, scale, color, texture, and materials proposed to be used with an existing structure and/or building.

- **Staff Finding:** Staff has examined the record in this matter and finds the applicant has met the criteria. The addition will add mass to the roof, however, it is primarily located in the center of the roof and out of view from key viewpoints (i.e. on 6<sup>th</sup> Street in front of the hotel and at the corner of 6<sup>th</sup> Street and Evergreen Avenue). All viewpoints where it will be visible are either where it will not be very visible or are viewpoints of lower importance (i.e. the rear of the building from 7<sup>th</sup> Street where the power lines already impact the view).

To help make it less visible, color will be used to de-emphasize the structure and a variety of rooflines will add visual interest to areas where it is visible. A parapet roof is proposed on the addition to hide mechanical equipment and to mimic the parapet roof of the hotel.

F. Other pertinent aesthetic factors as appropriate.

- **Staff Finding:** Not applicable.

The Redmond Development Code also includes Design Review Guidelines for Alterations and Additions. They are included here for reference to help inform how the proposal meets the above criteria.

#### **DESIGN REVIEW GUIDELINES ALTERATIONS / ADDITIONS**

A. SITING

1. In addition to the zoning requirements, the relationship of new additions to the street and to the open space between buildings shall be compatible with adjacent historic buildings and with the historic character of the surrounding area.

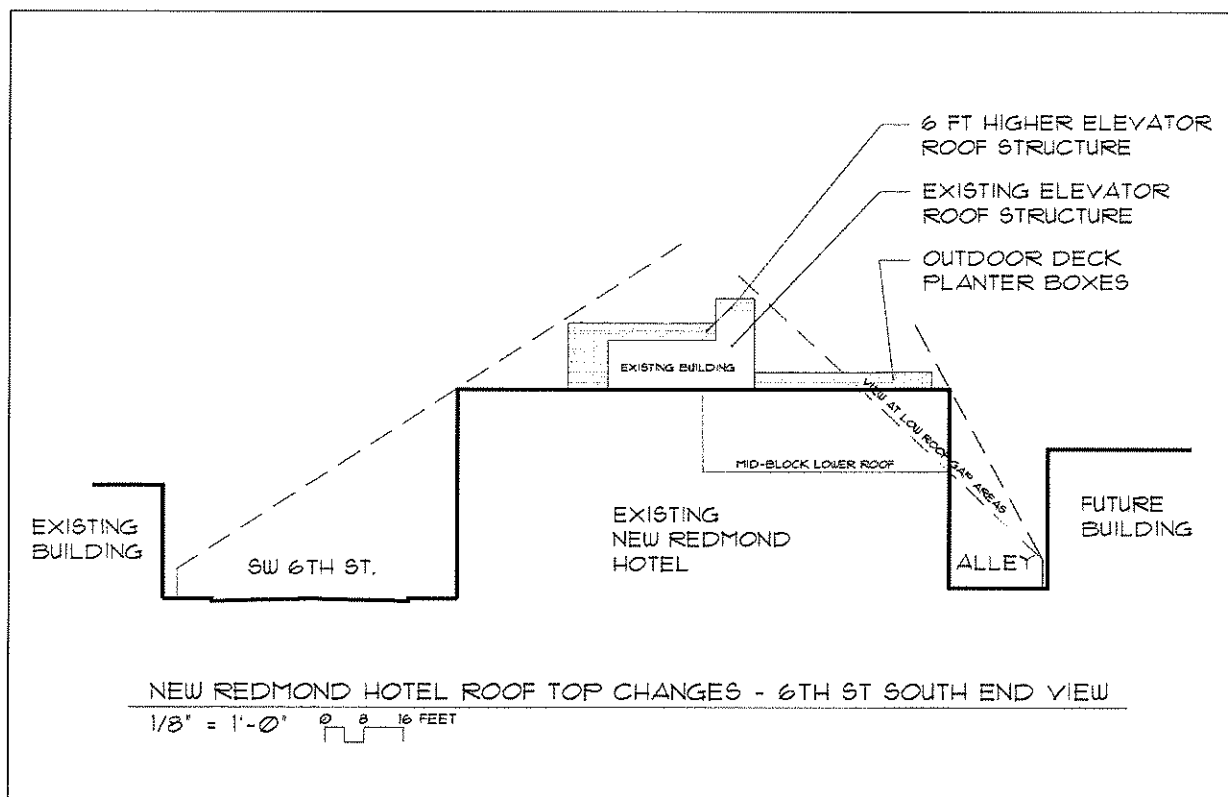
- **Staff Response:** Not applicable. The addition is on the roof and therefore not adjacent to the street or open space.

2. New additions shall be sited so that the impact to the primary facades(s) is kept to a minimum. Additions shall generally be located at the rear portions of the property or in such locations where they have the least visual impact from public ways.

**Staff response:** The addition is sited so that the impact to the primary facades is not visible at all or, in the case where it is visible, it is kept to a minimum. In this case, staff believes that the primary facades are the east façade (facing 6<sup>th</sup> Street) and the north façade (facing Evergreen Avenue). As viewed from 6<sup>th</sup> Street in front of the building, the addition will not be visible (as depicted in the section below). It will also not be visible from the important corner of 6<sup>th</sup> Street and Evergreen Avenue (see photo below taken after the rooftop building and elevator structure was installed).

The rooftop bar will not be visible at all from Evergreen Avenue on the north side of the building and only the structure for the emergency access stairway will be visible at the northwest corner of the structure. Based on this evidence, staff finds that the additions are located where they have the least visual impact from public ways and, thus complies with this guideline.

Where the structure is visible – on the west side as viewed from 7<sup>th</sup> Street and from other areas to the west – this view is of the back of the building, which is along the alley, is partially screened with power lines and does not include the architectural adornment found on the east and north facades. Because of this, staff does not consider these to be primary facades. Staff has required that the structure be painted a color to match the façade so that it blends into the existing building and fades into the background.





Taken from corner of 6<sup>th</sup> and Evergreen where the addition will not be visible.



Taken from corner of 6<sup>th</sup> and Forest. The addition will be slightly visible and will be painted to be subdued.





Taken from 7<sup>th</sup> and Forest. The addition is visible, but view is marred by existing power lines and not a primary viewpoint.



Photo of previous elevator structure on top of the hotel that shows there was building mass originally located on top of the structure and which is being replaced by a new structure.

## B. LANDSCAPE

1. Traditional landscape elements evident in the district - grass, trees, shrubs, picket fences, etc. - should be preserved and are encouraged in site redevelopment.

2. Inappropriate landscape treatments, such as berms and extensive ground cover, are discouraged.

- **Staff response:** This guideline is not applicable, as the improvement is on the roof. Low landscaping will be provided around the seating area on the rooftop deck to provide an aesthetic environment but will not be visible from the primary facades.

## C. BUILDING HEIGHT

1. In addition to the zoning requirements, the height of new additions shall not exceed the height of the historic building, or of historic buildings in the surrounding area.

- **Staff response:** The addition will be higher than the height of the historic building because it is located on the roof; however, the height will only be a few feet higher than the previous historic structure on top of the hotel that was used as an elevator penthouse.

## D. BUILDING BULK

1. New additions smaller than the historic building or the historic buildings in the surrounding area are encouraged.

(a) Where new additions must be larger, the new addition shall be articulated in such a manner that no single element is visually larger than the historic building or larger than the surrounding historic buildings.

- **Staff response:** The size of the addition will be much smaller than the historic building.

## E. PROPORTION AND SCALE

1. The relationship of height to width of new additions and their sub-elements, such as windows and doors and of alterations, shall be compatible with related elements of the historic building and with the historic character of the surrounding area.

- **Staff response:** The height to width ratio of the addition is similar in scale and feel to the hotel and the surrounding area.

2. The relationship of solids to voids (wall to window) shall be compatible with related elements on the historic building and with the historic character of the surrounding area.

- **Staff response:** The rooftop bar addition will not be visible from the primary facades and the structure housing the emergency access stairway will be minimally visible and on top of the roof, so the architectural details are less important. At any rate, there will be windows in the rooftop bar that provide a similar solid to void ratio will be in keeping with the historic building elements and character of the surrounding area.

## F. EXTERIOR FEATURES

1. General

(a) To the extent practicable, original historic architectural elements and materials shall be preserved.

- **Staff response:** The rooftop bar addition will retain all of the original architectural elements (with the exception of the demolition of the original elevator penthouse, which did not have historic value).

(b) Architectural elements and materials for new additions shall be compatible with related elements of the historic building and with the historic character of the surrounding area.

- **Staff response:** As mentioned previously in the findings, the rooftop bar and emergency stairway are located on top of the building and either not visible at all from the primary facades or minimally visible and therefore the architectural elements and materials are less important as if the addition were more visible. Despite that, the architectural elements (bulk and massing, color, use of parapets and flat roof pitches, window shapes and sizes, solid to void ratios, etc.) are designed to be compatible with the historic building.

(c) The preservation, cleaning, repair, and other treatment of original materials shall be in accord with the Secretary of Interior's Standards of Rehabilitation and Guidelines for Rehabilitating Historic Buildings.

- **Staff response:** This guideline is not applicable as the preservation, cleaning, repair and treatment of original materials is not proposed.

## 2. Foundations:

(a) Concrete or masonry foundations to replace deteriorated wood foundations are encouraged. Such new foundations shall be covered with board skirting or similar treatment to match the original appearance and extend to within six to eight inches (6" - 8") of the ground level.

(b) Concrete or masonry foundations for new additions need not be covered with material that stimulates earlier construction.

(c) New foundations shall not significantly alter the historic elevation of the building.

- **Staff response:** No new foundation work is proposed.

## 3. Roofs:

(a) Roofs on new additions shall be of forms (gabled, hipped, etc.) that are compatible with the historic building and the historic character of the district.

- **Staff response:** The roof on the addition is proposed to be flat with parapets to match the historic building roof character.

---

## MASONRY

(Adobe, Brick, Stone, Terra Cotta, Concrete, Stucco, Mortar)

## RECOMMENDED\*

Retaining original masonry and mortar, whenever possible, without the application of any surface treatment.

Repointing only those mortar joints where there is evidence of moisture problems or when sufficient mortar is missing to allow water to stand in the mortar joint.

Duplicating old mortar in composition, color, and texture.

Duplicating old mortar in joint size, method of application, and joint profile.

Repairing stucco with a stucco mixture that duplicates the original as closely as possible in appearance and texture.

Cleaning masonry only when necessary to halt deterioration or to remove graffiti and stains, and always with the gentlest method possible, such as low pressure water and soft, natural bristle brushes.

Repairing or replacing, where necessary, deteriorated material with new material that duplicates the old as closely as possible.

Replacing missing significant architectural features, such as cornices, brackets, railings, and shutters.

Retaining the original or early color and texture of masonry surfaces, including early signage wherever possible. Brick or stone surfaces may have been painted or whitewashed for practical and aesthetic reasons.

#### NOT RECOMMENDED

Applying waterproofing or water repellant coating or surface consolidation treatments unless required to solve a specific technical problem that has been studied and identified. Coatings are frequently unnecessary, expensive, and can accelerate deterioration of the masonry.

Repointing mortar joints that do not need repointing. Using electric saws and hammers to remove mortar can seriously damage the adjacent brick.

Repointing with mortar of high Portland cement content can often create a bond that is stronger than the building material. This can cause deterioration as a result of the differing coefficient of expansion and the differing porosity of the material and the mortar.

Repointing with mortar joints of a differing size or joint profile, texture, or color.

Sandblasting, including dry and wet grit and other abrasives, brick, or stone surfaces; this method of cleaning erodes the surface of the material and accelerates deterioration. Using chemical reaction with the masonry materials, i.e., acid on limestone or marble.

Applying new material which is inappropriate or was unavailable when the building was constructed, such as artificial brick siding, artificial cast stone, or brick veneer.

Removing architectural features such as cornices, brackets, railings, shutters, window architraves, and doorway pediments.

Removing paint from masonry surfaces indiscriminately. This may subject the building to damage and change its appearance.

- **Staff response:** Not applicable. No work is proposed to the masonry on the building with this application.

---

#### WOOD

(Clapboard, Weatherboard, Shingles, and Other Wooden Siding)

#### RECOMMENDED

Retaining and preserving significant architectural features wherever possible.



Repairing or replacing, where necessary, deteriorated material that duplicates in size, shape, and texture, the old as closely as possible.

#### NOT RECOMMENDED

Removing architectural features such as siding, cornices, brackets, window architraves, and doorway pediments. These are, in most cases, an essential part of a building's character and appearance that illustrate the continuity of growth and change.

Resurfacing frame buildings with new material that is inappropriate or was unavailable when the building was constructed, such as artificial stone, brick, veneer, asbestos, or asphalt shingles and plastic or aluminum siding. Such material can also contribute to the deterioration of the structure from moisture and insects.

- **Staff response:** This guideline is not applicable as wood on the building is not proposed to be changed with this application.

---

#### ARCHITECTURAL METALS

(Cast Iron, Steel, Pressed Tin, Aluminum, and Zinc)

#### RECOMMENDED

Retaining original material, whenever possible.

Cleaning when necessary with the appropriate method. Metals should be cleaned by methods that do not abrade the surface.

#### NOT RECOMMENDED

Removing architectural features that are an essential part of a building's character and appearance, illustrating the continuity of growth and change.

Exposing metals which were intended to be protected from the environment. Do not use cleaning methods which alter the color, texture, and tone of the metal.

- **Staff response:** No changes are proposed to the original material.

---

#### ROOFS AND ROOFING

#### RECOMMENDED

Preserving the original roof shape.

Retaining the original material, whenever possible.

Providing adequate roof drainage and ensuring that the roofing materials provide a weathertight covering for the structure.

Preserving or replacing, where necessary, all architectural features that give the roof its essential character, such as dormer windows, cupolas, cornices, brackets, chimneys, cresting, and weather vanes.

#### NOT RECOMMENDED

Changing the essential character of the roof by adding inappropriate features such as dormer windows, vents, or skylights.

Applying new roofing material that is inappropriate to the style and period of the building and neighborhood.

Stripping the roof of architectural features important to its character.

- **Staff response:** The original roof shape, material and architectural features will be preserved (other than removing the non-historic elevator penthouse structure).

---

## WINDOWS AND DOORS

### RECOMMENDED\*\*

Retaining and repairing window and door openings, frames, sash, glass, doors, lintels, sills, pediments, architraves, hardware, awnings, and shutters where they contribute to the architectural and historic character of the building.

Improving the thermal performance of existing windows and doors through adding or replacing weather-stripping and adding storm windows and doors which are compatible with the character of the building and which do not damage window or door frames.

Replacing missing or irreparable windows on significant facades with new windows that match the original in material, size, general muntin and mullion proportion and configuration, and reflective qualities of the glass.

Replacing missing or irreparable windows on significant facades with new windows that match the original in material, size, general muntin and mullion proportion and configuration, and reflective qualities of the glass.

### NOT RECOMMENDED

Introducing or changing the location or size of windows, doors, and other openings that alter the architectural and historic character of the building.

Replacing window and door features on significant facades with historically and architecturally incompatible materials such as anodized aluminum, mirrored or tinted glass.

Removing window and door features that can be repaired where such features contribute to the historic and architectural character of the building.

Installing on significant facades shutters, screens, blinds, security grills, and awnings which are historically inappropriate and which detract from the character of the building.

Installing new exterior storm windows and doors which are inappropriate in size or color, or which are inoperable, or which require removal of original windows and doors.

Installing interior storm windows that allow moisture to accumulate and damage the window.

Replacing sash which contribute to the character of the building with those that are incompatible in size, configuration, and reflective qualities or which alter the setback relationship between window and wall.

Replacing sash which contribute to the character of the building with those that are incompatible in size, configuration, and reflective qualities or which alter the setback relationship between window and wall.

Installing heating / air conditioning units in the window frames when the sash and frames may be damaged. Window installations should be considered only when all other viable heating / cooling systems would result in significant damage to historic material.

- **Staff response:** The historic windows are not proposed to be modified with this application.
- 

## STOREFRONTS

### RECOMMENDED

Retaining and repairing existing storefronts, including windows, sash, doors, transoms, signage, and decorative features where such features contribute to the architectural and historic character of the building.

Where original or early storefronts no longer exist or are too deteriorated to save, retaining the commercial character of the building through (1) contemporary design which is compatible with the scale, design, materials, color, and texture of the historic buildings, or (2) an accurate restoration of the storefront based on historical research and physical evidence.

### NOT RECOMMENDED

Introducing a storefront or new design element on the ground floor, such as an arcade, which alters the architectural and historic character of the building and its relationship with the street or its setting or which causes destruction of significant historic fabric.

Using materials which detract from the historic or architectural character of the building, such as mirrored glass.

Altering the entrance through a significant storefront.

- **Staff response:** This provision is not applicable.
- 

## ENTRANCES, PORCHES, AND STEPS

### RECOMMENDED

Retaining porches and steps that are appropriate to the building and its development. Porches or additions reflecting later architectural styles are often important to the building's historical integrity and, wherever possible, should be retained.

Repairing or replacing, where necessary, deteriorated architectural features of wood, iron, cast iron, terra cotta, tile, and brick.

### NOT RECOMMENDED

Removing or altering porches and steps that are appropriate to the building's development and style.

Stripping porches and steps of original material and architectural features, such as hand rails, balusters, columns, brackets, and roof decoration of wood, iron, cast iron, terra cotta, tile, and brick.

Enclosing porches and steps in a manner that destroys their intended appearance.

- **Staff response:** No changes are proposed to the building's entrances, porches or steps with this application.

**From:** [Kyle Roberts](#)  
**To:** [Jean Dahlquist](#)  
**Subject:** PAPA 711-21-TBD-HLS - McCaffery House  
**Date:** Wednesday, September 22, 2021 12:16:00 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)

---

Dear Fair Housing Council of Oregon,

Thank you for your comments regarding the McCaffery House request for historic building designation to the Redmond Local Landmark Register. Specifically, your comments were in relation to how Statewide Planning Goal 10 (Housing) would be impacted if the McCaffery House were to be listed on the Local Landmark Register.

If the designation were to be approved, it would have no impact on housing. The subject property is already a pre-existing non-conforming lot as it's only 6,100 square feet in size (i.e. it doesn't meet today's minimum lot size requirement). Therefore, future development of the property is limited. Secondly, HB 2001 allows cities to continue the application of discretionary historic design standards but doesn't allow for the categorical exclusion of middle housing.



**Kyle Roberts, AICP** | City of Redmond  
*Senior Planner*

**phone** 541.923.7758  
**cell** 541.233.8180  
**email** [kyle.roberts@redmondoregon.gov](mailto:kyle.roberts@redmondoregon.gov)

411 SW 9<sup>th</sup> Street Redmond, Oregon 97756



[WWW.REDMONDOREGON.GOV](http://WWW.REDMONDOREGON.GOV)

Please consider the environment before printing this email.

DISCLOSURE NOTICE:

Messages to and from this email address may be subject to Oregon Public Records Law.



To: Redmond Landmark Commission

From: David Olewiler, Resident

Subject: Jon and Judy Fessler (McCaffery house) Hearing on September 23, 2021

My name is David Olewiler and I, along with my wife Amelia Vakarcs, own a home on 108 NW 9<sup>th</sup> St in Redmond. The Fesslers and I have a common interest in preservation and recognition of historical properties in Redmond. I, like others, share a belief that preserving and recognizing buildings of our past is an important component of a vibrant small city.

I support approval of the Fesslers' application for historical status of the McCaffery house for the following reasons:

- The Fesslers have obtained a significant amount of history of the McCaffery house
- The Fesslers deeply care about preserving and honoring historical value of buildings in Redmond
- The Fesslers "inherited" the features of the house which do not qualify under conditions of criteria C

Many older homes in Redmond which have a significant historical record will not qualify for historical status under criteria C, largely because of energy efficiency-related home improvements, such as double paned vinyl windows and vinyl siding over exterior insulation.

I ask that the Landmark Commission approve the Fesslers' application and to additionally consider modifying Criteria C to allow for energy efficiency-related modifications to these buildings to qualify for historical designation. I believe the Redmond Landmark commission should do all it can to honor the historical value of the original home, even in cases where the owner inherited a modified home which does not qualify due to criteria C requirements.

Respectfully,

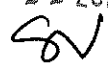
David Olewiler

[oly2@gci.net](mailto:oly2@gci.net)

541-598-4810

RECEIVED

SEP 22 2021

Initial:  Page 307 of 337

Date: 9/22/2021

To: Redmond Landmark Commission

Re: Jon & Judy Fessler (McCaffrey House)

I live at 148 NW 8<sup>th</sup> St. in Redmond. Judy and Jon Fessler's home is adjacent to mine.

I was unaware of the rich history of the McCaffrey House until informed by Judy Fessler, resident.

Given its history and background, I feel that the McCaffrey house should be identified as a Historic Designation.

In this every changing and growing town, our community is rich in local history. Please, let's keep this history alive and not lose sight of our beginnings.

Thank You

A handwritten signature in black ink, appearing to read 'Toni Rich', with a long, sweeping horizontal line extending to the right.

Toni Rich



# McCAFFERY HOUSE

## A HISTORIC RESOURCE DESIGNATION

### #711-21-000214-PLNG

REDMOND CITY COUNCIL  
JANUARY 11, 2022

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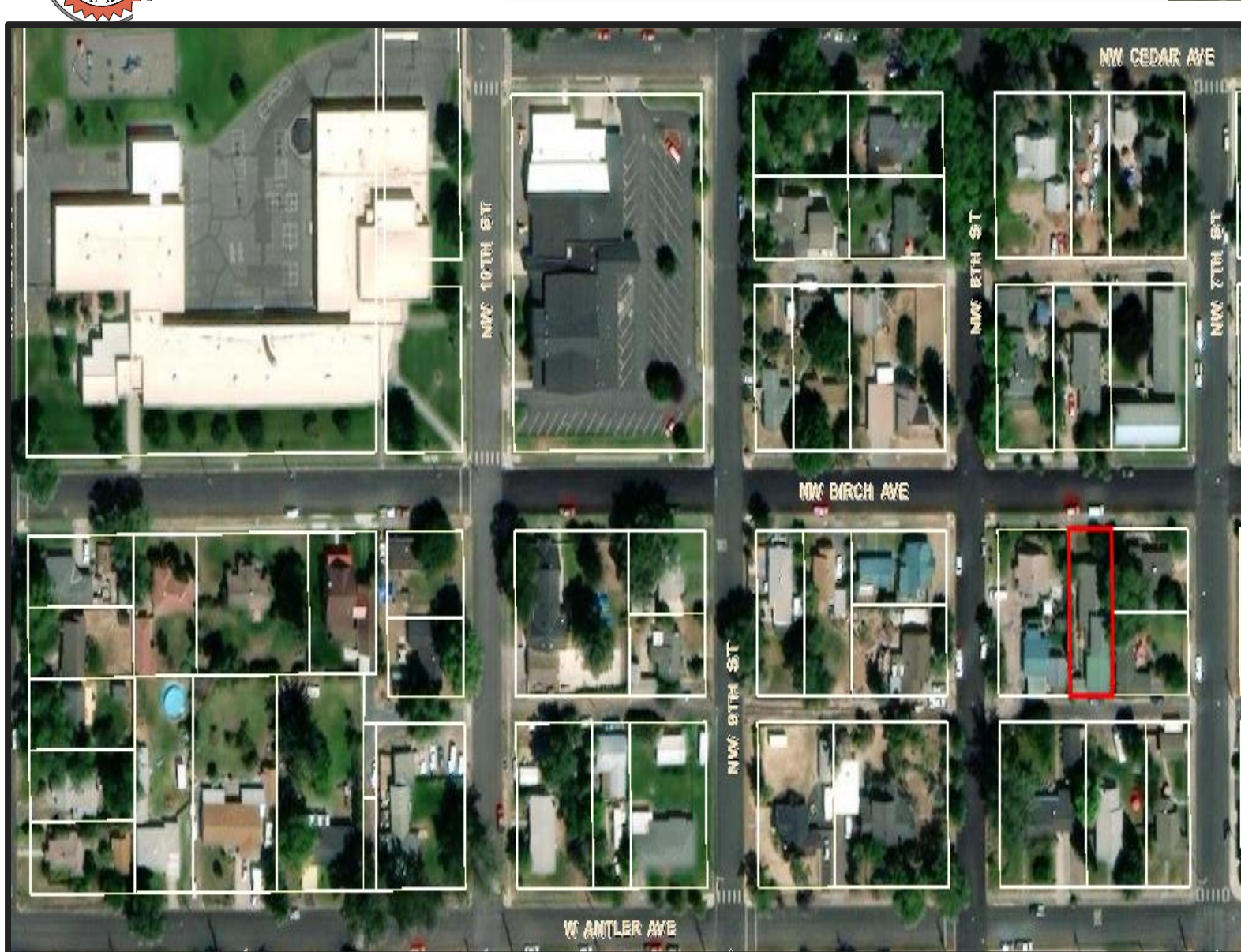
SLIDE / 1





# McCAFFERY HOUSE

## 726 NW BIRCH AVENUE







# HISTORIC RESOURCE DESIGNATION REQUEST

## **McCAFFERY HOUSE DESIGNATION REQUEST: LIST AS HISTORIC BUILDING ON LOCAL LANDMARK REGISTER**

01

### **SUMMARY & PROCESS OF HISTORIC DESIGNATION** STEPS FROM APPLICATION TO DECISION

02

### **WHAT IS THE LOCAL LANDMARK REGISTER?** RESULT OF BEING LISTED

03

### **EVALUATION CRITERIA** STAFF & HLC FINDINGS AND RECOMMENDATION

# SUMMARY & PROCESS OF HISTORIC DESIGNATION REQUEST

## AUGUST

Applicant applied for request to list McCaffery House on the Redmond Local Landmark Register

## SEPT. & OCT.

Historic Landmarks Commission reviewed & made recommendation based on staff findings

## JAN. 11

City Council conducts public hearing and acts on applicant's request

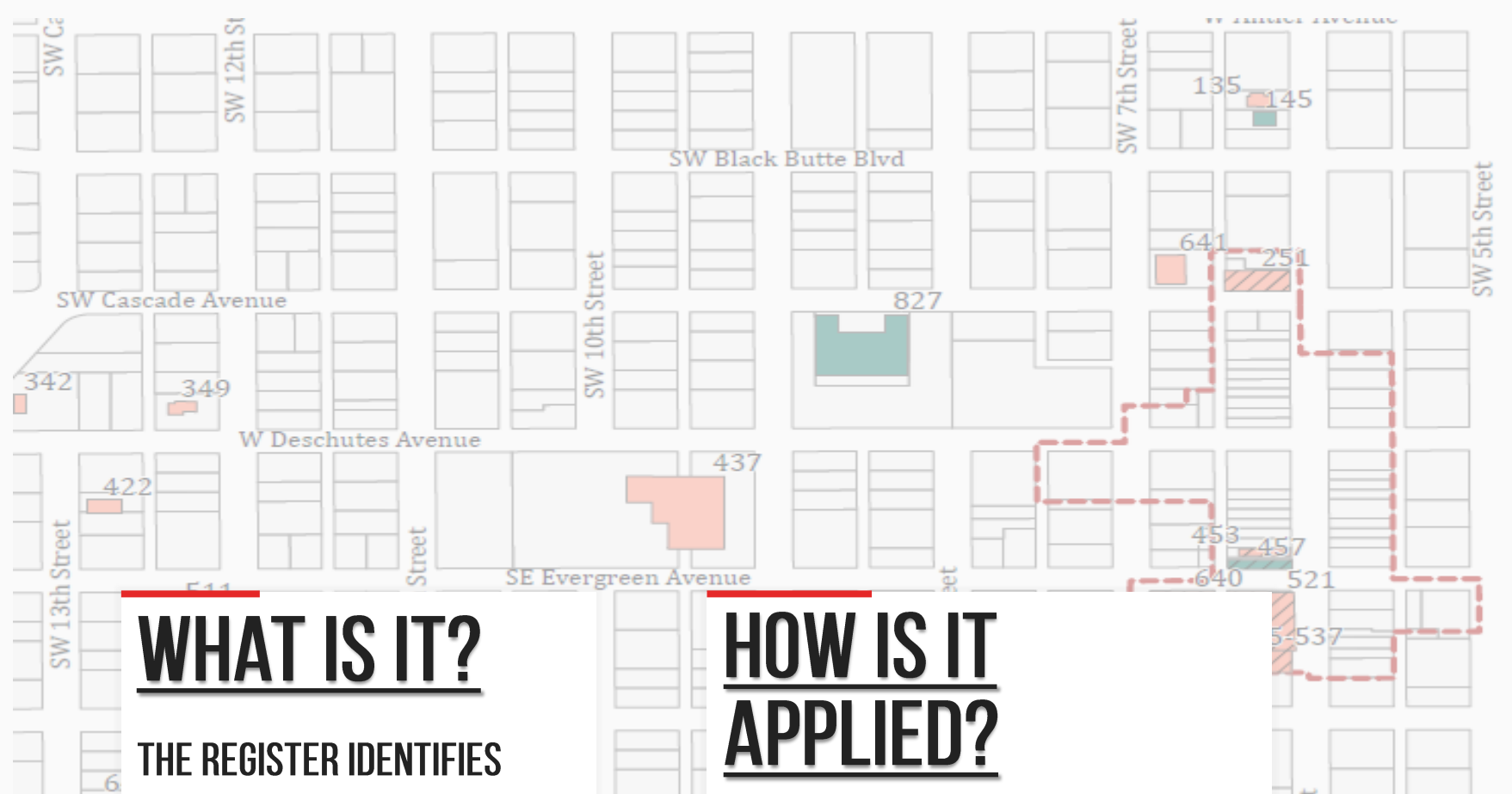
## IF APPROVED..

Request is processed as an amendment to Redmond Historic Preservation Plan (supporting document to Comp Plan)



# REDMOND LOCAL LANDMARK REGISTER

SLIDE / 5



## WHAT IS IT?

THE REGISTER IDENTIFIES BUILDINGS OR SITES OF HISTORICAL IMPORTANCE OR ARCHITECTURAL SIGNIFICANCE THAT ARE CONSIDERED EXEMPLARY OF THEIR TIME AND STYLE.

## HOW IS IT APPLIED?

- HLC REVIEW FOR ALTERATIONS, DEMOS, RELOCATIONS
- TECHNICAL OR FINANCIAL ASSISTANCE FROM HLC FOR REHABILITATION/ PRESERVATION



# LOCAL LANDMARK REGISTER

## DESIGNATION CRITERIA

**01**

THE PROPERTY IS  
LOCATED WITHIN THE  
BOUNDARIES OF THE CITY  
OF REDMOND

**02**

THE PROPERTY IS OVER 50  
YEARS OF AGE OR OF  
EXCEPTIONAL IMPORTANCE

**03**

THE PROPERTY  
POSSESSES SUFFICIENT  
HISTORIC INTEGRITY

**04**

THE PROPERTY HAS  
HISTORIC SIGNIFICANCE





# LOCAL LANDMARK REGISTER DESIGNATION CRITERIA

SLIDE / 7

**01** THE PROPERTY IS  
LOCATED WITHIN THE  
BOUNDARIES OF THE CITY  
OF REDMOND

**02** THE PROPERTY IS OVER  
50 YEARS OF AGE OR OF  
EXCEPTIONAL IMPORTANCE

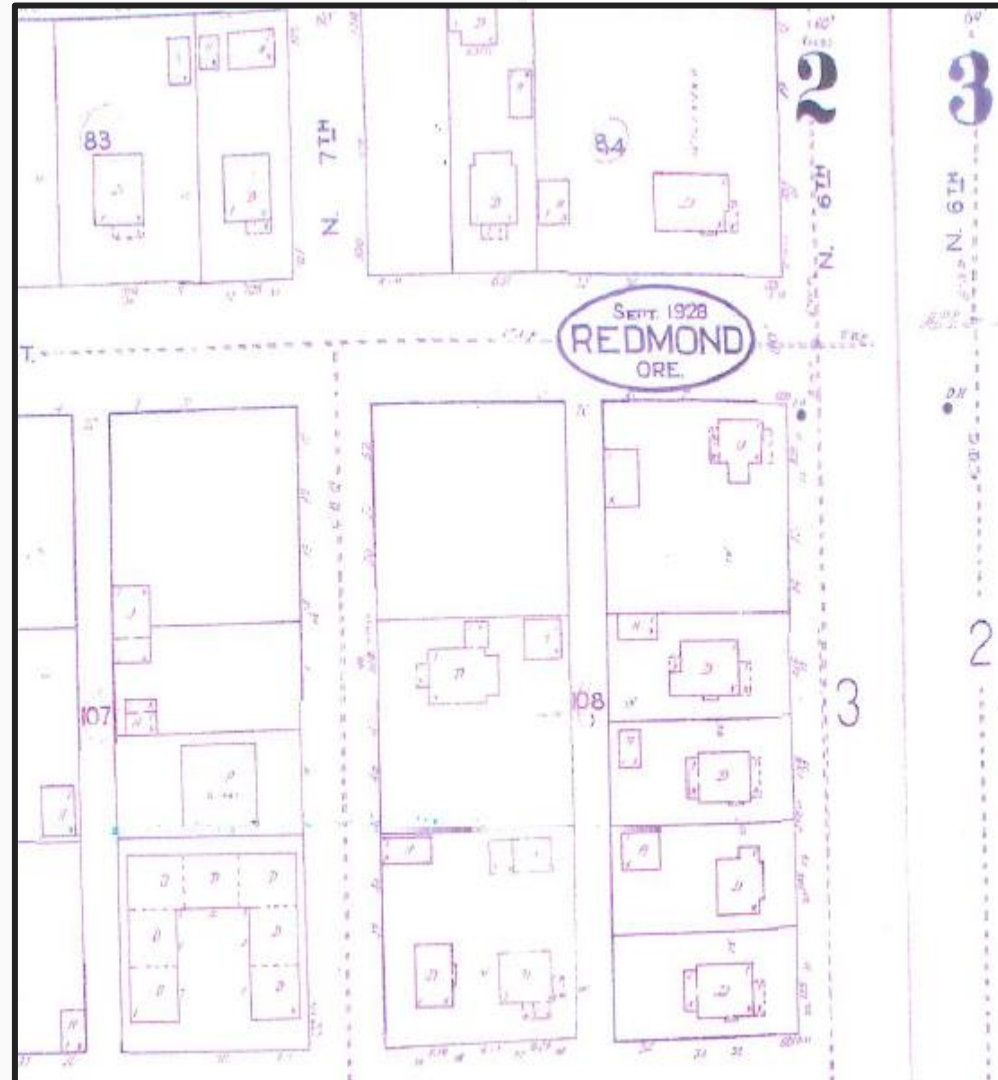






# LOCAL LANDMARK REGISTER DESIGNATION CRITERIA

## 04 THE PROPERTY HAS HISTORIC SIGNIFICANCE



IF YOU ARE LOOKING FOR  
**Any Kind of Land**

in Redmond or  
the Redmond District

.....BE SURE TO SEE.....

**F. W. McCaffery**

THE LAND MAN  
of Redmond

He has all kinds of property listed---IRRI-  
GATED LAND. DRY FARMING LAND.  
TIMBER LAND. HOMESTEADS, CITY  
and RESIDENCE PROPERTY in RED-  
MOND and other parts of Crook County.

The Garden Spot of Central Oregon



# LOCAL LANDMARK REGISTER DESIGNATION CRITERIA

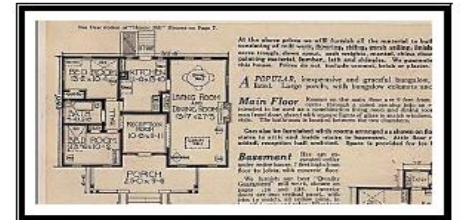
## 03

## THE PROPERTY POSSESSES SUFFICIENT HISTORIC INTEGRITY

**SEC. 8.0855(1)(C) RDC:** NO MAJOR ALTERATIONS OR ADDITIONS THAT HAVE OBSCURED OR DESTROYED THE SIGNIFICANT HISTORIC FEATURES.

- DESIGNATED AS “**NOT ELIGIBLE/NON-CONTRIBUTING**” IN 2017 HISTORIC RESOURCES SURVEY
- VINYL SIDING
- ORIGINAL WOOD WINDOWS REPLACED W/ VINYL
- LOSS OF HISTORIC WINDOW CASING TRIM PROFILE

### CRAFTSMAN BUNGALOWS OF REDMOND



COMPLETED FOR  
CITY OF REDMOND  
COMMUNITY DEVELOPMENT DEPT.

BY  
PRESERVATION SOLUTIONS LLC  
August 30, 2017





# LOCAL LANDMARK REGISTER DESIGNATION CRITERIA

SLIDE / 10

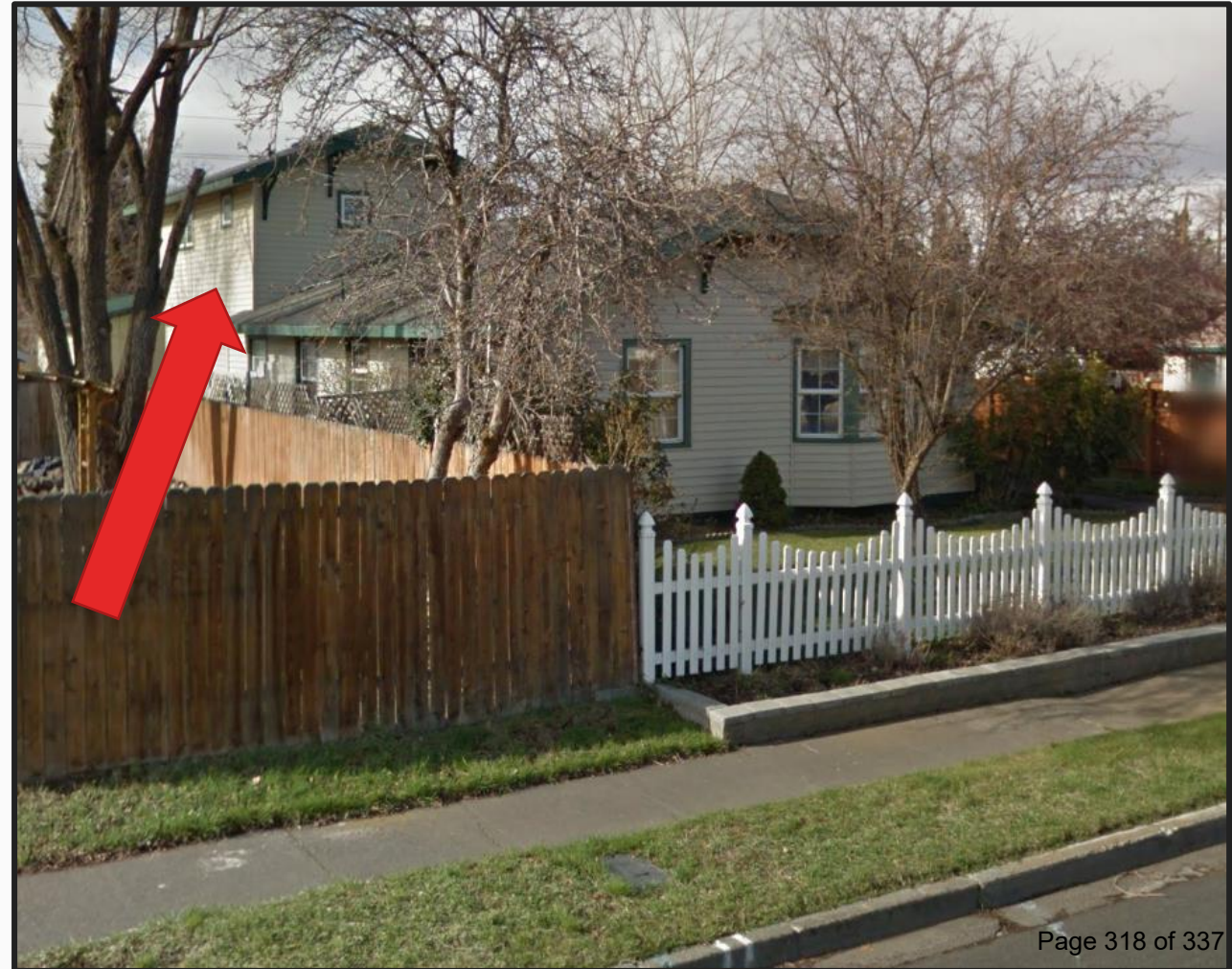
## 03

## THE PROPERTY POSSESSES SUFFICIENT HISTORIC INTEGRITY

**SEC. 8.0855(1)(C) RDC:** NO MAJOR ALTERATIONS OR ADDITIONS THAT HAVE OBSCURED OR DESTROYED THE SIGNIFICANT HISTORIC FEATURES.

MAJOR ALTERATIONS THAT MAY DESTROY THE HISTORIC INTEGRITY INCLUDE [...] **ADDITION OF UPPER STORIES** [...] ADDITIONS WHICH SIGNIFICANTLY DETRACT FROM OR OBSCURE THE FORM AND APPEARANCE OF THE HISTORIC RESOURCE WHEN **VIEWED FROM THE PUBLIC RIGHT-OF-WAY.**

SEC. 8.0855(1)(C)







# STAFF & HLC RECOMMENDATION



**DO NOT LIST McCAFFERY HOUSE ON LOCAL  
LANDMARK REGISTER**

DOES NOT MEET ALL REQUIRED CRITERIA FOR LISTING



**LIST McCAFFERY HOUSE ON REDMOND  
BUILDINGS & SITES OF HISTORICAL INTEREST**

IF CITY COUNCIL FINDS BUILDING IS OF HISTORICAL INTEREST BUT  
DOES NOT MEET CRITERIA FOR LOCAL LANDMARK DESIGNATION,  
COUNCIL MAY DESIGNATE BUILDING AS BUILDING OF HISTORICAL  
INTEREST (SEC. 8.0860(1), RDC)



# QUESTIONS





## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** City Council  
**THROUGH:** Keith Witcosky, City Manager  
Keith Leitz, HR Director  
**FROM:** John Roberts, Deputy City Manager  
**SUBJECT:** Deschutes Public Library Land Deed

---

### Addresses Council Goal:

7. COMPREHENSIVE PLANNING: Enhance the quality of life through adoption of programs, policies, and standards that manage growth while maintaining Redmond's small-town feel.  
A. Promote quality development.

### Report in Brief:

This item requests City Council authorize the City Manager to record a quitclaim deed allowing the City to release its reversionary interest in the current library property and only retain easement and/or right-of-way interest(s).

### Background:

In November 2021, the Deschutes Public Library (DPL) met with City Council to discuss the concept design for their new library in Redmond. The new library will replace the current library and is expected to be approximately 40,000 square feet. DPL's architect and design team continue to refine the design concepts and are preparing to initiate approval through the City's land use process. An issue that DPL needs to resolve, as part of the land use entitlements, is an existing Deed on the property, which if not modified would significantly encumber design and development.

The location of the new library and parking lot alignment will not be in accordance with the existing Deed. As such, DPL has requested the City transfer the City-owned property described in the Deed around the existing library to them.

In addition, there is a landscape zone along the East property line between the existing library and the police station parking lots. The current property line divides this landscape zone in half with a meandering sidewalk through the middle. DPL's current conceptual design maintains this area as a landscape zone with renovations to occur on the DPL side. DPL also requests consideration and approval to transfer the ownership of this planter area in its entirety to DPL. DPL will renovate and maintain this area as a landscape zone.

### Discussion:

The current Deed was recorded in May 2000. The Deed conveyed to DPL fee simple, in the amount of \$0, with the condition that the property was used for a library parking lot and a pocket park. The Deed contained reversionary clauses allowing the City to take the property back if the terms of the Deed were not met. Specifically, the City had the right to take back ownership if part of the property used as a library parking lot was not used for a parking lot, or if part of the property being used as a pocket park was not used as a pocket park.

The deed also identified seven existing easements addressing utilities, building restrictions, site plan agreement for improvement, and parking and shared access.

Guidance for a city to convey interest in property is provided in Oregon Revised Statutes 271.405. To effectuate the transfer of property interests and meet the needs of DPL, it is recommended the City record a quitclaim deed of its



interest with the following additional language:

SUBJECT TO reservations, covenants, conditions, restrictions and easements for all existing roads and utility installations all as the same appear of record or are apparent from an inspection of the Property, including any such rights in the same that may be held by the Grantor; including also, discrepancies, conflicts in boundary lines, shortage in area, encroachments or any other facts which a correct survey would disclose. THE EXPRESS PURPOSE OF THIS INSTRUMENT IS TO RELEASE THE GRANTOR'S REVERSIONARY INTEREST IN THE ABOVE-DESCRIBED PROPERTY AND FOR NO OTHER PURPOSE.

The language allows the City to release its reversionary interest in the property and only retain easement and/or right-of-way interest(s).

Notice of the public hearing, and to transfer interest of city real property, was provided per ORS 221.725 and published in the Bend Bulletin on January 6, 2022.

**Fiscal Impact:**

There is no fiscal impact.

**Alternative Courses of Action:**

1. Approve the quitclaim deed transferring property interest to Deschutes Public Library.
2. Do not approve a quitclaim deed transferring property interest to Deschutes Public Library.
3. Take no action and request more information.

**Recommendation / Suggested Motion:**

"I move to authorize the City Manager to sign a quitclaim deed allowing the City to release its reversionary interest in the current library property and only retain easement and/or right-of-way interest(s)."





## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** Redmond City Council  
**THROUGH:** Keith Witcosky, City Manager  
John Roberts, Deputy City Manager  
**FROM:** Kyle Roberts, Senior Planner  
**SUBJECT:** Resolution #2021-35: A resolution declaring certain territory as being annexed to and incorporated within the City of Redmond.

---

### Addresses Council Goal:

7. COMPREHENSIVE PLANNING: Enhance the quality of life through adoption of programs, policies, and standards that manage growth while maintaining Redmond's small-town feel.  
A. Promote quality development.  
B. Support orderly annexation from Urban Growth Boundary.

### Report in Brief:

This item requests City Council approve a resolution to annex property owned by Nicko Properties, LLC. The 19.23-acre property (Tax Lot 141333C000300; 3627 NW 10th Street, Redmond, OR 97756) is located in north Redmond.

### Background:

An annexation agreement was approved by City Council in March 2021. The annexation agreement is the first step in the process to bring a property into City limits. After the conditions of the annexation agreement are met, a resolution to establish final zoning is presented to City Council.

### Discussion:

As required in the annexation agreement, the property owner and subject property proceeded through the land use review process for a master development plan, tentative subdivision, and cottage development.

The land use review was approved through adoption of Ordinance #2021-11. The Ordinance ensures all annexation and development requirements have been met or addressed.

### Fiscal Impact:

There is no immediate anticipated fiscal impact. System Development Charges will be paid as part of development review and approval to offset infrastructure and service delivery costs.

### Alternative Courses of Action:

1. Approve Resolution #2021-35
2. Request more information
3. Do not approve Resolution #2021-35

### Recommendation / Suggested Motion:

"I move to approve Resolution #2021-35."

AFTER RECORDING RETURN TO:  
City Recorder's Office  
City of Redmond  
411 SW 9th Street  
Redmond, OR 97756

**REDMOND RESOLUTION  
RESOLUTION NO. 2021-35**

**A RESOLUTION DECLARING CERTAIN TERRITORY AS BEING ANNEXED TO AND  
INCORPORATED WITHIN THE CITY OF REDMOND.**

**WHEREAS**, an application has been submitted to the City of Redmond for the annexation of the property described in Exhibit "A", and

**WHEREAS**, the real property described in Exhibit "A" attached hereto and incorporated by reference is contiguous to the City of Redmond; and

**WHEREAS**, all owners of the territory described in Exhibit "A" have consented in writing to the annexation of the land described in Exhibit "A" into the City of Redmond; and

**WHEREAS**, the City Council finds that this annexation complies with the Redmond Urban Area Comprehensive Plan; and

**WHEREAS**, the City Council finds that this annexation is in the best interest of the City and of said territory described in Exhibit "A".

**NOW, THEREFORE, IT IS HEREBY RESOLVED BY THE CITY OF REDMOND AS FOLLOWS:**

SECTION 1: Annexation Area: The real property described in Exhibit "A" to this resolution is hereby proclaimed to be annexed to the City of Redmond, Oregon.

SECTION 2: Record: The City Recorder shall submit to the Secretary of State of the State of Oregon a copy of this Resolution together with a copy of the statement of consent of the landowners of the property described in Exhibit "A".

The City Recorder shall also send a description by metes and bounds or legal subdivision of the new boundaries of the City of Redmond to the Deschutes County Tax Assessor and the Deschutes County Clerk within 10 days of the date of this Resolution.

SECTION 3: Zoning: Upon annexation, the parcel described in Exhibit "A" will be rezoned per Exhibit "A" in Ordinance No. 2021-11, approving the Canyon Trails Master Development Plan for compliance with the 2040 Greater Redmond Area Comprehensive Plan and Zone Map.

**ADOPTED** by the City Council and **SIGNED** by the Mayor this 11<sup>th</sup> day of January 2022.

\_\_\_\_\_  
George Endicott, Mayor

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder

State of Oregon

County of Deschutes

On January 11, 2022, George Endicott, Mayor of the City of Redmond personally appeared before me

\_\_\_\_\_ who is personally known to me

\_\_\_\_\_ whose identity I proved on the basis of \_\_\_\_\_

\_\_\_\_\_ whose identity I proved on the oath/affirmation of \_\_\_\_\_,  
a credible witness

to be the signer of the above document, and he/she acknowledged that he/she signed it.

\_\_\_\_\_  
Notary Public

# EXHIBIT A

## ANNEXATION DESCRIPTION

A tract of land situated in the Southwest one-quarter of Section 33, Township 14 South, Range 13 East, Willamette Meridian, Deschutes County, Oregon, more particularly described as follows:

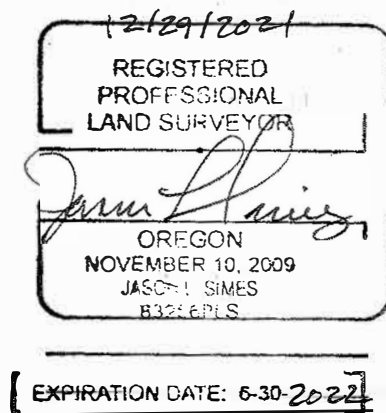
Commencing at a 3 1/4" aluminum cap at the Southwest corner of said Section 33; thence along said South line South 89°57'03" East 819.04 feet to a point; thence continuing along said South line South 89°57'03" East 1298.11 feet to a 5/8" iron rod with a yellow plastic cap marked "H.A. MCCOY ENGR" at the Southeast corner of "CANYON RIDGE, PHASES 1 & 2" filed in Cabinet I, Pages 867 through 873, Document No. 2020-07223, Deschutes County Official Records; thence along the East line of said "CANYON RIDGE, PHASES 1 & 2" the following courses: North 2°19'29" East 486.02 feet to a 5/8" iron rod with an orange plastic cap marked "WA LS 44648 OR 83256PLS"; South 89°57'53" East 34.00 feet to a 1/2" iron rod; North 0°29'35" East 158.74 feet to a 5/8" iron rod with a 5/8" iron rod with an orange plastic cap marked "WA LS 44648 OR 83256PLS", said point also being the Northwest corner of a tract of land described in Document No. 2017-9518, Deschutes County Official Records and the TRUE POINT OF BEGINNING; thence leaving said East line along the North line of said Document No. 2017-9518 the following courses: North 66°04'36" East 98.45 feet to a 1/2" iron pipe as described in said Document No. 2017-9518; thence North 79°51'46" East 109.63 feet; thence South 85°53'04" East 243.07 feet to a point on the West Right-of-Way line of NW 10<sup>th</sup> Street, said street also known as J.A. Wilcox Road as established September 8, 1910 in Crook County Commissioners Journal 4CJ403, the centerline of which is the North-South centerline of said Section 33, said point is 30.00 feet Westerly of when measured perpendicular to the centerline of said NW 10<sup>th</sup> Street; thence leaving said North line along said West Right-of-Way line parallel with and 30.00 feet Westerly of said centerline North 0°29'36" East 1241.31 feet to the South Right-of-Way line of NW Pershall Way as described in Book 364, Page 527, Deschutes County Deed Records, said point being 40.00 feet Southerly of when measured perpendicular to the centerline of said NW Pershall Way; thence along the South Right-of-Way line of said NW Pershall Way the following courses: South 59°01'15" West 139.56 feet; South 59°54'18" West 294.14 feet to the East line of said "CANYON RIDGE, PHASES 1 & 2"; thence along the East line of said "CANYON RIDGE, PHASES 1 & 2" the following courses: South 0°31'34" West 305.38 feet to the centerline of COID Lateral F, said point witnessed by a 1/2" iron pipe that bears North 0°31'34" East 21.68 feet; thence along said East line and the centerline of said COID Lateral F North 66°42'01" West 206.87 feet; continuing along said East line and centerline of said COID Lateral F along the arc of a 120.00 foot radius curve to the left, for an arc length of 143.16 feet, through a central angle of 68°21'14", the long chord of which bears South 79°07'22" West 134.82 feet, the Point of Intersection of said curve is monumented by a 1/2" iron pipe; continuing along said East line and centerline of said COID Lateral F South 44°56'46" West 71.04 feet; continuing along said East line and centerline of said COID Lateral F along the arc of a 283.00 foot radius curve to the right, for an arc length of 167.04 feet, through a central angle of 33°49'10", the long chord



of which bears South 61°51'21" West 164.63 feet; leaving said centerline of said COID Lateral F continuing along said East line South 3°19'29" West 697.13 feet to a 5/8" iron rod with orange plastic cap marked "WA 44848 OR 83256PLS"; thence North 88°54'47" East 484.17 feet to the TRUE POINT OF BEGINNING;

The above-described land contains 19.23 acres of land, more or less.

The basis of bearings of the above-described lands is South 89°57'03" East along the South line of said Section 33 per Minor Land Partition filed as CS00421, record of the Deschutes County Surveyor's Office.



# EXHIBIT B

A PARCEL OF LAND LOCATED IN THE SOUTHWEST ONE-QUARTER OF SECTION 33, TOWNSHIP 14 SOUTH, RANGE 13 EAST, WILLAMETTE MERIDIAN, DESCHUTES COUNTY, OREGON

| CURVE | RADIUS  | ARC LENGTH | CHORD LENGTH | CHORD BEARING | DELTA ANGLE |
|-------|---------|------------|--------------|---------------|-------------|
| C1    | 120.00' | 143.16'    | 134.82'      | S 79°07'22" W | 68°21'14"   |
| C2    | 283.00' | 167.04'    | 164.63'      | S 61°51'21" W | 33°49'10"   |

12/29/2021

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

OREGON  
NOVEMBER 10, 2009  
JASON L. SIMES  
83256PLS

EXPIRES 6/30/22

| LINE | BEARING       | DISTANCE |
|------|---------------|----------|
| L1   | N 66°04'36" E | 98.45'   |
| L2   | N 79°51'46" E | 109.63'  |
| L3   | S 59°01'15" W | 139.56'  |
| L4   | S 59°54'18" W | 294.14'  |
| L5   | N 66°42'01" W | 206.87'  |
| L6   | S 44°56'46" W | 71.04'   |



INDICATES FOUND  
SECTION CORNER



INDICATES FOUND  
QUARTER CORNER



INDICATES CALCULATED  
POSITION



INDICATES FOUND 1/2"  
IRON PIPE



INDICATES FOUND 1/2"  
IRON ROD



INDICATES FOUND 5/8"  
IRON ROD WITH ORANGE  
PLASTIC CAP  
"OR83256PLS - WA44648"



INDICATES FOUND 5/8"  
IRON ROD WITH YELLOW  
PLASTIC CAP MARKED "HA  
MCCOY ENGR"

CANYON RIDGE,  
PHASES 1 & 2

CENTERLINE  
COLD SUB-LATERAL  
F-1

DOCUMENT NO.  
2021-57555  
19.23 ACRES ±

SCALE: 1" = 200'

CANYON RIDGE,  
PHASES 1 & 2

CANYON RIDGE,  
PHASES 1 & 2

TPOB

DOCUMENT NO.  
2017-9518

DOCUMENT NO.  
2005-41854



S 89°57'03" E 819.04'

T14S  
T15S

S 89°57'03" E 1298.11'

H.A. MCCOY ENGINEERING & SURVEYING, LLC  
1180 SW LAKE ROAD, STE. 201  
REDMOND, OR 97756  
(541)923-7554

Redmond Res. #2021-35 - Page 5

PROJECT: 20-247 CANYON TRAILS

DESIGN: JLS

DATE: 11/24/2021

REV: JLS



## CITY OF REDMOND

**CITY HALL**  
411 SW 9<sup>th</sup> STREET  
REDMOND, OR 97756  
541.923.7710  
FAX: 541.548.0706  
[info@redmondoregon.gov](mailto:info@redmondoregon.gov)  
[redmondoregon.gov](http://redmondoregon.gov)

# STAFF REPORT

**DATE:** January 11, 2022  
**TO:** Redmond City Council  
**THROUGH:** Keith Witcosky, City Manager  
John Roberts, Deputy City Manager  
**FROM:** Kyle Roberts, Senior Planner  
**SUBJECT:** Resolution #2021-36: A Resolution requesting the transfer of County Right-of-Way from Deschutes County to the City of Redmond.

---

### Addresses Council Goal:

7. COMPREHENSIVE PLANNING: Enhance the quality of life through adoption of programs, policies, and standards that manage growth while maintaining Redmond's small-town feel.
- A. Promote quality development.
  - B. Support orderly annexation from Urban Growth Boundary.

### Report in Brief:

This item requests City Council approve a resolution to transfer jurisdiction of a portion of NW Pershall Way, NW 10th Street, and SW Helmholtz Way Rights-of-Way (ROW) from Deschutes County to the City of Redmond.

### Background:

In 1998, the City and Deschutes County entered into an Urban Area Growth Boundary Management Agreement. Part of the agreement requires the City to request transfer of road jurisdiction when adjacent properties are annexed. Transfer of road jurisdiction allows the streets to be improved to City standards and shifts the maintenance responsibility to the City.

### Discussion:

When annexation of the Canyon Trails Master Plan property is approved (Resolution #2021-35), in accordance with the 1998 Deschutes County/City of Redmond agreement, transfer of jurisdiction for the adjacent ROW is required. In this instance, this includes two segments of ROW: NW Pershall Way (to the north) and NW 10th Street (to the east).

The transfer of the NW Pershall Way ROW will create a jurisdictional gap. Meaning, the entirety of Pershall Way is currently maintained by the County, less the new small segment of ROW immediately north of the annexed area. The creation of jurisdictional gaps is not uncommon. In these circumstances, the City and County public works departments coordinate to determine the most efficient maintenance protocols. The Deschutes County Road Department and Redmond's Transportation Division are aware of the newly created ROW and will trade off responsibilities as needed to manage the entirety of Pershall Way as efficiently as possible.

The resolution also includes the transfer of a short section of SW Helmholtz Way ROW. Jurisdictional transfer of this ROW was not completed as part of the recent annexation of Korbin Meadows which City Council approved on September 14, 2021.

### Fiscal Impact:

The fiscal impact of this item would be maintenance associated with increasing the inventory of City streets and ROW. Additional street length totals approximately 1,070 feet.

### Alternative Courses of Action:

1. Approve Resolution #2021-36
2. Request more information
3. Do not approve Resolution #2021-36

**Recommendation / Suggested Motion:**

"I move to approve Resolution #2021-36."



**CITY OF REDMOND  
RESOLUTION NO. 2021-36**

**A RESOLUTION OF THE CITY OF REDMOND REQUESTING THE TRANSFER OF CERTAIN  
COUNTY RIGHTS-OF-WAY FROM DESCHUTES COUNTY.**

**WHEREAS**, the City Council has agreed to take jurisdiction of certain County roads within the City limits; and

**WHEREAS**, pursuant to ORS 373.270(6), the City Council wishes to initiate transfer of such jurisdiction to the City.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF  
REDMOND, OREGON, AS FOLLOWS:**

**SECTION 1:** That the City hereby requests that Deschutes County surrender jurisdiction to the City of Redmond of certain County rights-of-way described in NW Pershall Way Exhibits A and B, NW 10<sup>th</sup> Street Exhibits A and B, and SW Helmholtz Way Exhibits A and B attached hereto as of 12:00 a.m., February 10, 2022.

**SECTION 2:** That the jurisdiction of Deschutes County over the rights-of-way described in Section 1 hereof, and for the right-of-way improvements, construction, and repair shall cease upon transfer of the property to the City of Redmond.

**SECTION 3:** This resolution shall be effective February 10, 2022.

**ADOPTED** by the City Council and **SIGNED** by the Mayor this 11<sup>th</sup> day of January 2022.

\_\_\_\_\_  
George Endicott, Mayor

ATTEST:

\_\_\_\_\_  
Kelly Morse, City Recorder

State of Oregon  
County of Deschutes

On January 11, 2022, George Endicott, Mayor of the City of Redmond personally appeared before me

\_\_\_\_ who is personally known to me  
\_\_\_\_ whose identity I proved on the basis of \_\_\_\_\_  
\_\_\_\_ whose identity I proved on the oath/affirmation of \_\_\_\_\_,  
a credible witness

to be the signer of the above document, and he/she acknowledged that he/she signed it.

\_\_\_\_\_  
Notary Public

# Exhibit "A"

## Public Right-of-way Annexation

A portion of Northwest Pershall Way, located in the Northeast One-Quarter of the Southwest One-Quarter and the Northwest One-Quarter of the Southeast One-Quarter of Section 33, Township 14 South, Range 13 East, Willamette Meridian, City of Redmond, Deschutes County, Oregon, being more particularly described as follows:

Commencing at the Center One-Quarter corner of said Section 33; Thence along the East line of said Northeast One-Quarter of the Southwest One-Quarter South 0°29'38" West 611.59 feet to the North right of way line of Northwest Pershall Way and the **TRUE POINT OF BEGINNING**; Thence along said North right of way line North 59°02'05" East 23.45 feet; Thence along an extension of the East right of way line of Northwest Tenth Street South 0°29'38" West 82.06 feet; Thence along an extension of the South right-of-way line of Northwest Pershall Way South 59°02'05" West 23.45 feet to the centerline of said Northwest Tenth Street; Thence along said South right-of-way line of Northwest Pershall Way South 59°02'05" West 175.01 feet; Thence continuing along said South right-of-way line of Northwest Pershall Way South 59°55'05" West 293.92 feet; Thence North 30°04'55" West 70.00 feet to the said North right of way line of Northwest Pershall Way; Thence along said North right of way line of Northwest Pershall Way North 59°55'05" East 293.38 feet; Thence continuing along said North right of way line of Northwest Pershall Way North 59°02'05" East 217.30 feet to the **POINT OF BEGINNING**.

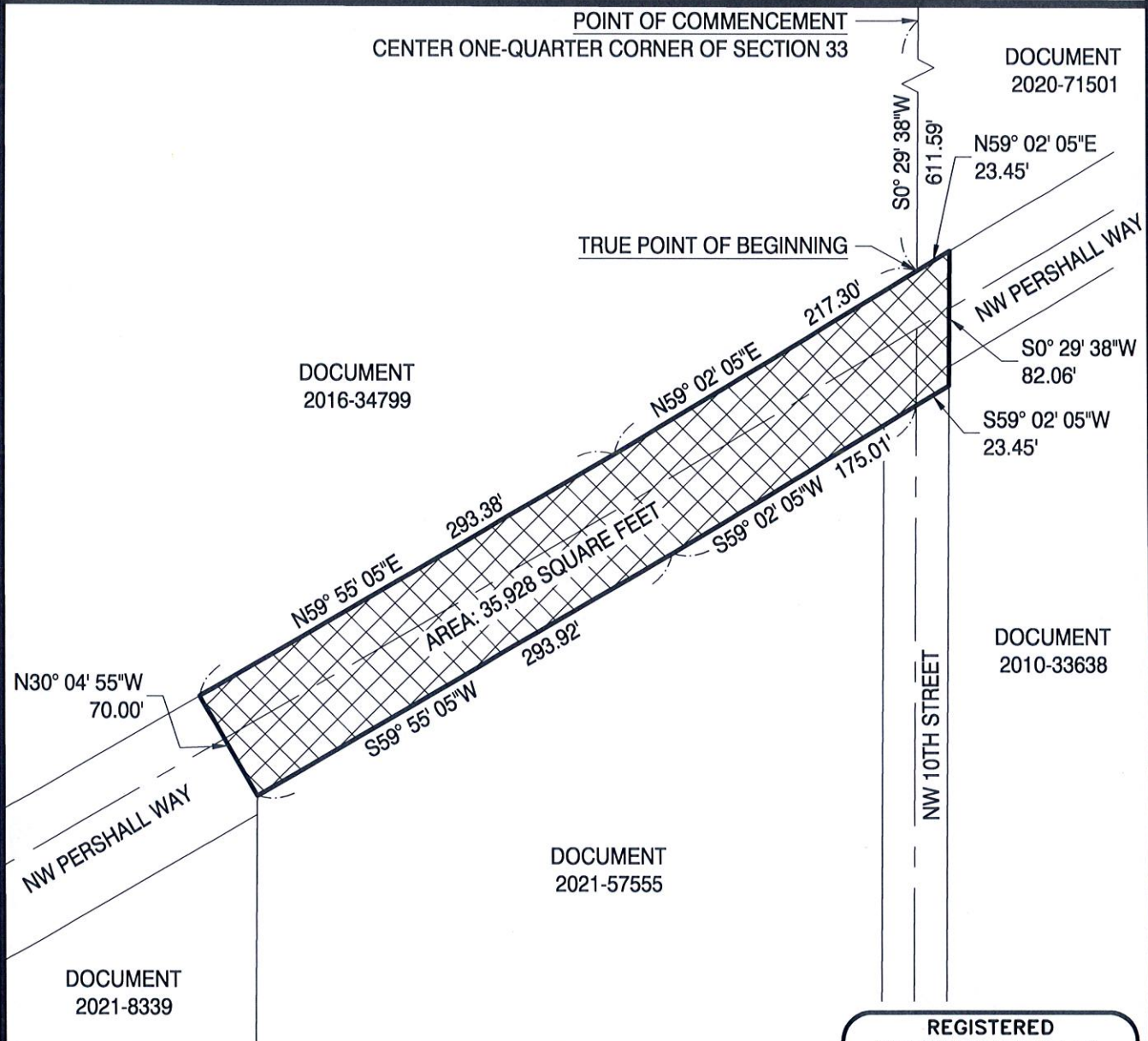
The Basis of Bearings is South 0°29'38" West along said East line of said Northeast One-Quarter of the Southwest One-Quarter.

The above described land contains 35,928 square feet, more or less.



# EXHIBIT B

SEVENTY FOOT WIDE RIGHT-OF-WAY ANNEXATION, NW PERSHALL WAY  
LOCATED IN THE NORTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER  
AND THE NORTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF  
SECTION 33, TOWNSHIP 14 SOUTH, RANGE 13 EAST, WILLAMETTE MERIDIAN,  
CITY OF REDMOND, DESCHUTES COUNTY, OREGON.



**H.A. M'COY**  
ENGINEERING & SURVEYING LLC

1180 SW LAKE ROAD SUITE 201  
REDMOND, OR 97756  
(541) 923-7554

SCALE: 1" = 100'  
FOR 8.5"x11" SHEETS



REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

OREGON  
JULY 11, 2006  
HAYES A. M'COY  
65686LS

EXPIRES 12/31/22

PROJECT: CANYON TRAILS, RIGHT-OF-WAY ANNEXATION

PROJECT NO: 20-247

DESIGN: JJW

DATE: 12/02/21

REV: DETAIL 1

PAGE: EXH. B



# Exhibit "A"

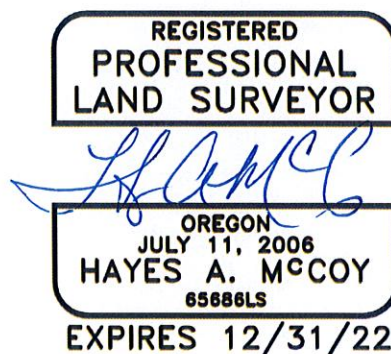
## Public Right-of-way Annexation

A portion of Northwest Tenth Street, located in the Northeast One-Quarter of the Southwest One-Quarter and the Northwest One-Quarter of the Southeast One-Quarter of Section 33, Township 14 South, Range 13 East, Willamette Meridian, City of Redmond, Deschutes County, Oregon, being more particularly described as follows:

Commencing at the Center One-Quarter corner of said Section 33; Thence along the East line of said Northeast One-Quarter of the Southwest One-Quarter South 0°29'38" West 693.65 feet to the South right of way line of Northwest Pershall Way and the **TRUE POINT OF BEGINNING**; Thence along an extension of said South right of way line North 59°02'05" East 23.45 feet to the East right of way line of Northwest Tenth Street; Thence along said East right of way line of Northwest Tenth Street South 0°29'38" West 548.76 feet; Thence North 89°30'22" West 20.00 feet to the centerline of said Northwest Tenth Street; Thence North 89°30'22" West 20.00 feet to the West right of way line of said Northwest Tenth Street; Thence along said West right-of-way line North 0°29'38" East 524.28 feet to said South right-of-way line of Northwest Pershall Way; Thence along said South right of way line North 59°02'05" East 23.45 feet to the **POINT OF BEGINNING**.

The Basis of Bearings is South 0°29'38" West along said East line of said Northeast One-Quarter of the Southwest One-Quarter.

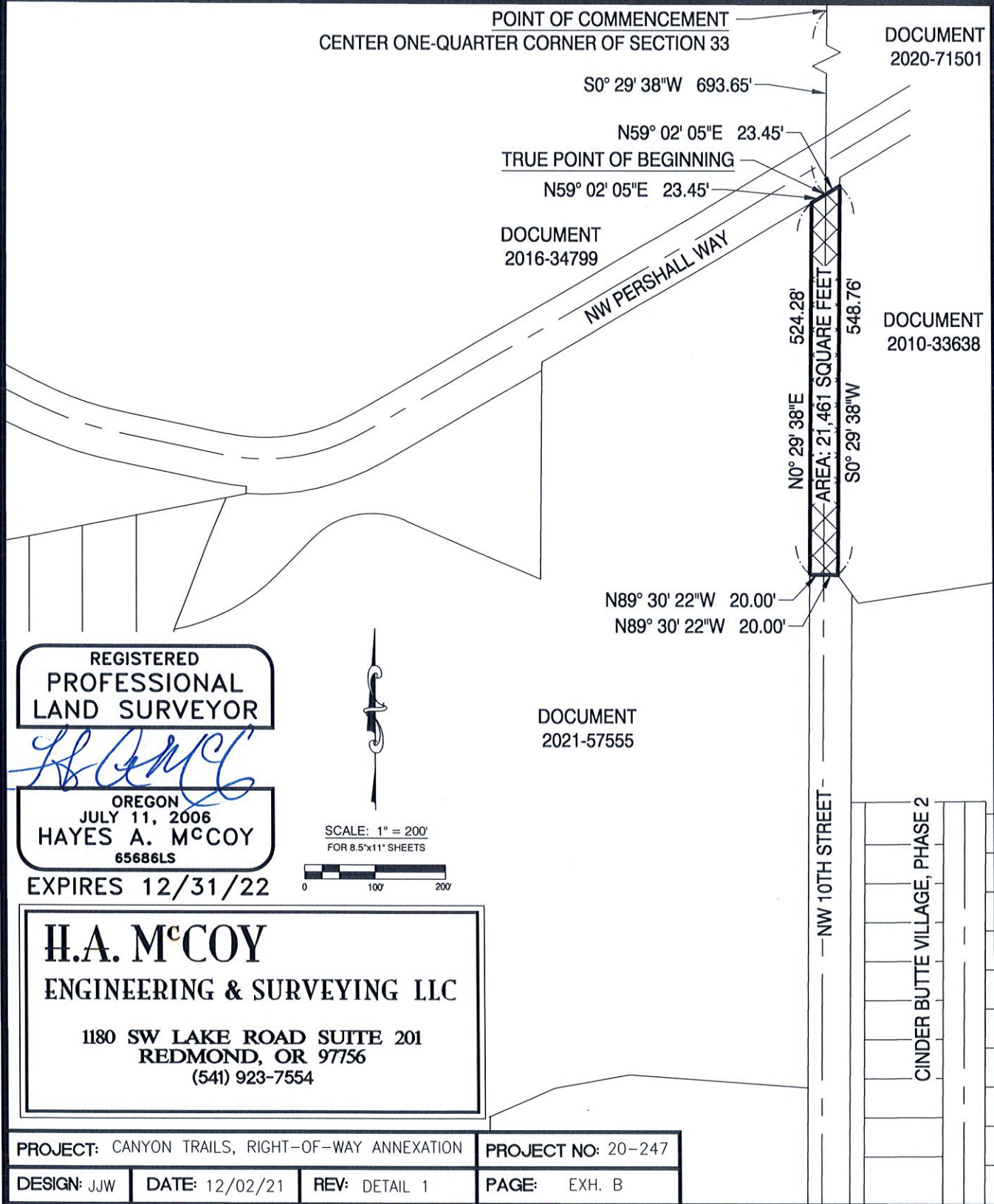
The above described land contains 21,461 square feet, more or less.





# EXHIBIT B

FORTY FOOT WIDE RIGHT-OF-WAY ANNEXATION, NW 10TH STREET  
LOCATED IN THE NORTHEAST ONE-QUARTER OF THE SOUTHWEST ONE-QUARTER  
AND THE NORTHWEST ONE-QUARTER OF THE SOUTHEAST ONE-QUARTER OF  
SECTION 33, TOWNSHIP 14 SOUTH, RANGE 13 EAST, WILLAMETTE MERIDIAN,  
CITY OF REDMOND, DESCHUTES COUNTY, OREGON.



# SW HELMHOLTZ WAY EXHIBIT A

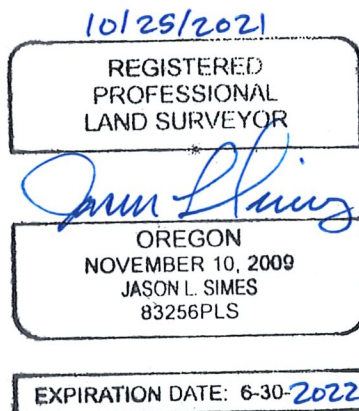
## LEGAL DESCRIPTION

A tract of land located in a portion of Southwest one-quarter of the Northwest one-quarter (also known as Government Lot 2) of Section 30, Township 15 South, Range 13 East, and in a portion of the Southeast one-quarter of the Northeast one-quarter of Section 25, Township 15 South, Range 12 East, Willamette Meridian, Deschutes County, Oregon, more particularly described as follows:

Commencing at 3/4" iron pipe per county survey CS13488, records of the Deschutes County Surveyor's Office being the West one-quarter corner of said Section 30; thence along the West line of said Southwest one-quarter of the Northwest one-quarter North 0°21'25" East 658.59 feet to a 1/2" iron pipe per county survey CS01398, records of the Deschutes County Surveyor's Office at the Southwest corner of the North one-half of said Southwest one-quarter of the Northwest one-quarter, said point being the TRUE POINT OF BEGINNING; thence along an extension of the South line of said North one-half of the Southwest one-quarter of the Northwest one-quarter North 89°34'50" West 21.15 feet to the West right of way line of SW Helmholtz Way; thence along said West right of way line North 0°43'32" East 328.00 feet; thence along an extension of the North line of said North one-half of the Southwest one-quarter of the Northwest one-quarter South 89°34'23" East 18.45 feet to a 1/2" iron pipe per county survey CS01398, records of the Deschutes County Surveyor's Office at the Northwest corner of the North one-half of said Southwest one-quarter of the Northwest one-quarter; thence along said North line South 89°34'23" East 41.55 feet to a point on the East right of way line of said Southwest Helmholtz Way; thence along said East right of way South 0°43'32" West 327.99 feet to said South line of the North one-half of the Southwest one-quarter of the Northwest one-quarter; thence along said South line North 89°34'50" West 38.86 feet to the TRUE POINT OF BEGINNING;

The above-described lands contain 0.45 acres of land, more or less.

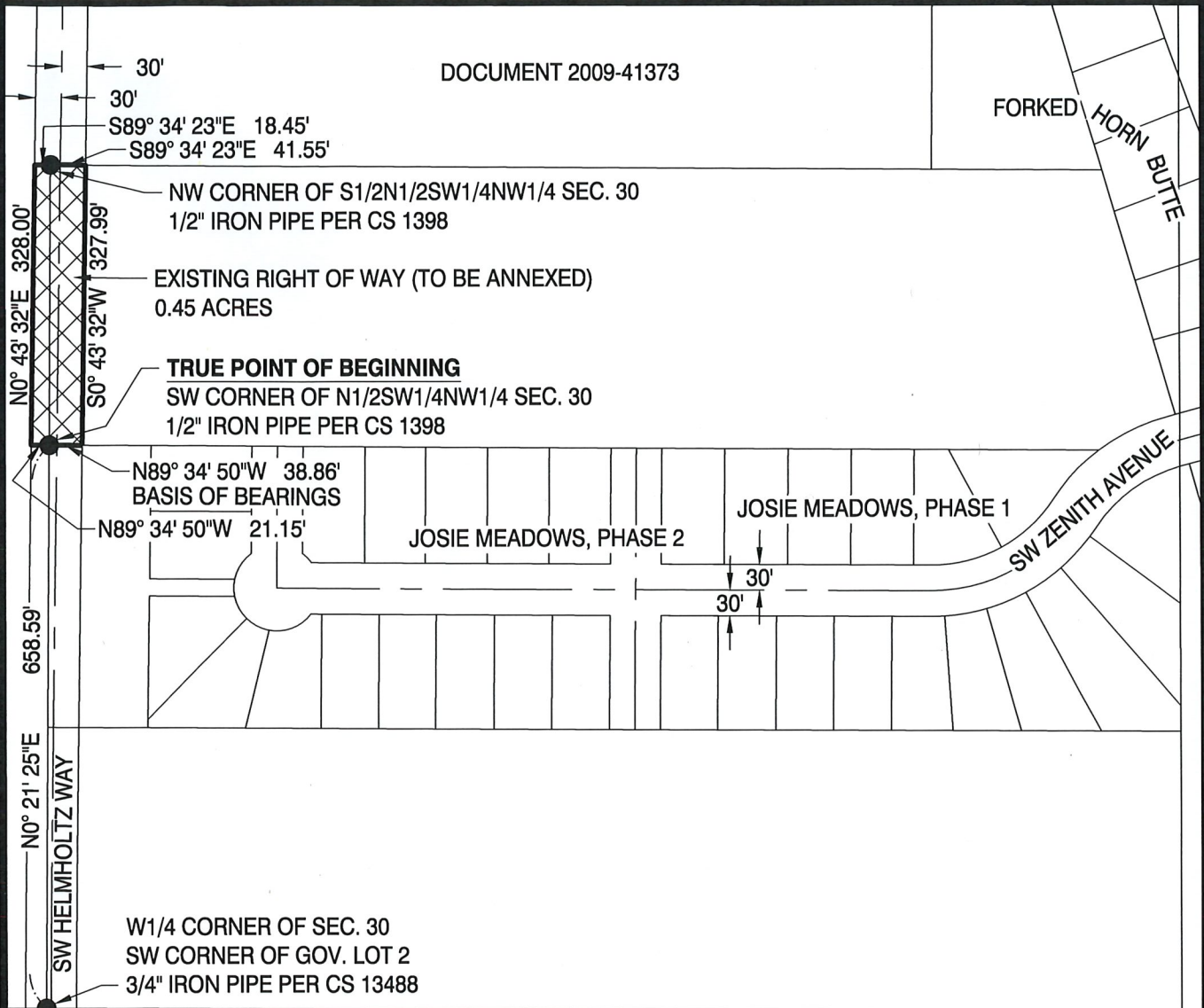
The basis of bearings of this description is North 89°34'50" West along the North line of Josie Meadows, Phase 1, recorded as Document No. 2020-385, Deschutes County Official Records.





# SW HELMHOLTZ WAY EXHIBIT B

A TRACT OF LAND LOCATED IN A PORTION OF GOVERNMENT LOT 2, THE SOUTHWEST ONE-QUARTER OF THE NORTHWEST ONE-QUARTER, OF SECTION 30, TOWNSHIP 15 SOUTH, RANGE 13 EAST, AND A PORTION OF THE SOUTHEAST ONE-QUARTER OF THE NORTHEAST ONE-QUARTER, OF SECTION 25, TOWNSHIP 15 SOUTH, RANGE 12 EAST, WILLAMETTE MERIDIAN, CITY OF REDMOND, DESCHUTES COUNTY, OREGON.



**H.A. M<sup>c</sup>COY**  
ENGINEERING & SURVEYING LLC

1180 SW LAKE ROAD SUITE 201  
REDMOND, OR 97756  
(541) 923-7554

SCALE: 1" = 200'  
FOR 8.5"x11" SHEETS



10/25/2021  
REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*Jason L. Simes*  
OREGON  
NOVEMBER 10, 2009  
JASON L. SIMES  
83256PLS

EXPIRES 6/30/22

PROJECT: KORBIN MEADOWS

PROJECT NO: 20-019

DESIGN: JJW

DATE: 10/25/21

REV: DETAIL 1

PAGE: EXH. B